

AU/ACSC/072/1999-04

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

SUSTAINMENT: MAKING IT BETTER
A FOCUS ON ORGANIC DEPOT OPERATIONS

by

Bernard J. Gruber, Major, USAF

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

Advisor: Lt Col Gary W. Hamby

Maxwell Air Force Base, Alabama

April 1999

Disclaimer

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the US government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

Contents

	<i>Page</i>
DISCLAIMER	ii
LIST OF ILLUSTRATIONS	v
LIST OF TABLES	vi
PREFACE	vii
ABSTRACT	ix
A FOCUS ON AIR LOGISTICS CENTERS	1
The Basic Problem – Why this Study?	1
The Air Force Depot System	2
The Fix?	2
1991 to Present Day	3
Why Organic Depot Operations?	5
Organic Depot Operations – Where Are We?	8
The Bigger Picture	8
The Changing Environment	10
Have We Given Up?	12
Striking the Balance	13
Summary	14
A FOCUS ON SUSTAINMENT	16
The New Focus – Joint Vision 2010	16
The Packard Commission	17
A Quick Overview	17
The Disconnect	18
Integrated Weapon System Management	19
Integrating the Packard Commission Report	20
Clear Command Channels	20
Small High Quality Staffs	23
Stability	25
Limited Reporting Requirements	27
Communications with Users	30
Prototyping and Testing	32

SUMMARY AND RECOMMENDATIONS	36
The Issue	36
The Focus.....	36
The Recommendations.....	37
GLOSSARY	39
BIBLIOGRAPHY	41

Illustrations

	<i>Page</i>
Figure 1 – The AFMC Budget	7
Figure 2 – Organizational Chart; Acquisition vs Joint Operations	21
Figure 3 – F-16 SPD Relationship	23

Tables

	<i>Page</i>
Table 1 – Example of Internet Use Applied to Depot Operations with User Interface.....	30
Table 2 – Aging Aircraft and Fleet Extension Program.....	33

Preface

In a December 1997 report submitted to the Secretary of Defense, a National Defense Panel (NDP) stated that

Department of Defense managers have little personal incentive to aggressively pursue the opportunities for infrastructure streamlining and cost reduction. Such actions are often unpopular among the local workforce, and the comptroller frequently seizes projected savings before efficiencies are realized. Thus, the current system is heavily biased against innovation and change – and encourages the continuation of inefficient and ineffective business practices.¹

It is my opinion that this accusation is false. I believe the men and women of the DOD workforce are hard working Americans trying to do the best they can with the tools they have been given. The NDP states that the defense manager has ‘little personal incentive’ to achieve streamlining measures. In other words, they don’t have an incentive to make things better. Personal incentive can usually be characterized by one of three measures: values, power, or money. Many of the greatest military leaders of this country possessed unquestionable values and have achieved power through attainment of flag officer rank – Washington, Pershing, Doolittle, MacArthur and Powell, just to name a few. Their incentive certainly was not money, as any military officer will attest. Just like my previous boss used to say, “If you’re in the Air Force for the money, you’ve picked the wrong job.”

Over the last nine years, Air Force leaders have instituted many innovative changes. Read any Tom Clancy book and you will find out how technically innovative the services

have been. Likewise, look to the hundreds of acquisition reform initiatives since the 1986 Goldwater-Nichols Act to understand the many management innovations the services have instituted. Acquisition reform is an example of good and innovative defense management. This initiative was bolstered by the information revolution, the technical revolution, the ending of the cold war, and changes within the strategic environment, but most of all it was bolstered by personal innovation. Unfortunately, an important aspect of defense reform was missed along the way – and that is the overhauling of our organic sustainment policies, practices, procedures and equipment. That is the issue this research paper addresses – making sustainment better from the lessons of acquisition reform.

I have spent the last eleven years working within the acquisition career field, eight years on the development side of the house and three in sustainment. As with any project, I would like to thank my friends at AFMC and the staff at Air University Library who have helped me along the way. Also, I would like to personally thank two members of the Air Command and Staff College staff: my research advisor, Lt Col Gary Hamby and Lt Col Hank Dasinger, Deputy of the ACSC Research Department, for their help and patience in developing this paper. I hope this paper is of use to all those who read it.

Abstract

Over the last ten years Air Force mission capable (MC) rates have steadily declined from 83.4 percent to 74.1 percent, a ten-percent decrease. Depot operations, both organic maintenance and supply, are directly attributable to this decline. Consequently, many senior leaders are emphasizing contract and private sector sustainment operations rather than organic and public sector sustainment operations. Accordingly, the emphasis of this paper is to illustrate why the Air Force needs an organic depot capability and how it can be improved. For every dollar the DOD spends on acquiring a weapon system, it will spend at least two more to sustain it over the weapons useful life. Moreover, the DOD has reduced procurement funding by 70 percent over this same period. Couple this funding reduction with a corresponding increase in aircraft usage and life extensions, and sustainment operations will only become more critical.

The basic methodology of this research is to compare where the Air Force was ten years ago with the advent of acquisition reform and correspondingly apply those thoughts to improving sustainment operations. This research was conducted via trade journals, informal interviews, the Internet and Air University Library sources. The paper concludes with recommendations for improving sustainment operations and integrating command relationships.

Notes

¹ Report of the National Defense Panel, *Transforming Defense, National Security in the 21st Century*, Washington D.C., December 1997.

Chapter 1

A Focus On Air Logistics Centers

Our current state of readiness borders on disastrous. We are the most threatened I can remember us being in the last generation.

—Senator James M. Imhofe
Chairman, SASC on Military Readiness
Washington Times, 2 July 1998

The Basic Problem – Why this Study?

Tell just about any program director procuring a new weapon system that they are required to use organic depot operations for long-term support and a groan will emanate from their mouth. This research paper is about understanding why such a negative association with organic sustainment exists, what to do about it and what affect is it having on our ability to sustain weapon systems into the 21st century.

In part, this negativity is an issue of false perceptions, but unfortunately the fear of “going organic” is rightly deserved. For clarification, organic (public sector) sustainment involves government work done in government facilities by government people. Private sector workload is that which is contracted out. In general, sustainment involves two logistical missions, supply and maintenance. As this research paper will point out, there are many culprits – lack of funding, lack of technology improvements, improper education and training, unclear command channels, and lack of stimulus. These

symptoms within organic depot operations directly affect Air Force readiness today. Since 1991, the Air Force's weapon system readiness rate (i.e., mission capable rate) has steadily declined from 83.4 percent to 74.1 percent.¹

The Air Force Depot System

The Air Force organic depot system is located at five air logistics centers throughout the United States. They include Sacramento Air Logistics Center (SA-ALC) located in Sacramento CA, Ogden (OO-ALC) located in Salt Lake City UT, Oklahoma City (OC-ALC) located in Oklahoma City OK, San Antonio (SA-ALC) located in San Antonio TX, and Warner Robins (WR-ALC) located in Warner Robins GA. These air logistics centers are responsible for worldwide logistics management, supply and repair, for a variety of Air Force weapon systems. Thus, the ALC infrastructure is the backbone for ensuring parts, components and subsystems are available in times of war and conflict. Because the ALCs are responsible for sustaining field operations, they are directly responsible for much of what drives mission capable (MC) rates through the range of military operations.

The Fix?

There have been many modifications in depot operations since 1991; most of these changes have focused on single weapon systems through reducing cycle times and improving response times. A recent *Logistics Spectrum* article noted that,

A series of reform initiatives has altered DOD logistics management environment radically since 1992. Reform focused initially on the acquisition community with significant changes to the DOD 5000-series system acquisition guidance. This was followed by changes to changes to Public Law with passage in 1994 of the Federal Acquisition Streamlining Act. These changes that began with the "front end" of the logistics life cycle are affecting the entire DOD materiel management system.²

Unfortunately, these reform initiatives have not ‘reformed’ the ‘back end’ of DOD logistics management. While concentrating on ‘front end’ logistics, procurement matters and acquisition reform, organic maintenance and supply have been relatively ignored.

1991 to Present Day

Besides the start of declining MC rates, the year 1991 is significant in four other ways. The cold war was essentially over, Air Force Materiel Command (AFMC) was formed, Operation DESERT STORM concluded and a recession loomed.

Cold War. The fundamental landscape of the DOD and the way the Air Force postures and sustains war changed following the cold war. The DOD no longer held large inventories of needed war materiel to support a symmetrical war between two superpowers. In similar context, the Air Force adopted a basic manufacturing technique from Japanese business leaders; a concept called just in time management. This philosophy emphasizes that parts and components are handed to manufacturing when they need it, and not just in case they need it. In the mid 1990’s, General Viccellio, the Air Force Materiel Command Commander implemented a program called Pacer Lean, a predecessor to Lean Logistics and today’s Agile Combat Support. These programs employed the same concepts of the just in time philosophy and are starting to take root in standard operating procedures.

Merger. Also in 1991, Air Force Systems Command and Air Force Logistics Command merged to become AFMC. The merger was spawned for myriad reasons including a shrinking budget, a need for a single manager from the beginning to the end of a program, and increased emphasis of the product and product teams. If history was any guide, the new AFMC was reminiscent of the long gone Air Materiel Command

formed in March 1946 and the Materiel Division of 1927.³ The management of systems and sustainment was for the most part organized under one roof again.

Operation DESERT STORM. This war caused another quandary for depot operations, U.S. enemies realized that significant time is required for force buildup – over six months in this case. The DOD will most likely not have this luxury in the future. Couple this fact with U.S. security environment changes – terrorism, weapons of mass destruction, rogue nations, ethnic strife – and an understandably different logistics infrastructure is required.

For these increasingly likely situations, we need a superior logistics force; one capable of extremely rapid yet reliable and secure – response and sustainment. Unfortunately, that superior logistics force is not in place. What we have now was well suited to support the Cold War, but today it fails to provide required performance – in terms of readiness, responsiveness, or sustainment, or assurance. Equally disturbing is the fact that it costs far too much and takes far too many people.⁴

In the author's opinion, DESERT STORM changed Americans expectations about wars, they must now end quickly and with a minimum number of casualties. Depot operations must be poised to execute rapidly and for indefinite periods of time.

Recession. Lastly, the recession of 1991 was a turning point in the U.S. economy and has led to an unprecedented eight years of continued and sustained growth. During this same period, defense constant year budgets shrunk from \$394.5 Billion in 1991 to \$267.0 Billion in 1999 – a 32.3% decrease.⁵ Moreover, Air Force Central Supply and Maintenance total obligation authority decreased from \$10.4 Billion to \$4.0 Billion – a 61.5% decrease.⁶ While the U.S. economy was booming, Air Force readiness suffered. While U.S. businesses flourished, Air Logistics Centers have deteriorated.

Why Organic Depot Operations?

Over the last 10 years, government critics have scrupulously observed the way the DOD spends the taxpayers dollars; and well they should. The DOD entered a new age of cutting costs while vigilantly supporting and defending the United States. Organic depot operations, both supply and maintenance, have been on the chopping block since the Base Realignment and Closure commission determined how inefficient they were. Furthermore, depot wholesale logistics have recently been funded at only 85 percent of requirements.⁷ So why do we stick with organic operations even though the war cry from the senior leadership is to go to the commercial sector? Three reasons come to mind: the law, the extent of the business and the protection from wartime surge in a time of crisis.

The Law. First and foremost, it's the law. Title USC 10 states

Not more than 50 percent of the funds made available in a fiscal year to a military department or a Defense Agency for depot-level maintenance and repair workload may be used to contract for the performance by non-Federal Government personnel of such workload for the military department or the Defense Agency. Any such funds that are not used for such a contract shall be used for the performance of depot-level maintenance and repair workload by employees of the Department of Defense.⁸

In layman's terms, this means the government workforce must do at least 50 percent of depot repair. The ratio used to be 60/40. There are many arguments of whether or not the 50 percent number is correct. The goal of this paper is not to debate this point. What is important to realize, though, is that whether or not more bases close or are realigned (e.g., Sacramento and Kelly ALCs), the government workforce is obligated to perform. Besides the law, there are two other reasons the Air Force needs to improve organic operations: the size of the business and the safety net offered by its existence.

It's Big Business. Air Force Materiel Command's Depot Maintenance Activities Group (DMAG) budget is almost five billion dollars while the Supply Management Activities Group (SMAG) is another 9.5 billion.⁹ Importantly, these dollars do not represent separate amounts paid to contractors for repair of other Air Force weapon systems. Department of Defense wide the government outsources approximately 28 percent of the total depot maintenance workload.¹⁰ Furthermore, "funding for logistics related activities takes up one-third of the Department of Defense budget; and nearly one-half the Department's total manpower."¹¹ Lastly, about 50 percent of the AFMC 100,000 person workforce is at the ALC, the equivalent of a small city. The point, of course, in detailing these numbers is to portray the enormity of Air Force depot operations and to highlight two points. First, the depot operations infrastructure was built in support of fighting a major scale war. The infrastructure could not be replaced for many years. Second, millions have been spent on the infrastructure to support these operations. In turn, depot operations support an economic base within each locale.

Headquarters AFMC is responsible for funding each of the ALCs. Each ALC sustains Air Force weapon systems through supply and maintenance operations. For fiscal year 1998 (FY98) the total AFMC budget was \$32.6 Billion, or 59 percent of the Air Forces total obligation authority.¹² Presently, the AFMC commander has directed that all funds flowing through AFMC will be in one of eight "pots" of money – science and technology, test and evaluation, product support, depot maintenance, supply management, information management, information services, and installations and support. For FY98, the funding profile is shown in Figure 1 below.

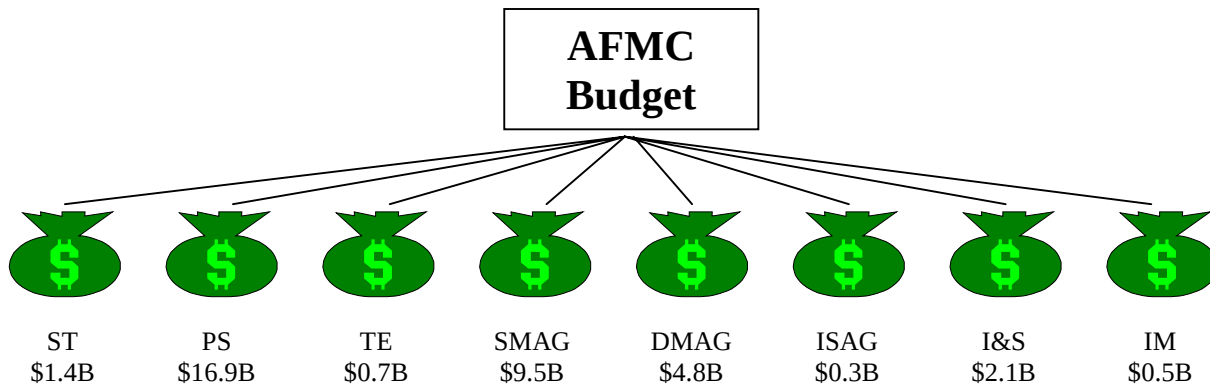


Figure 1 – The AFMC Budget (FY98)¹³

This research paper concentrates on AFMC’s DMAG and SMAG business areas. The DMAG is responsible for 6.8% of AFMC’s total budget. While this may not seem like a big apportionment, consider that a \$4.8 billion dollar company would rank 319 on the Fortune 500 list, right behind Mattel.¹⁴ Adding in SMAG would place it at 96, and amazingly AFMC would rank number 16 directly behind Sears Roebuck.¹⁵ The Air Force has invested billions into the depot infrastructure in support of organic operations. In the writer’s opinion, the Air Force needs to improve these operations while optimizing capacity and preparing for national emergencies.

Wartime Protection. The next factor to consider is surge protection. Organic sources offer the facilities and personnel required for large-scale build-up in defense of this country. Organic facilities, unlike commercial business, have available facilities for wartime surge and long-term sustainment. Additionally, depot maintenance personnel have the expertise and tooling required to support these requirements on a massive scale. The primary reason a commercial contractor does not maintain a similar set of facilities is the same reason much of the workload is transferring to the commercial sector – affordability. A contractor, unlike organic depots, will not maintain facilities that

negatively affect the bottom line and obligations to stockholders. Secondly, a contractor does not have an obligation to maintain wartime facilities unless it is expressly written in the contracts, which drives up costs. Interestingly, an Air War College student research paper written in 1954 stated that “The current concept of depot maintenance should continue with organic facilities providing support for vital aircraft ... and industry performing all non vital workloads.”¹⁶ This conclusion was based on cost. However, if a contractor suddenly goes out of business, as is often the case, the capability to sustain the warfighter is lost. This is especially true in high technology areas and inherent government work such as cryptography, avionics labs, or stealth. Congressional leaders, though, were seriously concerned about the cost of maintaining excess capacity, especially AF depots.¹⁷ This excess increases supply and maintenance costs, but is it fair to compare these costs with that of contractors since the Air Force cannot lease out unused facilities? Regardless, the defense of America demands a ready capability in times of national crises.

Organic Depot Operations – Where Are We?

The Bigger Picture

So if we conclude that organic depots are an essential part of the DOD’s business, and furthermore that it is here to stay – how do we make it better? A quick search on the Internet yields numerous studies that make depots better. Unfortunately, these studies have one common characteristic; they look at a single weapon system, a single process, or a single initiative. While these studies hold important information they often do not lead to great revelations.

The Defense Science Board, (a senior, Secretary-level advisory group), in its 1998 summer study on logistics transformation, concluded that current logistics improvements, while excellent in many respects, simply won't transform logistics, significantly enhance performance, or maximize cost reduction. The problem, they observed, is not the people – who are trying valiantly to make marginal improvements on a 1950's system – it is the process itself. They also observed that transforming logistics is a complex challenge, “more complex than a major weapons system”, since we are dealing with an over \$80 billion dollar a year business with enormous built-in inertia.¹⁸

Two ideas seem to be missing. The first is to look at the big picture combined with basic management principles and the second is to consider a previous idea that has worked and may be directly applied to improving depot operations. The rest of this chapter addresses these two ideas.

Headquarters AFMC has awarded several contracts to study what is going wrong. More often than not, the results are simply a verification of what depot personnel already know. One place to look first is private enterprise. For instance, Boeing and Caterpillar guarantee a 24 hour delivery of space parts by replacing costly inventories with fast transport; Federal Express advertises a form of ‘total asset visibility’ that allows customers to locate and identify packages anywhere in its system.¹⁹ In an unrelated article, Dr Gansler stated

Response time is another serious problem we face. The Army stocks numerous parts manufactured by Caterpillar. Average time for those parts, when a base runs out, range from 21 to 36 days here in the United States or 50 to 68 days overseas. Caterpillar itself resupplies domestic commercial dealers in one or two days and overseas dealers (in 100 countries) in two to four days at most – or they pay for it. To achieve these results, they use modern information, information technology and rapid transportation, instead of carrying huge inventories. And our volume is not an acceptable excuse: during the height of Operation DESERT STORM, military requisitions peaked at 35,000 deliveries per day (on a three-day moving average) – far short of the performance of commercial package systems (such as FEDEX or UPS) that handle millions of packages overnight.²⁰

United Airlines has cut engine repair cycle time by 50 percent and reduced inventory from \$700M to \$60M while outsourcing less than 20 percent of workload.²¹ Commercial industry forged a path proving business can be substantially improved. Can government improve in this way, or are they just working real hard but not getting anywhere? The DOD acquisition reform program offers a good place to find out, but first it is necessary to understand the new depot environment.

The Changing Environment

Old Blood. A common perception is that government workers are inherently lazy and have little incentive to work hard. There are three primary reasons supporting this belief. First, over 90 percent of the organic workforce are civilian with an average age of 47.²² The depot workforce has little ‘new blood.’ Secondly, our civilian personnel system is at a stand still (no hiring/little career progression) because of DOD downsizing. Lastly, based on the writer’s experience, many of the ALC workers are ‘just plain tired’ of all the new programs and leaders that come in to ‘shape things up.’ While personnel are at the core of change, outside influences surround depot innovation and processes.

Strategic Environment. Historically, depot operations have been controlled by the nature of U.S. campaigns – WWI, WWII, Korea, Vietnam and DESERT STORM. The Air Force goal has remained ever vigilant; to fly, fight and win. Likewise, Air Force basic doctrine states, “wars have been traditionally fought in three phases: halt the invading force, build up combat power and weaken the enemy, and then mount a decisive counteroffensive.”²³ Today, we can no longer count on these typical war scenarios. The strategic environment has changed to that of globally protracted conflicts (Balkans, NORTHERN WATCH, humanitarian assistance, etc.) and is evidenced by increased

deployments, operations tempo, and turbulence throughout the world. This old view of the world has impacted more than just field personnel, it has impacted organic depot operators too. The undersecretary of defense recently stated, “The logistics systems, processes organic capabilities, and inventories that developed over time to support our cold war strategy reflected our war fighting strategy and largely the technology of the 50’s, 60’s, and 70’s.”²⁴ They must adapt.

Two-level Maintenance. Two conflicting ideas emerge within this new global environment. First, the depots can no longer stock huge piles of inventory based on a relatively stable cold war environment. Therefore, as Operation DESERT FOX recently proved, depots must be able to respond quickly to contingency actions and requirements surge. Secondly the DOD must continue to reduce the amount of support equipment and consumables they must take to go to war.²⁵ Therefore, the implementation and continuation of two-level maintenance across weapon systems will most likely continue. Two-level maintenance, in general, removes the capability to diagnose and repair black boxes (e.g. removal and replacement of a bad circuit card) in the field. The reason to continue this trend is fairly obvious; by reducing support equipment in the field, and locating it centrally within a depot, the Air Force can reduce transportation and overhead costs through elimination of the ‘middle-man.’ Furthermore, centralization reduces training requirements for field personnel. Thus, Air Force field maintainers are caught in a quandary much like the consumer at home. The field maintainer wants to fix the item in the field, and they know they can, but there is a little black tag surrounding the box that says something akin to “warranty void if opened.” The user must send the unit in to be repaired and often winds up paying as much for the repair as buying a new item.

Privatization. Over the last ten years public sector operations have witnessed an unrelenting drive to private sector sustainment initiatives. Why is this so? There are several reasons, but none so prevalent as the perception that the commercial sector conducts its business better, faster and cheaper. Is this a false perception that the government cannot compete?

”The situation military leaders face today in the struggle over the scope of privatization is highly analogous to that faced with McNamara. Indeed, it is essentially the same struggle, fought over different objectives. Spear heading the drive for privatization are again political appointees guided by advisors with strong roots in the private sector.”²⁶

Research supports both sides. Regardless, change is under way – away from the government and into private enterprise.

Have We Given Up?

As the Undersecretary of Defense for Acquisition and Technology, USD(A&T), noted in October 1996, “our evidence indicates that industry support can substitute for much of the traditional organic capabilities within the Department and perform these functions better, quicker, and cheaper.”²⁷ The question to ask is why is this so? How is it that the DOD cannot compete when an E-4 makes \$28,056 and the pay of an equivalent commercial maintenance person gets \$34,376?²⁸ Or how is it when the facilities of the DOD are completely paid for, whereas almost any business has debt, that the government cannot compete? Ralph Nader recently stated that some skeptics view these reforms as the latest method to change a deep government bureaucracy, but regardless, acquisition reform is undeniable major and formal shift of power and control from the pentagon to industry.²⁹ The context of acquisition reform Mr. Nader alludes to here is termed outsourcing. However, as stated by the USD(A&T) this trend to outsource within the

sustainment side of AFMC is driving full steam ahead with what seems to be little regard for losing an internal government base, knowledge and infrastructure.

In this writer's opinion, what the government should do is best value competitive sourcing. The word sourcing, as opposed to outsourcing, seems insignificant but it is not. This difference in verbage signifies that the government is capable of being competitive. In support of this, the USD recently changed tune, in March 1998 he noted "Another critical element is competitive sourcing of all non-inherently-governmental work."³⁰ The opportunity for government to keep this work is there, but the initiative must be seized.

Striking the Balance

The government in, general, must strike a balance between organic and contractor support. Two cases that are beginning to unfold supporting this notion are the newly formed partnerships between Lockheed Martin and Warner-Robins Air Force Logistics Center. They have joined forces to provide depot repair services for the Low Altitude and Targeting Infrared System for Night. As part of the agreement, Lockheed Martin will relocate its Goldsboro, North Carolina, navigation and targeting facility to Robins AFB, Georgia.³¹ The second case also involves WR-ALC. In September 1997, they won a public-private competition for the C-5 maintenance contract. This new contract is projected to save millions over the workload previously done by SA-ALC. The C-5 award to WR-ALC took many persons within government and industry by surprise. This case is very important to understand for a few reasons. First, it sends a clear message that organic facilities must be competitive, otherwise the workload will be competed to outside agencies. Secondly, it proved that organic support costs could in fact be cheaper. Third, it makes use of existing government facilities thus reduces infrastructure costs.

Summary

In summary, this chapter is paper has explored why the Air Force should study and understand the role of organic support, why it is needed, and in general terms, what to do about it. Organic depot operations, both supply and maintenance centers have supported the Air Force since WWI.³² They have provided a stable infrastructure for every conflict the Air Force has been involved in. The Air Force must look to make these operations more efficient, more effective, and less costly. Chapter two of this paper concentrates on that issue by looking at acquisition reform since the early 1990's and applying some of lessons learned to depot operations.

Notes

¹ Colonel Andy Sherbo, "Operations and Maintenance, Funding and The Art of Readiness," *The Air Force Comptroller*, April 1998, 12.

² John Cummings, "Acquisition Reform Update," *Logistics Spectrum*, May/June 1997, 24.

³ Bernard J. Termena, Layne B. Peiffer, and H. P. Carlin, *Logistics, An Illustrated History of AFLC and Its Antecedents, 1921-1981* (Office of History, WPAFB OH, 1981), Appendix 5, 263.

⁴ USAF Almanac 1998, *Air Force Magazine*, May 1998, 44.

⁵ Ibid.

⁶ Honorable Jacques S. Gansler "Defense Logistics Reform; Meeting Critical, Modern Warfighters Need Affordably," Speech, Council of Logistics Management, Anaheim, CA, 14 October 1998.

⁷ Minutes of HQ AFMC/LGI meeting, FY99 1st Quarter Operational Results and Sustainment Support Projection, n.p., January 1999.

⁸ Title 10, Sec. 2466, "Limitations on the performance of depot-level maintenance of materiel," paragraph (a), 1997.

⁹ "A Diverse Enterprise" AFMC Leading Edge, Volume 40, May 1998. 5.

¹⁰ Brigadier General Richard A. Black, "Lessons from Acquisition Reform: Innovation, Integration and Education," *Logistics Spectrum*, January-February 1998, 7.

¹¹ "A Diverse Enterprise" AFMC Leading Edge, May 1998. 5.

¹² Ibid.

¹³ Ibid.

Notes

¹⁴ "The Fortune 500 List," *Fortune*, 1998, n.p.: on-line, Internet, available from <http://www.pathfinder.com/fortune/fortune500/500list.htm>.

¹⁵ Ibid.

¹⁶ Lt Col Thomas Krieger, "Is Organic USAF Depot Level Capability for Aircraft Necessary," AWC Research Paper, AY 1954.

¹⁷ Congressional Record: House, "House Vote on Base Closure Commission Recommendations" [Page H8685-H8704] From the Congressional Record Online via GPO Access [wais.access.gpo.gov], September 8, 1995.

¹⁸ Gansler "Defense Logistics Reform; Meeting Critical, Modern Warfighters Need Affordably," 14 October 1998.

¹⁹ "Command Population By Base" *Leading Edge*, January 1997, 11.

²⁰ Honorable Jacques S. Gansler "Statement of the Undersecretary of Defense for Acquisition and Technology before the Subcommittee on Readiness," Speech, U.S. Senate, Washington D.C., 4 March 1998.

²¹ Minutes of Trip Report, meeting conducted at United Airlines, San Francisco, CA, 4 February 1998.

²² "Command Population By Base" *Leading Edge*, January 1997, 11.

²³ *Air Force Basic Doctrine*, Air Force Doctrine Document 1, September 1997, 41.

²⁴ Honorable Paul G. Kaminski, "Re-engineering Defense Logistics," Keynote Address, DOD Logistics Offsite Conference, Xerox Center, Leesburg, VA, 24 Oct 96.

²⁵ Ibid.

²⁶ Ralph Nader, "Acquisition Reform Implies Shift of Power to Industry," *National Defense*, October 1997, 52.

²⁷ Ibid.

²⁸ "How does your pay stack up?," *Air Force Times*, 21 September 1998, 17.

²⁹ Nader, 51.

³⁰ Honorable Jacques S. Gansler "Statement of the Undersecretary of Defense for Acquisition and Technology before the Subcommittee on Acquisition and Technology," Speech, U.S. Senate, Washington D.C., 18 March 1998.

³¹ Jeffrey J. Hinkle "Partnership Forms Between Lockheed Martin, USAF," *National Defense*, February 1998, 38.

³² Termena, 14.

Chapter 2

A Focus on Sustainment

The New Focus – Joint Vision 2010

The nearest approach to immortality on earth is a government bureau.

– James F. Byrnes

Joint Vision 2010 specifically highlights the need and the requirement for focused logistics in the 21st Century. In fact, the Chairman of the Joint Chiefs of Staff recognizes focused logistics as one of the four pillars to achieving full spectrum dominance on the battlefield. The other three pillars, each related to power projection, are dominant maneuver, precision engagement, and full dimensional protection.¹ Shrouding these four pillars are information superiority and technological innovations.²

According to *JV2010*, “Focused Logistics will be the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while en route and to deliver tailored logistics packages and sustainment directly at the strategic, operational and tactical level of operations.”³ Specifically, “Defense operations will work jointly and integrate with the civilian sector, where required, to take advantage of advanced business practices, commercial economies, and global networks.”⁴ *Joint Vision 2010* envisions what the military landscape will look like 10-15 years out, and aims to achieve new levels of effectiveness in joint war fighting. The remainder of

this research paper will concentrate on achieving focused logistics through the many lessons learned from acquisition reform.

The Packard Commission

*Excellence in defense management will not and cannot emerge by legislation or directive. Excellence requires the opposite – responsibility and authority placed firmly in the hands of those at the working level, who have knowledge and enthusiasm for the tasks at hand.*⁵

– Mr. David Packard, Chairman
President’s Blue Ribbon Commission
on Defense Management

A Quick Overview

In this writer’s opinion, one particular effort has superceded all others as the cornerstone of acquisition reform, *The President’s Blue Ribbon Commission on Defense Management*. Prior to release, David Packard, as the Deputy Secretary of Defense under the Nixon administration, recognized the DOD needed a better way of managing defense acquisition. In May 1970, he issued a policy memorandum on this very subject.⁶ This memorandum clearly became the underpinnings of the first defense acquisition presidential directive, Department of Defense Directive 5000.1. This document delineates the basic rules for acquisition management.

President Reagan originally established the Blue Ribbon Commission to study issues of defense management and organization, not just acquisition. The commission compared the military acquisition system with that of commercial industries. *A Quest for Excellence* was submitted to the President in 1985, and is a hallmark of acquisition reform. In particular, Chapter IV of this document highlights six critical areas that successful companies cleave – clear command channels, stability, limited reporting requirements, small high quality staffs, communication with the user, and prototyping.⁷

The Air Force Materiel Command in its quest to “operate [sustainment] like a business”⁸ has struggled in each of these six basic management areas.

The Disconnect

“The President established the Blue Ribbon Commission on defense management in part because public confidence in the effectiveness of the defense acquisition system has been shaped by a spate of “horror stories”— overpriced spare parts, test deficiencies, and cost and schedule overruns.”⁹ Remember the stories of \$500 hammers, \$700 toasters, and the Golden Fleece awards? The introduction of the report goes on to state other basic recommendations – empowerment, reduction of paperwork and rules, teamwork and a common sense approach. The impact of this report is evidenced again and again by the way the Air Force procures weapon systems today. Judging from experience, almost every acquisition professional knows about the Packard Commission and what they were about. On the other hand, very few logistics personnel do.

There are a couple of reasons for this. The first is that when the Packard Commission report was implemented via the Goldwater-Nichols Act of 1986, AFMC was separated into two major commands – Systems Command and Logistics Command. While Air Force Logistics Command (AFLC) seems to have done little with the report, the influence on Air Force Systems Command (AFSC) was enormous. Secondly, further revision of DOD Directive 5000.1 delineated creation of an Undersecretary of Defense for Acquisition and establishment of Program Executive Office positions that were not linked to AFLC.

More importantly, the results of the study were focused on ‘defense acquisition’ and not on the original purpose of the study, ‘defense management.’ In other words, the

report focused on overhauling acquisition, not defense management or sustainment. Even though most may argue the \$500 hammers were really sustainment and spare parts issues. Nonetheless, the six identified features that “typified the most successful commercial programs”¹⁰ lend themselves well to examination of AF sustainment reform.

Integrated Weapon System Management

An examination of DOD 5000.1 reveals little insight to how organic depot operations should operate. This probably makes sense given the title of the directive – “Defense Acquisition.” More importantly, though, is the absence of any equivalent directive dictating basic rules of sustainment, sustainment reform, or sustainment management. In part, the Air Force’s answer to this absence was a philosophy known as Integrated Weapon System Management (IWSM), the roots of which can also be traced back to 1991. The IWSM philosophy defines how AFMC accomplishes its missions by providing support throughout the life cycle.¹¹ Four basic tenets of IWSM include: a single face to user, a seamless process, a ‘cradle to grave’ approach, and integrated ‘product’ development.¹² Again, though, the emphasis of IWSM was put on front-end acquisition processes impacting sustainment operations in the future, not current sustainment practices. As an example, the C-17 System Program Office (SPO) completed a multi-year contract for sustainment of the aircraft, an acquisition reform effort that handed sustainment operations over to a commercial contractor.

Based on the author’s experience, many similar efforts have saved millions of dollars, and they should be applauded. But few similar efforts can be seen within organic depot operations. There should be a greater emphasis on this area considering the magnitude of the work as discussed earlier. Accordingly, the rest of this paper is

dedicated to exploring the tenets of the Packard report – clear command channels, stability, limited reporting requirements, small high quality staffs, communications with users, and prototyping and testing – emphasizing integration into organic sustainment operations.

Integrating the Packard Commission Report

Clear Command Channels

A commercial program manager has clear responsibility for his program, and a short, unambiguous chain of command to his chief executive officer (CEO), group general manager, or some comparable decision-maker. Corporate interest groups, wishing to influence program actions, must persuade the responsible program manager, who may accept or reject their proposals. Major unresolved issues are referred to the CEO, who has the clear authority to resolve any conflicts.¹³

– The Packard Commission

In the writer's opinion, the real dilemma facing AFMC business is identifying the CEO. Is it the AFMC commander, or is it the Under Secretary of the Air Force for Acquisition [SAF/AQ]? By design, the AFMC commander organizes, trains and equips, but does not actively 'manage' programs. A CEO by definition is responsible for all aspects of company business – as stated above, one who has clear authority to resolve *any* conflicts. In a public company, the CEO directs the entire organization below, and is responsible to a Board of Directors, who act on behalf of stockholders.

Prior to 1991, a weapon system was managed by one of two chains of command, the AFSC Commander or the AFLC Commander, both four star generals. The CEO was the CSAF. A program, upon reaching full rate production, was transferred from the AFSC to the AFLC. This process and change of command was called the Program Management

Responsibility Transfer (PMRT). From personal experience, the PMRT was a long, laborious and costly process for all involved. One of the tenets of IWSM (ref Chap 1), envisaged by the merger of the commands, sought to correct this problem by creating a ‘single face to the user.’¹⁴ Thus, the single manager concept was born. The single manager was chartered to direct a program throughout the weapons lifecycle. This eliminated program ‘transfer’ and established clearer command channels.

Also around 1991, the Program Executive Office (PEO) and Designated Acquisition Commander (DAC) structure was formed. Interestingly, the Goldwater-Nichols DOD Reorganization Act of 1986, through a recommendation of the Packard Commission, created an Undersecretary of Defense for Acquisition that became responsible for all major weapon system acquisitions.¹⁵ The AFLC or AFSC commanders were no longer responsible for any program management issues, much like the service chiefs were no longer in charge of war fighting. Figure 2 illustrates this comparison.

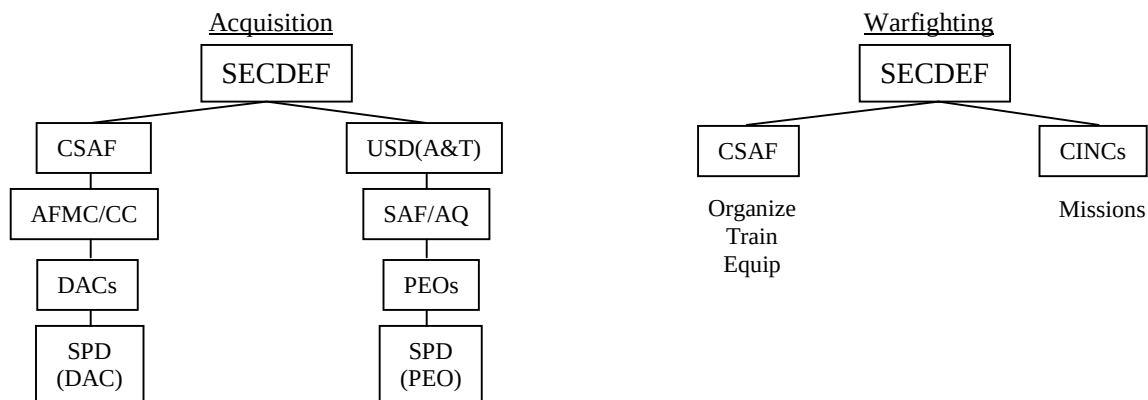


Figure 2 – Organizational Chart: Acquisition vs Joint Operations

So instead of a PMRT at MAJCOM level the program responsibility now transfers from PEO to DAC at some point in time. In general, PEOs manage developmental and major acquisition programs whereas DACs manage sustainment programs.¹⁶ From the

research conducted, there are no guidelines delineating when this transfer occurs. After the PEO structure was formed, General Randolph, AFSC/CC at the time, stated “the minute we come to sit in this chair [as AFMC/CC], we’re no longer allowed to be involved in program management. You’ve got to say there’s something fundamentally wrong with that.”¹⁷ Today, the AFMC commander is responsible to organize, train, equip and fund all weapon system programs, but only has program management responsibility for DAC programs. As General Skantze (USAF, Retired), also prior AFSC/CC, stated, “SAF/AQ ... Is a staff function, and it is transient. It does not constitute an Air Force Acquisition Institution.”¹⁸

The ramification to Air Force depots is twofold. The first issue is that the PEO structure is made up of primarily acquisition experts. Thus, logistical expertise within the program development phase is scarce. This lack of expertise often times causes problems downstream when a program finally does transfer to the operations and sustainment phase. As stated in *Logistics Spectrum*, “... logistics personnel have essentially operated in a vacuum and have not participated in the early system design process.”¹⁹ Secondly, if a program is in a sustainment phase, and also happens to be a PEO program (e.g. F-16) then clear command channels are severed again.

The F-16 system program director reports to the PEO for fighters and bombers, while F-16 avionics report to the OO-ALC commander. Some may argue this is just a matrix versus straight-line relationship. The pros and cons of a matrix versus straight-line organization could be debated indefinitely. What needs to be cleared up is that one command body should be involved with all programmatic decisions (acquisition and sustainment) for all weapon systems. This basic F-16 SPO relationship is shown in Fig 3.

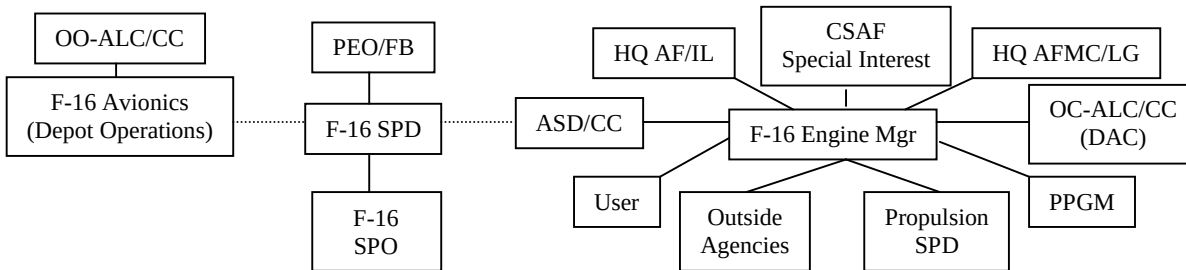


Figure 3 – F-16 SPD Relationship

This arrangement presents funding issues also. “It [IWSM] asserts that the program manager for a particular program will have cradle to grave responsibility. That is a fine concept, but to make that work you must give the program managers total funding responsibility including control of 3400 [operations and maintenance] funding.”²⁰ Costs are reported in ‘colors of money’: 3400 for operations and maintenance, 30xx funds for procurement, and 3600 for research and development. Along with clear and complete control, a program manager must have a dedicated staff to work actions and issues. A solution to this PEO/DAC structure is offered in the following sections.

Small High Quality Staffs

Generally, commercial program management staffs are much smaller than in typical defense programs, but personnel are hand-selected by the program manager and are of very high quality. Program staffs spend their time managing the program, not selling it or defending it.”²¹

– The Packard Commission

In the writer’s judgement, to proficiently manage weapon systems through the life cycle, AFMC should groom ‘materielists,’²² who are proficient in both logistics and acquisition. As stated earlier, one of the tenets of IWSM is product focus – if AFMC maintained a core of personnel based on product expertise, much like U.S. colleges offer degrees, the walls of the old AFLC (sustainment) and AFSC (acquisition) regimes may be finally be broken down. Most commercial institutions are organized in this fashion –

employing product focus across developmental and sustainment lines. To a large extent, ‘front end’ procurement is managed this way through aeronautical (ASC), space (SMC), armament (AAC), and electronics (ESC) centers. By establishing AFMC as a materielist institution and organizing all weapon systems under PEO’s, as product experts, the AF can establish SAF/AQ as the CEO, but make AFMC/CC a *voting* Chairman of the Board. The PEOs act as product COOs, the AFMC center commanders as functional COOs, and the HQ AFMC staff as voting board members to institute clear command channels.

Mr. Scrivner, Chairman of the Acquisition Reform Working Group, believes education for the workforce should be redefined and restructured as continuous learning. The industry panel recommends applying new technologies, including distance learning and experimental learning.²³ As we rely more and more on technology, the Air Force must have ready and trained military personnel that can deploy to the field readily.

A large portion of the personnel within the depots are not military [43 percent civilian in product centers vs. 16 percent in depots]²⁴, thus officers and enlisted troops do not have as great of a chance to work in the depots. There are cross-flow programs that bring field maintenance personnel into the depots, but the programs are limited. Amazingly, the ALC commanders themselves have little if no experience within a depot. Out of a cumulative 149 years of service for the five ALC commanders, only seven years have been spent within the depot system.²⁵ That’s 4.7 percent. In contrast to this, the product center commanders have spent an average of 30.4 percent of their time within program offices. Furthermore, of the 11 SPDs at ALCs (of 44 total), only three have prior depot experience, and their combined tenure is less than eight years.²⁶

Stability

At the outset of a commercial program, a program manager enters into a fundamental agreement or “contract” with his CEO on specifics of performance, schedule, and cost. So long as a program manager lives by this contract, his CEO provides strong management support throughout the life of the program. This gives a program manager maximum incentive to make realistic estimates, and maximum support in achieving them. In turn, a CEO does not authorize full-scale development for a program until his board of directors is solidly behind it, prepared to fund the program fully and let the CEO run it within the agreed-to funding.²⁷

– The Packard Commission

Couple this idea with the business arrangement previously mentioned [SAF/AQ as CEO and AFMC/CC as Chairman of the Board] and SAF/AQ would manage cost, schedule and performance requirements at a macro level, while the SPD would manage the program at system level. The AFMC/CC would authorize milestones, plan, organize, train and equip throughout the program life. The ‘chairman’ would act as the CINCs eyes and ears for program execution. As General Skantze related in a story:

As the SRAM PM, I had a sudden technical demand from the user that would have unnecessarily delayed the production start. I explained that to Lt. Gen. J. T. Stuart, who was my ASD [product center] commander, he called the CINCSAC and resolved the problem – commander to commander. Believe me, a staff PEO cannot do that.²⁸

The importance of the PEO, under SAF/AQ, should not be neglected although. The PEO has direct access to the ever changing world inside the pentagon and works two levels away from the USD(A&T). The USD(A&T) ensures unity of effort for all DOD acquisition programs. Likewise, the AFMC/CC as the Chairman of the Board could be versed in programs affecting CINCs, and be able to talk about how AFMC is, or isn’t, addressing CINCs Integrated Program List (IPL) requirements.

One of the issues the Air Force was previously chided about was they did not have an acquisition ear in Washington. Now they do. The PEO can act as the Chief Operating

Officer in Washington, but must advocate all AF programs, including those within the depots. These PEO positions are also natural grooming positions for AFMC center commander positions and are critical to program success. Criteria for selection to these senior level 'materielist' positions should rely on experience, education and training within the acquisition and sustainment infrastructures.

From the author's perspective, one of the best programs ever put forth for acquisition personnel was Acquisition Professional Development Program (APDP). The APDP promotes an acquisition corps and ensures each program director of a major weapon system has certified expertise. Criteria includes education, training and tenure. This system is used extensively though out program offices within AFMC. As the name implies, APDP is focused on acquisition. The APDP should be expanded to include sustainment certification by offering depot maintenance and supply courses. There are none now. The closest applicable certification, which comes under the realm of APDP, is manufacturing, production, and quality assurance (PQM). To the extent of research conducted for this paper, these classes are not required for any depot positions.

The APDP certification courses for acquisition logistics offer 'front end' some insight for any depot operations program manager or staff person. Unfortunately, most all sustainment persons sit on 21xx type (logistics) positions, and not 63xx (acquisition) positions. From personal experience, selection criteria for getting into these classes is not based on whether or not the person really requires the APDP course, but if they sit in a 63xx position. This issue should be investigated further and changed to reflect mission needs and not pre-ordained selection requirements.

The hallmark class of APDP program management certification is the Defense Systems Management College (DSMC) Program Management Course (PMC.) A review of the 14-week course shows very little concentration on depot operations.²⁹ With the incredible infrastructure and support staff DSMC has, a core ‘sustainment operations’ section should be offered. This certainly would not mean that all ALC personnel would go through DSMC in-residence, but by using distance learning techniques, DSMC instructors may one-day reach 4000 students, rather than a class of 40.³⁰ Teaching depot operations and manufacturing repair through distance learning techniques can reach both organic depot and contract depot simultaneously. In this way, shared knowledge may transgress across new boundaries from a common baseline requiring DSMC certification for contract and government persons, the program could be called Systems Management Professional Development Program (SMPDP.)

Limited Reporting Requirements

A commercial program manager reports only to his CEO. Typically, he does so on a “management-by-exception” basis, focusing on deviations from plan.³¹

– The Packard Commission

This paper previously examined the need for clear command channels within. In Air Force terms, limited reporting is an analogy for centralized control and decentralized execution. The single program manager is given responsibility for execution of the program based off validated requirements – cost, schedule and performance. Often times, an SPD is required to report to many persons outside his or her chain of command (ref Fig 3) taking away time to talk with whom they should. As an example, General Electric F100 engines are produced in Cincinnati Ohio, but are repaired in the organic

depot at Kelly AFB. Many inspection, tooling, cleaning and repairing procedures and equipment are similar if not the same, yet the two organizations rarely talk with each other. Likewise, as a commercial industry vice-president explained on a similar program,

The real issue we have is with the ‘color of money,” he said, “operations and maintenance funding flows through the depot system while procurement and acquisition dollars go to us ... [a manufacturing company, like GE]. As a result, for example, the depot is rebuilding... while we are a ... manufacturer with all of the equipment to rebuild. That makes no sense. In other cases, the depot will over-haul a component and then send it to us [for modernization], after being painted, but we still have to tear it a part and convert it.”³²

In a similar argument, Mr. Scrivner, “believes the Defense Department should adopt a policy of purchasing commercial products and accepting bids from commercial firms.”³³ Why is it that organic depot maintenance is a stand-alone operation without input from the original manufacturer? All factors must be considered early on through the [HQ AFMC] Source of Repair Analysis Process, the law, the DOD infrastructure, original manufacturer expertise and cost. More specifically, what should an ALC program director report and how should it be transmitted adequately?

The Department [of Defense] is planning to operationally deploy a pilot asset visibility program ... It will provide the field commander with the ability to “see” – real time, – virtually all materiel stocked by a Service of Defense Agency. Following requisitioning, the field commander will be able to track the real time movement of his materiel from the moment it leaves its point of origin until receipt at its ultimate destination.”³⁴

Technologies for this kind of system exist today. As an example, any one of the millions of packages shipped via Federal Express can be located instantly via an Intranet system. An Intranet is essentially the same philosophy as the Internet yet it supports many safeguards (e.g., firewalls, crypto, passwords, and signing techniques) to keep data from unauthorized users. The DOD’s SIPRNET is an example. Commercial businesses use the strictest of security protocols as it directly affects the solidarity of their company.

The USD(A&T) notion of total asset visibility for the user is a step in the right direction. With advancing technologies monthly status meetings via video teleconferences, manual data collection for metrics and presentation building will become events of the past.

Most would agree that meetings today are generally informational in nature, but the reporting and status responsibilities are enormous. For example, every month at HQ AFMC the DMAG provides a 2-hour status of key performance indicators for the using commands and HQ AF/IL. The data presented is generally two months old by the time it reaches this point. Many hard working very knowledgeable people are involved in compiling and presenting this data in an acceptable format. In this case, the ALCs have become a slave to the reporting systems that track and account required depot operations data (e.g., cost, schedule, inventories, forecasting, and shipping.) As *Logistics Spectrum* noted, “These [legacy] systems are so ingrained that to eliminate them would cause failure in the business processes themselves. Most of these systems lost their flexibility long ago.”³⁵ In sum, the support system is emphasized – not the infrastructure to support the user. This approach is the antithesis of limited reporting. Why? Because of the long hours it takes to generate, the validity of the data, and the approach taken (i.e., status vs. issue.) Adding to this concern, Dr. Gansler recently noted “What is most disturbing about our current information technology is that many of our core transaction systems were built in the mid 60’s, in 80 column card format!”³⁶

This author believes the solution is two-fold. First, let the user decide what parameters, format and data they want. Second, provide the data real-time 24 hours a day. Lets take an example of a current system that does just that. The world of investing has been turned upside down by the Internet and the availability of raw company

fundamentals (e.g., stock price, P/E ratio, market capitalization, profile, daily volume, etc.) An individual investor can now do in a matter of minutes that which used to take several weeks of exhaustive research by a ‘certified’ broker. Below is a simple analogy of what is offered on an open financial Internet site at www.quote.yahoo.com/?u.

Table 1 – Example of Internet Use Applied to Depot Operations with User Interface

Available	Potential
Financial News	Sustainment News
News by Industry	News by DMAG/SMAG
Message Boards	Message Boards/FAQs
Technical Help	Problem Resolution
Research	Research
By Mutual Fund	By Weapon System
By Industry	By Major Subassembly
By Individual Stock	By LRU or SRU
Stock Screener	Supply/Maintenance Screener
By Industry	By Weapon System
Share Price	Supply/Repair Price
Market Cap	Avail Budget (for each user)
P/E Ratio	Price Fluctuation
Avg Daily Volume	Output/Day
x-dividend	Delivery Date
Chart	GUI Charts
1 day to 5 yrs performance	1 day to 5 yrs performance
Vs moving avg / S&P 500	Vs moving average / std cycle time

This data is at the fingertip of the user at any given time. Furthermore, data can be manipulated in any way the user or customer would like to see it. As stated by the Packard Commission, the program manager would only report on deviations,³⁷ and this approach allows them to do it. In addition, the users, or stockholders in this case, can evaluate how well the company (i.e., depot) is doing to meet requirements.

Communications with Users

A commercial program manager establishes a dialogue with the customer, or user, at the conception of the program when the initial trade-off is made, and maintains that communication throughout the program. Generally, when developmental problems arise, a performance trade-off is

*made – with the user’s concurrence – in order to protect cost and schedule. As a result, a program manager is motivated to seek out and address problems, rather than hide them.*³⁸

– The Packard Commission

In other words know your customer. No other truer wisdom was ever given to the great salesmen in this country, as well as every great company in this country. The very impetus of company survival is profit and maximum profits are generally achieved through customer satisfaction. Obviously, the one ingredient missing in government business is this drive for profit. When the government awards a contract to an organic government agency, there is never a profit; it is not allowed by statutory regulation. Isn’t it ironic that, in general, users seem to be happier with contractor logistics support, such as the C-17, than they are with organic depot support – even though the customer is paying a well-documented profit to the contractor. Therefore, the issue of user support is not so much a cost issue (although this is of course extremely important), but one of customer satisfaction. Since depot operations are not allowed to act like a business in this respect, the Air Force must look elsewhere. Two places to look are increasing personnel experience and improving system reliability.

“Increasing its [deployed equipment] reliability will decrease the demand for mechanics while, at the same time, reduce the required amount of equipment and spare parts – thus providing a compound benefit.”³⁹ Thus, repair to improve, not to simply replace. A 27-inch color TV with stereo and cable ready access today cost no more than what a black and white scratchy sounding TV costs some 30 years ago, and it comes in the same box. Yet, many of our systems are this age and have not been updated. Electronic processing power and miniaturization happens so fast these days that the

government must change or be left with obsolete parts. To help get around this issue, the USAF, like the Army, can set up field to depot liaisons.

Logistics assistance representatives (LARs) are responsible for troubleshooting and diagnosing problems with equipment that is supplied, repaired, and maintained by the Army Materiel Command (AMC) Major Support Command (MSC) to which they are assigned. Whenever a soldier in the field has equipment problems or cannot obtain parts needed to operate a piece of equipment, he just contacts the LARs. Directly supporting the user while improving reliability will give the right combination of support. This process avoids the long process of reporting progress through commander to commander interaction by heading it off at the grassroots level.⁴⁰

Prototyping and Testing

*In commercial programs, a system (or critical subsystem) involving unproven technology is realized in prototype hardware and tested under simulated operational conditions before final design approval or authorization for production.*⁴¹

– The Packard Commission

Prototyping and testing does not, for the most part, apply to depot operations workload except in the area of upgrades and modifications. It goes without saying that customers want products that work when they get them. There are many ways to get to this end-state: beta testing, field-testing or lab simulations. So many commercial technologies have been invented in the last decade that the Air Force sustainment system must be willing to accept them or perish. As several Air Force journals support, the average age of all DOD aircraft is over 20 years old and growing. “The most significant problems with the oldest aircraft are airframe related, such as the KC-135 skin corrosion, bulkhead cracks and beam corrosion.”⁴² Repairs and modification of this extent will not happen with a fix and return concept. They will have to be extensively tested prior to any

fleet modification. As can be seen from Table 2 below, most USAF aircraft are expected to be in the inventory for many years to come.

Table 2 – Aging Aircraft and Fleet Extension Program⁴³

Aircraft Type	Number of Aircraft	Average Age now	Projected Retirement
C/KC-135	638	37	2040
B-52	94	37	2030
C-5	77	27	2021
C-141	248	32	2010
C-130	439	25	2030
F-15	940	12	2020
F-16	1727	9	2020
Total – All AD/Reserve	4927	20.2	---

Modifications at the subsystem level may be an easier task. Groups like the Joint Technical Architecture Committee are making great strides to identify, develop, and implement open systems architecture and standard interfaces across a wide array of platforms.⁴⁴ Mr. Krikorian, as a professor at DSMC, stated, “the open-system approach is a strategy that defines key interfaces for a system, subsystem, or equipment being developed. It is designed to easily facilitate replacement.”⁴⁵ A simple analogy is that of a parallel or serial connection on any home PC. A myriad of different subsystems (printers, cameras, scanners, external hard drives, etc.) may be hooked up to one common interface or bus. There is no further need to test the ‘bus’ because of extensive testing that happened beforehand. Any number of new and expanded systems can work from the standard interface thus enhancing the basic computer system. This is how the Air Force depots need to start thinking about upgrade, modifications, and repairs.

Any number of government publications is of contrary opinion. Many believe the USAF should continue to specify form, fit and function. What the USAF should specify

is the performance, cost and standard interface of the system – not unlike the Joint Technical Architecture committee is trying to do now on developmental programs.⁴⁶ This concept alleviates two problems. The first is that any manufacture may bid on the subsystem, which connects to the interface – if it's better and cheaper, the government should buy it. The second is that the government will get away from having to support obsolete parts. As mentioned previously, the depots are now in the business of repairing to specified technical orders and drawings. This standard interface philosophy lessens the burden of trying to find these parts.

Notes

¹ Department of Defense, Joint Chiefs of Staff, *Joint Vision 2010*, 19.

² Ibid.

³ *Joint Vision 2010*, 24.

⁴ Ibid.

⁵ Blue Ribbon Commission on Defense Management, *A Quest for Excellence, Final Report to the President*, (Washington D.C., June 1986), 45.

⁶ Major Curtis K. Munechika, *Acquisition Reform: "This, Too, Shall Pass...?"* ACSC Research Paper, AY 1997, Chapter 1, 3.

⁷ Packard Commission, 50.

⁸ AFMC/CC Kick-off Briefing, 28 May 97, n.p.: on-line, Internet, available from <http://www.asc.wpafb.af.mil/HQ-AFMC/CC/ccx.htm>

⁹ Packard Commission, 50.

¹⁰ Ibid.

¹¹ AFMC Pamphlet 800-60, 31 March 1993, n.p.; on-line, Internet, available from <http://www.asc.wpafb.af.mil/indguide/iwsm.htm>.

¹² Ibid. [Also available from Internet, <http://129.48.28.13/indguide/iwsm.htm>.]

¹³ Packard Commission, 50.

¹⁴ Ibid.

¹⁵ Title 10, U.S.C., Section 1702, Chapter 87, Defense Acquisition Workforce, General Authorities And Responsibilities for Under Secretary Of Defense For Acquisition, 1986.

¹⁶ A listing if PEO/DAC portfolios may be found on-line, SAF/AQ home page, Internet, http://www.safaq.hq.af.mil/safaq_info/portfolio/locked/.

¹⁷ David F. Bond, "Systems Command Chief Calls Program Management Consolidation 'Ill-Advised,'" *Aviation Week and Space Technology*, 19 March 1990, 213.

¹⁸ General Lawrence A. Skantze (USAF, ret), "USAF Acquisition Process Headed in the Wrong Direction," *National Defense*, November 1997, 36.

Notes

¹⁹ Benjamin S. Blanchard, "A Vision for Logistics Support Planning," *Logistics Spectrum*, Volume 31, May/June 1997, 15.

²⁰ Ibid.

²¹ Packard Commission, 50.

²² Origin of word unknown, used in several briefings by Gen Henry Viccellio, AFMC/CC, 1993-1996.

²³ "Industry Panel Pushes House, Senate to Expand Scope of Acquisition Reform," *National Defense*, July/August 1998, 59.

²⁴ *Leading Edge*, May 1998, n.p.: on-line, Internet, available from http://www.afmc.wpafb.af.mil/HQ-AFMC/PA/leading_edge/may98/contents.htm

²⁵ Review of AF biographies available through Internet sources. <http://www.af.mil/news/biographies/> and command screening available at HQ AFPC.

²⁶ Ibid.

²⁷ *National Defense*, July/August 1998, 59.

²⁸ Skantze, 37.

²⁹ Defense Systems Management College home page, n.p.: on-line, Internet, available from <http://www.dsmc.dsm.mil/courses/crslist.htm>

³⁰ Brigadier General Richard A. Black, "Lessons from Acquisition Reform: Innovation, Integration and Education," *Logistics Spectrum*, January-February 1998, 7.

³¹ Packard Commission, 50.

³² Scott R. Gourley "Acquisition Reform: Welding Industrial Strengths," *Army*, February 1998, 34.

³³ *National Defense*, July/August 1998, 59.

²¹ Honorable Paul G. Kaminski "Re-engineering Defense Logistics," Keynote Address, DOD Logistics Offsite Conference, Xerox Center, Leesburg, VA, 24 Oct 96.

³⁵ "Using Legacy Computing Systems in the World of Electronic Commerce," *Logistics Spectrum*, Volume 31, September/October 1997, 12.

³⁶ Gansler "Defense Logistics Reform; Meeting Critical, Modern Warfighters Need Affordably," 14 October 1998.

³⁷ Packard Commission, 50.

³⁸ Ibid.

³⁹ Gourley, 32.

⁴⁰ "Open-Systems Necessary to Acquisition Reform," *National Defense*, Jan 98, 39.

⁴¹ Packard Commission, 50.

⁴² Lieutenant General William P. Hallin, "The Challenge of Sustaining Older Aircraft," *Air Force Journal of Logistics*, Volume XXII, Number 2, Summer 1998, 1.

⁴³ USAF Scientific Advisory Board, *New World Vistas: Air and Space Power for the 21st Century*. Unpublished draft, the Materials Volume, 15 December 1995, 29.

⁴⁴ "Joint Technical Architecture Committee," Defense Information Systems Agency, n.p.: Internet, on-line, available from <http://www-jta.itsi.disa.mil/jta/faq.html>

⁴⁵ Jeffrey J. Hinkle "Partnership Forms Between Lockheed Martin, USAF," *National Defense*, February 1998, 38.

⁴⁶ "Joint Technical Architecture Committee," Defense Information Systems Agency, n.p.: Internet, on-line, available from <http://www-jta.itsi.disa.mil/jta/faq.html>

Chapter 3

Summary and Recommendations

One worthwhile task carried to a successful conclusion is better than a hundred half-finished tasks.

—B. L. Forbes

The Issue

As this paper stated, a growing number of DOD leaders insist that organic depot operations cannot compete with that of contracted depot operations. In other words, public sector sustainment cannot be done faster, better or cheaper than private sector sustainment. A further investigation and comparison of sustainment costs must be thoroughly evaluated before coming to this conclusion. Nonetheless, the Air Force has experienced a steady state decrease in mission capable rates since 1991 – 83.4 percent to 74.1 percent – that must be corrected. In 1991 the cold war ended and Operation DESERT STORM concluded, thus changing depot operations from a just in case concept to a just in time philosophy. The merger of AFSC and AFLC placed acquisition and logistics under one roof again and the recession of 1991 commenced an unprecedented growth in the U.S. business sector, but a corresponding decrease in DOD budgets.

The Focus

To that end, the focus of this research was to understand some of the shortfalls and recommend solutions for managing depot operations better. First, it was necessary to

explain how Air Force ALCs manage depot operations – the business of maintenance and supply. Second, the paper gave rationale for preserving organic capabilities: namely, U.S.C. Title 10 requirements, an experience base of 50,000 personnel within an existing infrastructure, and the wartime safety net afforded by AF depots. Following a brief explanation of the current environment, the paper focused on some of the many lessons learned through acquisition reform – as delineated by the Packard Commission – and applied them to organic depot operations. To that end, the primary recommendations of this paper are based on the need for a seamless integration between SAF/AQ, ‘AFSC’ and ‘AFLC’ into one ‘AFMC’ that is truly responsible for all development, testing, production and sustainment of Air Force weapon systems. Accordingly, there are several overarching recommendations that should be implemented based upon this research.

The Recommendations

The first recommendation is to expand the use of implementation contracts with measurable goals and expectations while decreasing the number of study contracts. The AFMC spends too many dollars learning what depot personnel already know. Correspondingly, by expanding the use of true partnering between ALCs and private enterprise, depot personnel may learn how to implement commercial practices. Permit DOD personnel to work in contractor facilities, and contract personnel to work in excess government facilities with government people while increasing the role of the original manufacturer in sustainment operations. This will reduce infrastructure costs while improving organic and contract relations. Lastly, increase the role of blue suitors in depot operations and concurrently increase manpower authorizations to expand the experience base for senior sustainment positions while integrating field experience.

Secondly, institutionalize AFMC/CC as the AF Acquisition Chairman of the Board to act as a voting member in the development, test and production of weapon systems. Increasing the role of AFMC/CC will lend itself to the articulation of CINC requirements through the IPL process and CORONA. Simultaneously, place all weapon systems, by product, under the purview of PEOs for funding and requirements advocacy as well as joint alignment (through the USD/A&T) with other services. Similarly, align product and logistic center commanders to PEOs and products. Continue the role of the single manager, but permit system program directors to manage all funds for weapon system requirements. For subordinates, expand APDP to a “Systems Management Professional Development Program,” including critical sustainment positions and certifications while grooming materialists whom are proficient in both depot operations and acquisition.

Third, decrease the reliance on legacy systems quickly in favor of a web-based environment. Continue efforts to repair and improve, vice repair to replace. Likewise, upgrade and modify with standard interfaces and open systems architectures where feasible. Also, consider the use of direct liaisons within ALCs whom are responsible directly to the field for troubleshooting and customer support.

These recommendations are based upon experience over the last ten years of acquisition reform. They can, and should, be applied to sustainment operations, lest the Air Force will fail to meet user requirements to the detriment of U.S. national security. Organic depot operations must survive and can be competitive with the commercial marketplace; there is no reason it cannot be.

Glossary

ACSC	Air Command and Staff College
AF	Air Force
AFB	Air Force Base
AFIT	Air Force Institute of Technology
AFLC	Air Force Logistics Command
AFMC	Air Force Materiel Command
AFSC	Air Force Systems Command
ALC	Air Logistics Center
AMC	Air Mobility Command
APB	Acquisition Program Baseline
APDP	Acquisition Professional Development Program
ASC	Aeronautical Systems Center
ASD	Aeronautical Systems Division (changed to ASC '91)
AU	Air University
AWC	Air War College
BMDO	Ballistic Missile Defense Organization
CEO	Chief Executive Officer
CINC	Commander in Chief
COO	Chief Operating Officer
DAC	Designated Acquisition Commander
DMAG	Depot Maintenance Activities Group
DOD	Department of Defense
DSMC	Defense Systems Management College
GUI	Graphical User Interface
IWSM	Integrated Weapon System Management
IPL	Integrated program List
LRU	Line Replaceable Unit
MAJCOM	Major Command
MC	Mission Capable
MSC	Major Support Command

NDP	National Defense Panel
OC-ALC	Oklahoma City ALC
OO-ALC	Ogden ALC
PEO	Program Executive Officer
PMC	Program Management Course
PQM	Production, Quality and Manufacturing
SA-ALC	San Antonio ALC
SORAP	Source of Repair Approval Process
SIPRNET	Secret IP Router Network
SMAG	Supply Management Activities Group
SM-ALC	Sacramento ALC
SMPDP	System Management Professional Development Program
SPD	System Program Director
SPO	System Program Office
SRAM	Sort Range Attack Missile
SRU	Shop Replaceable Unit
USAF	United States Air Force
USC	United States Code
WR-ALC	Warner-Robins ALC

Bibliography

- "A Diverse Enterprise" *AFMC Leading Edge*, Volume 40, May 1998, 5.
- Air Force Basic Doctrine*, Air Force Doctrine Document 1, September 1997, 41.
- Air Force Materiel Command (AFMC) Pamphlet 800-60, 31 March 1993, n.p. On-line. Internet, 7 Oct 96. Available from <http://www.asc.wpafb.af.mil/indguide/iwsm.htm>.
- Black, Brigadier General Richard A. "Lessons from Acquisition Reform: Innovation, Integration and Education." *Logistics Spectrum*, Vol 32, January/February 1998, 7.
- Blanchard, Benjamin S. "A Vision for Logistics Support Planning." *Logistics Spectrum*, Vol 31, May/June 1997, 15.
- Blue Ribbon Commission on Defense Management. *A Quest for Excellence, Final Report to the President*. Washington D.C., June 1986.
- Bond, David F. "Systems Command Chief Calls Program Management Consolidation 'Ill-Advised.'" *Aviation Week and Space Technology*, 19 March 1990, 213.
- "Command Population By Base" *AFMC Leading Edge*, January 1997, 11.
- Cummings, John "Acquisition Reform Update." *Logistics Spectrum*, May/June 1997, 24.
- Department of Defense. Joint Chiefs of Staff. *Joint Vision 2010*, 24
- Gansler, Honorable Jacques S. "Defense Logistics Reform; Meeting Critical, Modern Warfighters Need Affordably." Speech. Council of Logistics Management, Anaheim, CA, 14 October 1998.
- Gansler, Honorable Jacques S. "Statement of the Undersecretary of Defense for Acquisition and Technology before the Subcommittee on Readiness." Speech. U.S. Senate, Washington D.C., 4 March 1998.
- Gansler, Honorable Jacques S. "Statement of the Undersecretary of Defense for Acquisition and Technology before the Subcommittee on Acquisition and Technology." Speech. U.S. Senate, Washington D.C., 18 March 1998.
- Gourley, Scott R. "Acquisition Reform: Welding Industrial Strengths." *Army*, Feb 98, 31.
- Hallin, Lieutenant General William P. "The Challenge of Sustaining Older Aircraft." *Air Force Journal of Logistics*, Volume XXII, Number 2, Summer 1998, 1-2.
- Hinkle, Jeffrey J. "Partnership Forms Between Lockheed Martin, USAF." *National Defense*, February 1998, 38.
- "How does your pay stack up?," *Air Force Times*, 21 September 1998, 17.
- "Industry Panel Pushes House, Senate to Expand Scope of Acquisition Reform." *National Defense*, July/August 1998, 59.
- Kaminski, Honorable Paul G. "Re-engineering Defense Logistics." Keynote Address. DOD Logistics Offsite Conference, Xerox Center, Leesburg, VA, 24 October 1996.
- Krieger, Lt Col Thomas "Is Organic USAF Depot Level Capability for Aircraft Necessary," AWC Research Paper, AY 1954.
- Nader, Ralph "Acquisition Reform Implies Shift of Power to Industry." *National Defense*, October 1997, 51-52.

“Open-Systems, Necessary to Acquisition Reform.” *National Defense*, January 1998, 39.

Rivero, Ramon R. “Using the Web to Improve Sustainment Logistics.” *Army Logistician*, March-April 1998, 27-29.

Sherbo, Colonel Andy “Operations and Maintenance, Funding and The Art of Readiness.” *The Air Force Comptroller*, April 1998, 10-14.

Skantze, General (ret) Lawrence A. “USAF Acquisition Process Headed in the Wrong Direction.” *National Defense*, November 1997, 36-37.

Termena, Bernard J., Layne B. Peiffer, and H. P. Carlin. *Logistics, An Illustrated History of AFLC and Its Antecedents, 1921-1981*. Office of History, WPAFB OH, 1981.

Report of the National Defense Panel. *Transforming Defense, National Security in the 21st Century*, Washington D.C., December 1997.

USAF Almanac 1998, *Air Force Magazine*, May 1998, 44-53.

USAF Scientific Advisory Board, *New World Vistas: Air and Space Power for the 21st Century*. Unpublished draft, the Materials Volume, 15 December 1995

“Using Legacy Computing Systems in the World of Electronic Commerce.” *Logistics Spectrum*, Volume 31, September/October 1997, 12.

DISTRIBUTION A:

Approved for public release; distribution is unlimited.

Air Command and Staff College
Maxwell AFB, Al 36112