

AIR WAR COLLEGE

AIR UNIVERSITY

ORGANIC VERSUS CONTRACTOR LOGISTICS SUPPORT FOR
DEPOT-LEVEL REPAIR:
FACTORS THAT DRIVE SUB-OPTIMAL DECISIONS

by

Paul H. Porter, Lt Col, USAF

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

Advisor: Colonel Woodrow A. Meeks

16 February 2016

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, the Department of Defense, or Air University. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.



Biography

Lieutenant Colonel Paul Porter is assigned to the Air War College, Air University, Maxwell AFB, AL. His previous assignment was the Executive Officer to the Assistant Deputy Under Secretary of the Air Force, International Affairs, Office of the Under Secretary of the Air Force, Washington, D.C. International Affairs is responsible for formulating and integrating Air Force policy with respect to political-military relationships, security assistance, technology and information disclosure issues, military exchanges, and attaché affairs in support of U.S. government objectives.

Lieutenant Colonel Porter's core specialty is contracting. He has deployed overseas to Pakistan and Iraq. During his Air Force career, Lieutenant Colonel Porter commanded at the squadron level to include a squadron testing a new construct (combining the Contracting and Comptroller Squadrons). In addition to his command experience, Lieutenant Colonel Porter has been a staff officer at US Africa Command, the Air Staff, Special Operations Command Africa, Joint Task Force Civil Support, Joint Special Operations Task Force, and a Standing Joint Force Headquarters unit. He has been a contracting officer at the systems-, operational-, and contingency-levels.

Abstract

In system-level acquisitions, decisions made in the initial stages of a program have significant consequences throughout the program's life. One critical decision is whether depot maintenance will be supported organically by the government or rely on Contractor Logistics Support (CLS). The consequences of this decision are legion and will determine options and costs over the life of the program. There are many factors involved in the decision whether to support a weapons system organically or through CLS. This paper reviews the policy, laws, and factors that the Program Manager (PM) must consider when selecting which entity will perform depot-level maintenance. The paper exposes how the factors of law requirements and acquisition culture drive sub-optimal decisions and need to be remedied. The paper demonstrates how these factors drove sub-optimal decisions in the KC-46 depot maintenance decision.

Recommendations for each of these factors are included. Changes to the law are required to mitigate one issue while a change to an organizational climate is required to counter the other. Both efforts are not quick fixes to this complex problem and will require long-term dedication.

Introduction

In system-level acquisitions, decisions made in the initial stages of a program have significant consequences throughout the program's life. One critical decision is whether depot maintenance will be supported organically by the government or rely on Contractor Logistics Support (CLS). The consequences of this decision are legion and will determine options and costs over the life of the program. Secretary of Defense Ashton Carter stated weapon system sustainment accounts for 70 percent of a system's total cost.¹ In fact, in 2011, Air Force sustainment activities exceeded the total operating costs of American Airlines and Delta Airlines.² Once the organic or CLS support decision is made early in the acquisition process, the course is irrevocably set, investments in infrastructure and personnel are selected, and funding is aligned.

There are many factors involved in this decision, however, legal requirements and acquisition culture are the primary drivers of sub-optimal decisions and need to be properly evaluated. Optimized decisions for maintenance come only after understanding the many factors.

This paper first describes various factors the Program Manager (PM) must consider and whether these factors, by themselves, lean toward organic or CLS support. Then, it discusses the two factors (law requirements and acquisition culture) that hold sway over all other factors which result in higher costs or degradation of government capabilities had these factors not come into play. Finally, the paper concludes with some insights and recommendations to remedy these issues.

Considerations in Using CLS or Organic Support

Break-Even Analysis in the Decision Process

When a business decision is made in an ideal environment, all costs and factors are known and the optimal decision is obvious. One method to determine the best decision is using break-even analysis (see Figure 1). One cost curve may be more advantageous if only a few items will be produced (Line A); the other option is more advantageous when many are produced (Line B). The break-even point (Point C) is the production quantity where the advantage moves to a different cost curve.

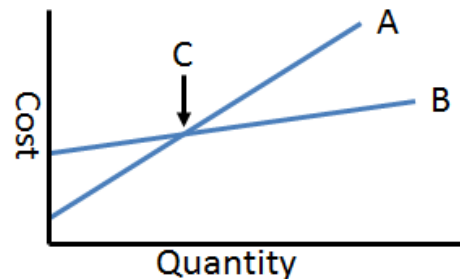


Figure 1 – Simple Break-Even Analysis

For a business decision in this simplistic example, the optimal choice is dependent on how much quantity will be produced.

In an ideal weapon system acquisition, deciding whether to provide organic maintenance or CLS should be an exercise in projecting costs based solely on the number of items to be maintained and selecting which method provides the best value to the government. However, two sets of issues make this decision complicated. The first set relates to costs. The Air Force does not have a comprehensive method to capture organic maintenance costs accurately.³ Specifically, there is no one Air Force entity where all organic maintenance cost data is managed and collected. This set of issues is outside the scope of this paper and is a candidate for future research.

The second set of issues is the various non-monetary factors, the focus of this paper, that can and do influence sustainment decisions. For this example, it is sufficient to say that these non-monetary factors muddy the selection. The break-even point, Point C, in Figure 2 is no

longer a specific point from which to pivot the decision but an ambiguous space. If the cost of organic support is depicted by Line A and CLS costs are depicted by Line B, it now becomes complex to determine which option is proper for the program. Reducing the size of the “box” in Figure 2 to find the break-even point, Point C, is worthwhile but the influence of non-monetary factors will inevitably create a “box” from which a decision will have to be made. With this in mind, we turn to the various non-monetary factors that influence the decision ‘box.’

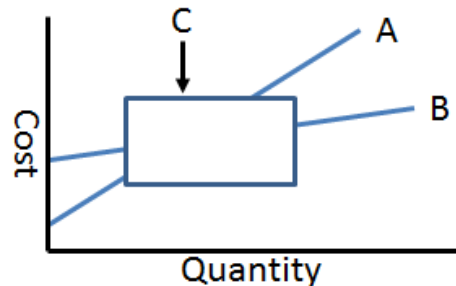


Figure 2 - Notional Organic/CLS Break-Even Model

Cost Skewing in Recent Programs that Use CLS

The Air Force supports most of its newest aircraft through CLS while it organically supports most of its older aircraft.⁴ This fact skews superficial analysis regarding costs. For example, a part on a 40-year old aircraft supported organically has to be replaced due to age whereas a commensurate part on a newer aircraft will not need replacement. When the costs of support are calculated, the organic support is considered more costly, not because it is inefficient but because the need for repair and replacement is greater. It is important for the (PM) to understand circumstances behind costs when determining whether organic or CLS is most advantageous to the Air Force.

Laws that Govern CLS and Organic Support

Rules and regulations governing Contractor Logistic Support (CLS) are complex. However, two key policies embodied in Title 10 shape how CLS is handled. First, 10 USC 2466 requires at least 50 percent of depot-level maintenance be done by government organizations.⁵ This requirement is often known as the “50/50 Rule.” The 50 percent is measured as the

percentage of total appropriated funding made available for organic maintenance and repair for the corresponding fiscal year reported by each armed branch and defense agencies.⁶ In Fiscal Year 2013, the total dollars the Air Force spent toward depot-level maintenance was \$11.471B.⁷ Of that amount, \$5.827B was spent on organic support. The official percentage of Air Force organic maintenance spending was 51.8 percent.⁸ The impact of this legally-binding requirement is that, at most, contractors can perform only the 50% of depot-level maintenance as measured in dollars.⁹

The second key policy is embodied in 10 USC 2464 which requires the DoD to determine *core logistics capabilities*. These capabilities must be owned and operated by the government.¹⁰ The law defines the core logistics capabilities as those that are necessary to maintain and repair the weapon systems and other military equipment.¹¹ Congress has repeatedly expressed keen interest in Air Force responsiveness to because of the quantity of federal jobs that organic maintenance provides.¹² Organic facilities at Hill AFB, Utah; Tinker AFB, Oklahoma; and Warner-Robins, Georgia are significant employers in their respective states with a huge economic impact. For example, the Air Logistics Center at Hill AFB employs 8,100 military, civilian and contract personnel at Hill AFB in 155 different job series.¹³ Congress, in response to its constituents in these states, requires the Services to provide regular reporting to them on contractor versus organic workload and money.^{14,15}

In sum, there are laws that mandate 50/50 Rule compliance and assure that core functions¹⁶ are not contracted out. The Services implement policy and procedures to assure they keep an eye on how their various programs impact the 50/50 Rule at the Air Force-level.¹⁷

Policies that Govern CLS and Organic Support

There are two key policies the PM considers. First, Air Force Instruction (AFI) 63-101 states that the PM will consider CLS as part of the Life Cycle Sustainment Plan.¹⁸ For CLS, the PM is the government person that validates the contract performance thresholds and objectives¹⁹ and must include contract deliverables such as data tracking and reporting depot-level maintenance contractor and organic (50/50 Rule) costs.²⁰

Second, the AFI states that the PM will assess long-term data and data right requirements to ensure data access that the Government may require for system sustainment and to maintain competition throughout the life cycle.²¹ Data rights shall be considered as a part of any procurement.²² Data rights directly affect the feasibility and affordability of any future potential transition from CLS to organic support.²³ Feasibility is part of the equation because data, in the correct format, is needed to perform maintenance as highlighted in certain situations like the F119 engine (see appendix). Obtaining data rights after a contract is awarded is usually very expensive.

Costs associated with data rights can help explain why many existing programs use CLS.²⁴ At times, the government has not purchased data needed for the government to perform sustainment work. The GAO noted in a 2004 report that “DoD program managers...often opt to spend limited acquisition dollars on increased weapon system capability rather than on the rights to the technical data²⁵” which, later in the program’s life, limits options on sources of repair.

In sum, the 50/50 Rule and core logistic capability requirements are embodied in law require compliance reporting to Congress. Air Force Instructions require the PM to consider CLS and data rights as part of the program’s sustainment plan.

Profit Incentive as Part of CLS Costs

Organic support on average should be cheaper than CLS because there is no profit incentive. Under CLS, the vendor expects to make a profit. The amount of profit is determined by contract type (Cost Plus, Firm Fixed Price, etc.) and incentivizes the contractor to control costs once the contract work has started. The government cost will be the cost of performing the work on the contract *plus* the amount of profit. Contractors have the incentive (profit) to retain the supply chain status quo and if the workload is to transition to an organic support organization, the government organic organization assumes all transition risk because the contractor no longer has any incentive.²⁶ CLS benefits the government because contractors control sustainment costs to maximize their profit.

For the government, profit is not part of the price calculation. In this sense, the price of the work equals the cost of the work. If the work and the labor efficiency were the same between the contractor and the organic support, the delta between the prices of the two entities would be the profit. All things being equal, the organic support would theoretically always provide a lower price. Understanding the profit incentive provides decision makers with a fundamental understanding of cost and pricing motives in the maintenance support decision. Profit incentive is not the only factor influencing cost of maintenance.

Fiscal Flexibility

Fiscal flexibility is different between the CLS and organic support. For the contractor, the money they receive from the government can be used for any needed purpose related to accomplishing maintenance. The contractor may use funding to procure and repair items, pay salaries, rent equipment, etc. A contractor can also procure new and more-reliable parts which

result in fewer failures and demand on the supply system, less maintenance, and thereby obtain better aircraft reliability, thereby maximizing profits by lowering maintenance costs.²⁷

Government fiscal law and policy require certain, specific types of funding—colors of money—for each purpose. The government provides funding via an Element of Expense Investment Code (EEIC) which is for a specific purpose. If PMs receive money in an EEIC for procurement, they cannot use that money for equipment rental. The PMs must have an EEIC for each aspect of the program. If the PM lacks funding in one area and has a surplus in another area, he or she will have to work through a bureaucratic process convert funding. Government funding flexibility is very rigid compared to the contractor. In this regard, CLS is more advantageous.

Aircraft Program Classification

Security classification of the aircraft program can affect the maintenance decision.²⁸ Recent aircraft programs have very high classification levels. New technologies such as stealth and drone capabilities are highly classified which requires maintenance personnel with specialized clearances and special facilities. When the aircraft production run is complete, those individuals can be transferred to CLS support providing the contractor with an initial advantage. Additionally, contractor personnel will mostly remain constant on the program compared to military personnel who frequently rotate resulting in more organic maintainers needed compared to CLS. The delays for military personnel to gain access to the program and facilities also make CLS support more desirable.

Acquisition Culture

The “acquisition culture” and what is in vogue when the sustainment decisions are made can affect the decision on whether support will be CLS or organic. For example, prior to the

1980s, the default source of repair was organic maintenance. In the 1990s, the Air Force policies encouraged PMs to outsource to CLS.²⁹ Reasons for this change included prevailing political pressure to move government work to the private sector, acquisition reform that held commercial firms offered many benefits unavailable within government, senior governmental official mandating CLS, and changes to the relationship between the PEO structure, SAF/AQ, and AFMC.³⁰ I will discuss this issue in detail later on in the paper.

Method of the Acquisition Process

The process by which items come into the inventory effects the sustainment decisions. If an item comes through the “normal” acquisition process, then the acquisition processes are in place to make a formal decision between CLS or organic support. However, there have been recent additions to the Air Force inventory such as drones that have come through research and development channels directly into operational use.³¹ As such, these items are predominantly maintained via CLS because the contractor is the partner bringing this capability directly to the operational Air Force.

In sum, there are many policies and factors that impact the decision on whether CLS or organic support is the selected option. The fact that more recent additions to the Air Force inventory are supported via CLS rests on several factors that are not readily apparent. Understanding the fiscal magnitude and its impact to the Air Force will assist in understanding the criticality of getting this decision right.

Impact to the Air Force Enterprise: Why Does this Decision Matter?

The magnitude of the decision and the related consequences are enormous. For fiscal year 2013 (FY13), the Department of the Air Force reported to Congress that it spent \$11,471.6B on depot-level maintenance and repair workloads. The Air Force reported in FY12 and FY11

that it spent \$12,178.0B and 12,296.5B, respectively. To assist with context, the DoD FY 2016 budget request included funding to purchase 57 Joint Strike Fighters (\$10.6 billion), 16 P-8 aircraft (\$3.4 billion), and development of the KC-46 tanker (\$3.0 billion).³² These figures give a frame of reference on what could be bought with the money being spent on depot-level maintenance and repair workloads.

Each percentage point of depot-level workload as it relates to the 50/50 Rule in FY13 is worth \$115M (the figure was higher in previous years). Deciding to allocate depot-level repair workload to a contractor means that the Air Force has lost the purchasing power of the corresponding money because once that money goes on contract; the Air Force loses the discretion to use that money elsewhere.

What happens if the decision is incorrect? The Appendix contains a study summary highlighting the time and money to transition nine simple items for the F-22 engine from CLS to organic support. This study identifies the myriad of issues and provides insight into the consequences of the 'CLS or organic' maintenance decision.

In sum, the decision whether to send depot-level maintenance to a contractor facility or do it organically is very important. The money commitment is significant and in our current fiscal environment, the decision has to be right. The factors must be evaluated correctly. George Orwell wrote in his book *Animal Farm*, "All animals are equal, but some animals are more equal than others." Similarly, there are factors that are more equal than the others. The next section gives us that insight.

Factors that Drive Support Decisions to Sub-Optimal Results

There are a few factors that drive the maintenance support decision more than others. However, no specific factor stands alone; all the factors interrelate at some level. With that said,

I argue there are two factors that hold sway over the other factors. They are first, the laws that govern CLS and second, the acquisition culture. The laws that govern CLS are ‘hard’ factors whereas the acquisition culture is a ‘soft’ factor. This distinction is expanded on the next section when recommendations are provided. I will discuss these factors and how they hold sway over the other factors using the KC-46 organic maintenance decision to buttress my argument.

The KC-46A is the newest Air Force air-to-air refueling tanker aircraft. The Air Force expects to receive 179 KC-46A aircraft.³³ The Air Force made the decision to sustain the KC-46A via organic capability primarily at the Air Logistics Center at Tinker AFB, Oklahoma. The KC-46A is built on Boeing’s 767 jet liner air frame with several military-specific modifications.³⁴

Laws that Govern CLS—the ‘Hard’ Factor

Congress requires an annual report from the DoD on compliance with these laws. Violation of the law gains significant unwanted Congressional attention. The latest report to Congress was provided in September 2014 with reporting for Fiscal Year 2013. The Air Force performed 51.8 percent of depot-level repair work organically—just barely over the 50 percent requirement.³⁵ The percentage for the Air Force hovers very close to that number going back to 2005.³⁶

In determining whether the KC-46A should be supported organically or through CLS, the 50/50 Rule and core logistics capabilities requirement came into play. In order not violate the 50/50 Rule, Air Force headquarters decided to pursue organic maintenance.³⁷ Also, maintaining the KC-46A organically was determined to be a core logistics capability.³⁸ The consequences of this decision in relation to several of the factors identified above run contrary to what would be optimal otherwise.

First, Boeing builds the 767 for numerous airlines around the world. Boeing has delivered 692 767-airframes to 50 different world-wide customers to date with 80 more airframes on order.³⁹ Boeing has the facilities, workforce, and technical skill in-house already to support the 767. It has already borne the cost of training a workforce and worked through the learning curve. The potential that the Air Force would enjoy cost saving advantages of such commercial cross-over are negated.

Second, in regards to facilities specifically, the government will have to build 14 new hangars at Tinker to house the KC-46A tankers because the aircraft is too large for existing facilities.⁴⁰ Building the hangars will require a multi-million dollar military construction effort in the midst of a resource constrained environment.⁴¹

Finally, 600 people will require crossover training to become skill proficient in the 767/KC-46. If they do not become proficient within five years, there is no mechanism in place to provide an alternate option—the transition risk is all on the government.⁴²

In summary, the legal requirement embodied in the 50/50 Rule drove the Air Force to organic support. This choice will duplicate expertise already available, requires multi-million dollar construction projects, and hinges on a finite timeline for workforce training.

Acquisition Culture—the ‘Soft’ Factor

As mentioned above, acquisition culture has an effect on the maintenance support decision. In the 1980s and earlier, organic was the default source of repair.⁴³ During the 1990s, the Air Force chose CLS as the preferable support option⁴⁴ and initiated Total System Performance Responsibility (TSPR) was used to justify downsizing the government acquisition workforce and core functions.⁴⁵ In addition to the reduction of government manpower these policies afforded, there was an expectation that overall program cost would be reduced if the

contractor assumed more control and oversight. In the mid-1990s, Secretary of Defense William Perry began the process of shifting away from military specifications and standards.⁴⁶ This was done in response to industry stating that these military unique requirement added 20-30 percent cost to the program, but added little effectiveness to the final system.⁴⁷ The result is that the acquisition culture saw CLS as a means to reduce government manpower and reduce program costs. With these benefits in mind, the ‘CLS or organic’ analysis and justifications were drafted to predominately support CLS.

Consequences of those decisions are now being realized. The pendulum is swinging back toward organic maintenance. The promised substantial program savings have not materialized.⁴⁸ The technical insight into a program lost through TSPR in the 1990s is now seen as a significant government deficiency that affects the ability to control costs and make smart acquisition choices through the program life cycle.⁴⁹ As before, the analysis and justifications to support the ‘CLS or organic’ decisions will likely favor organic support—the new acquisition culture preference. Already, program tech data is routinely purchased to support organic options.

The most telling synopsis of the impact of acquisition culture comes from Lt Gen John Thompson, Commander of the Air Force Life Cycle Management Center. He was quoted during a recent workshop on owning technical baselines stating that, “a program’s position on this spectrum of ownership [CLS or organic] is what it is as a result of the ‘acquisition reform’ environment at the time, not what it should have been for the long-term life of the program after careful program-by-program deliberation and decision.”⁵⁰

In summary, the acquisition culture has a significant impact on the ‘CLS or organic’ decision. Depending on whether the preference is CLS or organic support, program decisions and their corresponding justifications are crafted to support that preference. If acquisition culture

and the law drive choices that are not optimal, what can mitigate these factors? That is the subject of the next section.

Recommendations to Mitigate Predominant Factors

Since the law and acquisition culture drive choices that may not be optimal in view of program costs and life cycle, mitigating these factors will assist in selecting better options for the program and the Air Force. One is embodied in law while the other relates to culture.

The 50/50 Rule and core logistics capability are embodied in law. As such, any change must be legislative, but it is not impossible and has been changed before. The original limitation for contractor support was set at 40 percent when the requirement was set it forth in law in 1988.⁵¹ Congress increased that maximum to 50 percent in the FY 1998 Defense Authorization Act.⁵² It is not coincidental the change was made during the era of CLS being the preferable option. Nonetheless, if there is sufficient pressure from the DoD with a strong business case that this requirement is driving unwarranted costs, changes can be made.

Once factor that may temper DoD pressure for change is that not all military departments are bumping against the 50/50 Rule. In a review of 50/50 Rule reports from 2005-2015, only the Air Force and Navy are close to the 50 percent limit and the Navy has only been close to the threshold since 2009.⁵³ The Army on the other hand, maintains an organic workload around the 60 percent level.⁵⁴

The same legislative process would have to be followed to amend the legislation requiring *core logistics capabilities* to be done by the government. Additional research is required to understand the genesis of this legislative requirement and the nuances that could be used to achieve a less stringent standard.

Second, changing the acquisition culture is a significant challenge as is any organizational culture change. Numerous books and articles discuss affecting cultural change in an organization. For DoD acquisition culture, the most influential people that set the tone for that culture reside at very senior levels of the acquisition chain: Secretary of Defense William Perry moving away from military standards,⁵⁵ ASECFAF Darleen Druyun advocating TSPR as a way to reduce manpower and her “Lighting Bolts” initiatives,⁵⁶ General “Speedy” Martin and his reorganization of AFMC resulting in reduced engineering oversight of contractors,⁵⁷ AFLCMC/CC Lt Gen Thompson emphasis on technical baselines, and USD/AT&L Mr. Frank Kendall’s Better Buying Power initiatives. The acquisition workforce will always take cues from leadership.

Leadership must champion the appropriate and tempered acquisition culture. Combining their message with updates to acquisition courses, changes in ‘CLS or organic’ decision processes, and repeated messaging to the acquisition workforce should bring about the desired effect. It will be slow change but it will change.

In conclusion, there are many factors that must be taken into consideration when determining whether CLS or organic support is the optimal choice. Two of those factors, law and culture, are predominant in that decision which, at times, may not lead to the best choice. However, these dominant factors can be changed but only through a dedicated effort from senior leadership. Making these changes is the right thing to do for the program, the Air Force, and the tax payer. (Word count 4789)

Appendix

F119 Engine Part Transition from CLS to Organic Support

The implications of costs and time if a 'CLS or organic' decision can be best understood by analyzing a specific case study. This case looks at the requirements, costs, and risks associated with nine Peculiar Support Equipment (PSE) items of the F119 engine, the engine that powers the F-22. This study was done at the direction of The Air Force Chief of Staff. The issues and concerns addressed in the following case study are representative of common issues and concerns with any potential future CLS transition opportunity. This case study highlights several key issues that need to be taken into account when items are being transferred from CLS to organic management and support. Many of these key issues come into play when determining whether to pursue CLS or organic support from the onset of a program.

The initial step in a transition effort is to form a competent, motivated, and experienced team of subject matter experts.⁵⁸ As with any large organizational endeavor, resourcing the team charged with the effort and having the correct expertise is critical to any potential for success. In the case of the F119, the team was formed and provided a clear charter. In order to progress on the assigned task, the team identified some assumptions about the environment. The team assumed:⁵⁹

1. The F119 items are relatively easy to manage in the organic supply chain management system. Complex items would require expertise and proprietary knowledge and therefore were not considered.
2. The items studied should *not* be used as a direct comparison for all parts since the PSE items are simple compared to other items which were specifically not chosen due to

complexity. In other words, these PSE items were selected because they did not come with complex issues. More complex items will need additional scrutiny and time to evaluate.

3. The PSE items under study are small enough that it would require fewer resources to manage and sustain compared to complex items such as engine spare parts.
4. Organic supply chain management processes for support equipment may be well understood and utilized, but turnaround times for repairs or organic support may be longer than CLS supply chain management.
5. If PSE items were to be managed organically, equipment allowance standard would be modified in order to mitigate impacts to availability.

The next key issue for the F119 transition was that technical data quality, format, and cost are primary risk drivers to transition feasibility. The team went to the 1st Fighter Wing and Maintenance Group and asked them to provide an analysis of what would be required to transition the F119 items into organic support. The issues described in their analysis are applicable to other efforts. In fact, the issues are telling in that the items for the F119 are simple and PSE items. These issues would be magnified if the items were complex such as the engine itself. The resultant drawings of the tech data were important to the transition.

The team found the drawings used by the contractor were acceptable in the current form.⁶⁰ However, the technical orders needed by the government would have to be reconstructed because they were not in the format the government requires for all technical orders.⁶¹ Further, the work cards required by the Air Force technical order standards did not have sufficient detail. The key to obtaining the information needed to bring these items up to meet minimum government standards is technical data. Often the government will not buy the technical data

from the contractor which is required to remedy the deficiencies noted above.⁶² The lack of this technical data means the Air Force will be unable to maintain the items unless it provides additional funding to purchase the needed data.⁶³ The evaluation team also uncovered an additional hurdle not foreseen at the onset. After any conversion process to bring the data up to Government standards, a verification process will have to be conducted to assure that no data loss occurred during the conversion.

The conversion process requires time, manpower, and money to conduct. Understanding the scope of the conversion process helps the government understand the size and complexity of the issue.⁶⁴ Mitigating as much risk as possible is required to make conversion successful.

Risk, as described up to this point, is one aspect of transitioning the F119 items from CLS to organic support. The costs of conducting the study are also important to take into account. Any future transition of items will need to take into account that just to perform the analysis of whether to transition or how to transition will require its own separate funding. The total cost to the government is for this study was \$127,000.⁶⁵ This is a significant cost in light that this feasibility study is for nine simple PSE items. For context, these nine support items are miniscule when compared to the quantity and complexity of the engine itself and the aircraft as a whole—nine items out of thousands. The costs in time and money grow as the number and complexity grows. The ideal would be to use this figure and determine the potential cost savings and the amount of time required to recoup this expenditure.⁶⁶ Further, being able to provide cost analysis of organic management after the transition of F119 compared to the cost of retaining the current contract would be vital to the decision making process. This analysis would greatly impact the decision of senior leader regarding the transition.⁶⁷ Again, it will cost the government

\$127,000 just for the transition study for these simple PSE items. What would be the transition costs if the government decided to proceed with the transition?

The transition costs are those cost that would be required to accomplish the actual reassignment of the nine F119 PSE items from CLS to organic support.⁶⁸ The transition costs may include time to assemble a data call; costs for government formatted technical data; provisioning conference expenses; man-hours charged to the transition, including actions to hire personnel; additional personnel hired to support the transition to organic management, and an interim support contract with the F119 engine vendor, Pratt & Whitney.⁶⁹ Fortunately, the government owned the technical data rights during the acquisition process; however, the government had not stated the requirement for delivery of the depot-level tech data in a government format. Instead, depot-level technical orders only needed to be contractor formatted.⁷⁰ Pratt & Whitney estimated a formatting cost of \$3.4M for the nine F119 PSE items.⁷¹ Again, this cost is only for nine simple items that the government owns the technical data. If the government had the money and chose to move forward with transition, how long would it take?

The timeline for the F119 PSE transition can be broken into three segments: feasibility study, transition planning, and actual transition effort. This feasibility study started in September 2010 and at the time of the study was published in November 2011, a year had passed. There was still another year of pre-transition planning that still needed to be done. When the pre-transition planning was complete, then the actual transition effort would commence.

For the nine F119 PSE items, the study indicates the transition itself would take **approximately two years!** However, A. T. Kearney who authored the F-22 business case analysis noted, “The length of the transition investment depend on the complexity and size of

work that is transitioned.”⁷² The two-year timeline mentioned above does *not* take into account contract lead time required to establish contracts required for the transition. If contract lead time is incorporated into the timeline, the notional timeline to transition these nine items from CLS to organic support is anywhere from 3½ to 7 years *assuming* the transition team is in place prior to pre-transition start as shown in Figure 3.⁷³

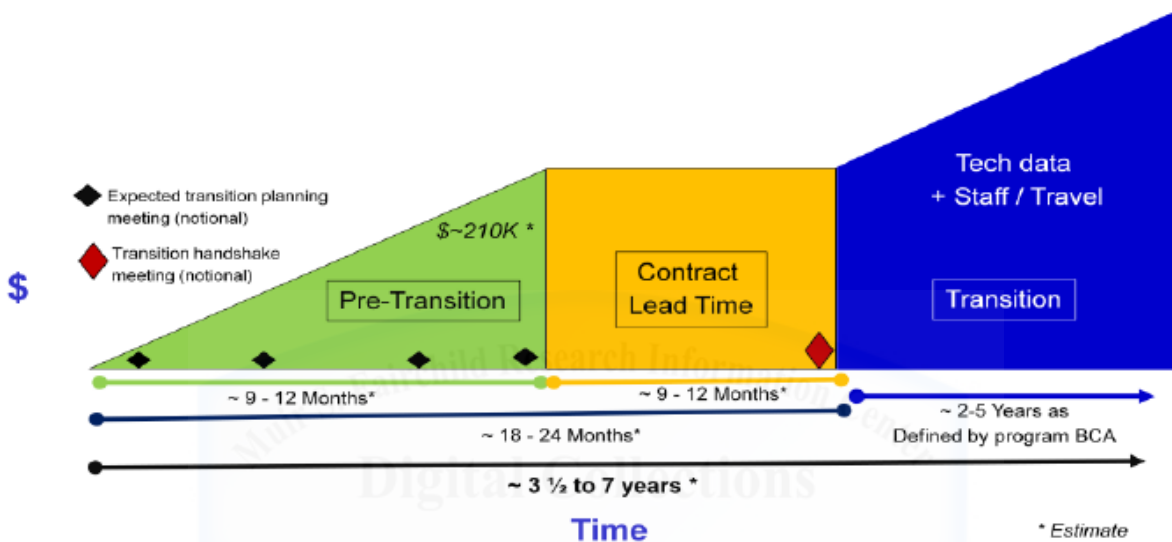


Figure 3 - Expected Transition Timeline

In sum, the F119 PSE study demonstrates that the transition of nine relatively simple items requires sincere effort and dedicated resources to be successful. The time horizon to execute this transition is very long. This study highlights the pitfalls that technical data can impact on a transition effort and the amount of pre-planning required by subject matter experts needed to assure success. The key lesson from the F119 study is that a commitment of time and resources are required to transition items and, as Mr. Kearney state, the commitments will only increase when more complex items are transitioned.

Notes

¹ John G. Drew, Ronald G. McGarvey and Peter Buryk, *Enabling Early Sustainment Decision: Application to F-35 Depot-Level Maintenance*, (Santa Monica, CA: RAND, 2013), 1.

² Ibid.

³ Michael Boito, Cynthia R. Cook, and John C Graser, *Contractor Logistics Support in the U.S. Air Force*, (Santa Monica, CA: RAND, 2009), 65-66.

⁴ Ibid., 45.

⁵ Ibid., 9-11.

⁶ Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report to Congress on Distribution of Department of Defense Depot Maintenance Workloads for Fiscal years 2013 to 2015* (Washington, DC: September 2014), 1-2. Available at: <http://www.acq.osd.mil/log/mpp/plans.html>.

⁷ Ibid., 3.

⁸ Ibid.

⁹ The Program Manager is part of the *Depot Source of Repair* (DSOR) process which provides enterprise-wide visibility on the program's impact to the 50/50 Rule. The DSOR process and participant's responsibilities are identified in AFI 63-101, Paragraph 6.9.

¹⁰ Boito, *Contractor Logistics Support*, 9.

¹¹ Ibid., 11.

¹² Ibid.

¹³ Hill Air Force Base, *Ogden Air Logistics Complex Factsheet*, 16 July 2015. Available at <http://www.hill.af.mil/library/factsheets/factsheet.asp?id=5594>

¹⁴ 10 United States Code (USC), Section 2466(d), Limitations on the performance of depot-level maintenance of materiel.

¹⁵ There was a third key policy embedded in 10 USC 2462 which required DoD to procure noncore maintenance from private sources if they are cheaper than organic sources; however, this section of the code was removed in the National Defense Service Act (NDAA) of 2015. This policy was factored into decisions which may assist in explaining why some programs prior to 2015 selected specific paths for depot-level maintenance. The essence of this policy is still carried on within the Depot Source of Repair (DSOR) process. The DSOR process still contains an aspect that requires a best value determination between organic or CLS support/repair although no longer required by law. It is part of the smart business case practice as described by an AFSC official.

¹⁶ Paragraph E1.6. of DoD Instruction 4151.20 "Depot Maintenance Core Capabilities Determination Process, core is defined as "depot maintenance capability (including personnel, equipment, and facilities) maintained by the Department of Defense at Government-owned, Government-operated facilities as the ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements. Depot maintenance for the designated weapon systems and other military equipment is the primary workload assigned to DoD depots to support core depot maintenance capabilities."

¹⁷ The Program Manager is part of the *Depot Source of Repair* (DSOR) process which provides enterprise-wide visibility on the program's impact to the 50/50 Rule. The DSOR process and participant's responsibilities are identified in AFI 63-101, Paragraph 6.9.

¹⁸ Air Force Guidance Memorandum 2015-01 to Air Force Instruction (AFI) 63-101/20-101, *Integrated Life Cycle Management*, 19 September 2015, 76.

¹⁹ Ibid., 77.

²⁰ Ibid.

²¹ Ibid., 79.

²² Ibid.

²³ United States Government Accountability Office, *F-35 Sustainment: Need for Affordable Strategy, Greater Attention to Risks, and Improved Cost Estimates*, GAO Report No.: GAO-14-778 (Washington, DC: GAO, September 2014), 10.

²⁴ Air Force Guidance Memorandum 2015-01, 58.

²⁵ United States Government Accountability Office, *Defense Management: Opportunities to Enhance the Implementation of Performance-Based Logistics*, GAO Report No.: GAO-04-715 (Washington, DC: GAO, August 2004), 4.

- ²⁶ Rob Blakey, *Supply Support Transition Feasibility Study – F119 Engine Peculiar Support Equipment*, Report no. A9A12034 (Wright-Patterson AFB, OH: Air Force Material Command Studies and Analysis Division (HQ AFMC/A9A), February 2012), 3.
- ²⁷ Boito, *Contractor Logistics Support*, 47.
- ²⁸ Ibid.
- ²⁹ Ibid., 59.
- ³⁰ Ibid., 58-59.
- ³¹ Ibid., 60.
- ³² DoD Releases Fiscal Year 2016 Budget Proposal, Press Operations, Release No: NR-031-15, February 2, 2015, <http://www.defense.gov/News/News-Releases/News-Release-View/Article/605365>
- ³³ Mike W. Ray, “Sustainment Planning in Progress as Production Starts on KC-46A.” *Air Force Print News*, 4 October 2013, <http://www.tinker.af.mil/news/story.asp?id=123366678>
- ³⁴ Ibid.
- ³⁵ Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report to Congress on Distribution of Department of Defense Depot Maintenance Workloads for Fiscal years 2013 to 2015* (Washington, DC: September 2014), 1-2. Available at: <http://www.acq.osd.mil/log/mpp/plans.html>.
- ³⁶ Ibid. The web site contains reports from 2005 through 2014.
- ³⁷ Jacob C. Jensen, “KC-46 Workforce Requirements for Depot Maintenance Activation” (Master Thesis, Air Force Institute of Technology, March 2014), 2.
- ³⁸ Ibid., 1-2.
- ³⁹ Boeing Orders & Deliveries, Boeing.com, http://www.boeing.com/commercial/?cm_re=March_2015-_-Roadblock-_-Orders+%26+Deliveries/#/orders-deliveries
- ⁴⁰ Ray, *Sustainment Planning in Progress*.
- ⁴¹ Jensen, *KC-46 Workforce Requirements*, 3.
- ⁴² Ibid., 1.
- ⁴³ Boito, *Contractor Logistics Support*, 59.
- ⁴⁴ Ibid.
- ⁴⁵ Darleen Druyen, Principal Deputy Under Secretary of the Air Force for Acquisition testified in 1999, “TSPR served to allow the USAF the opportunity to downsize.” National Research Council, *Owning the Technical Baseline for Acquisition Programs in the U.S. Air Force*, A Workshop Report (Washington DC: The National Academy Press, 2015), 6.
- ⁴⁶ National Research Council, *Owning the Technical Baseline*, 6.
- ⁴⁷ Ibid.
- ⁴⁸ Air Force Life Cycle Management Center (AFLCMC) Official, interview by the author, 20 November 2015.
- ⁴⁹ National Research Council, *Owning the Technical Baseline*, 8.
- ⁵⁰ Lt Gen Thompson as quoted in National Research Council, *Owning the Technical Baseline*, 12-13.
- ⁵¹ Boito, *Contractor Logistics Support*, 11.
- ⁵² Ibid.
- ⁵³ Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report to Congress on Distribution of Department of Defense Depot Maintenance Workloads for Fiscal years 2013 to 2015* (Washington, DC: September 2014), 1-2. Available at: <http://www.acq.osd.mil/log/mpp/plans.html>.
- ⁵⁴ Ibid.
- ⁵⁵ National Research Council, *Owning the Technical Baseline*, 6.
- ⁵⁶ Ibid., 7.
- ⁵⁷ Ibid.
- ⁵⁸ Rob Blakey, *Supply Support Transition Feasibility Study – F119 Engine Peculiar Support Equipment*, Report no. A9A12034 (Wright-Patterson AFB, OH: Air Force Material Command Studies and Analysis Division (HQ AFMC/A9A), February 2012), 10.
- ⁵⁹ Ibid., 12.
- ⁶⁰ Ibid., 15.
- ⁶¹ Ibid.
- ⁶² Boito, *Contractor Logistics Support*, 83 and GAO, *Defense Management: Opportunities to Enhance*, 4.
- ⁶³ Blakey, *Supply Support Transition*, 15.
- ⁶⁴ To accomplish this, the study team provided a construct of 20 questions that would provide input into how ready and how complex the conversion process might be. The questions range from simple “gate keeper” questions such

as whether the drawings and data are available to more qualitative intricate questions about intended concept of support and procurement lead times. Wherever the items fell on the spectrum of 'readiness' for conversion, asking the contractor to provide a rough order of magnitude estimate to have the items ready for conversion transforms the cost risk of conversion to a cost requirement. Transition readiness risk can be mitigated, but not eliminated by detailed item-level evaluation of logistics supportability by the transition team. (Boito, *Contractor Logistics Support*, 16).

⁶⁵ For the F119 PSE items, these costs fell into three categories: personnel costs, travel costs, and opportunity costs.

Personnel costs were the man-hours associated with the feasibility study. This cost comprised government employees (civilian and military) as well as contractor hours. Time was spent in meetings, conducting face-to-face interviews, and working issues individually. Personnel costs for this study came to \$48,513.

Travel costs were comprised of the per diem, lodging, airfare, etc. that team members required in order to perform the study. There were several meetings and site visits that required travel by the study team. For the government employees, the costs were \$24,420 and for the contractor, the costs were \$13,554.

Opportunity costs reflect activities or expenses incurred during the project that could have been applied to other mission area efforts. These are the costs of activities that were done by team members in support of the study that are not part of their day-to-day routine job. For example, team members had to respond to items found during the study which is not a normal part of their job. The opportunity cost associated with the feasibility study is \$40,205. (Blakey, *Supply Support Transition*, 17-20).

⁶⁶ Blakey, *Supply Support Transition*, 15.

⁶⁷ Ibid.

⁶⁸ Ibid., 19.

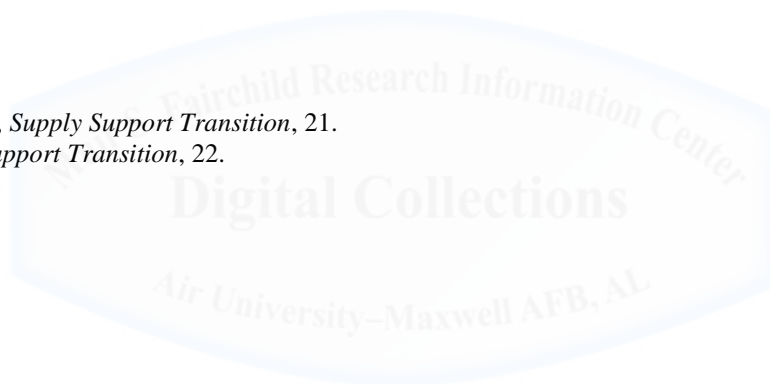
⁶⁹ Ibid.

⁷⁰ Ibid., 20.

⁷¹ Ibid.

⁷² Quoted in Blakey, *Supply Support Transition*, 21.

⁷³ Blakey, *Supply Support Transition*, 22.



Bibliography

10 United States Code (USC), Section 2466(d), Limitations on the Performance of Depot-Level Maintenance of Materiel.

Air Force Guidance Memorandum 2015-01 to Air Force Instruction (AFI) 63-101/20-101. *Integrated Life Cycle Management*, 19 September 2015.

Blakey, Rob. *Supply Support Transition Feasibility Study – F119 Engine Peculiar Support Equipment*, Report no. A9A12034. Air Force Materiel Command Studies and Analysis Division (HQ AFMC/A9A), February 2012.

Boito, Michael, Cynthia R. Cook, and John C Graser. *Contractor Logistics Support in the U.S. Air Force*. Santa Monica, CA: RAND Corporation, 2009.

Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015, Public Law No: 113-291. 113th Congress (2013-2014).

Defense Management: Opportunities to Enhance the Implementation of Performance-Based Logistics. United States Government Accountability Office, GAO Report No.: GAO-04-715, August 2004.

Department of Defense Instruction (DODI) 4151.20. *Depot Maintenance Core Capabilities Determination Process*. 5 January 2007.

Drew, John G., Ronald G. McGarvey, and Peter Buryk. *Enabling Early Sustainment Decision: Application to F-35 Depot-Level Maintenance*. Santa Monica, CA: RAND Corporation, 2013.

F-35 Sustainment: Need for Affordable Strategy, Greater Attention to Risks, and Improved Cost Estimates. United States Government Accountability Office, GAO Report No.: GAO-14-778, September 2014.

Jensen, Jacob C. “KC-46 Workforce Requirements for Depot Maintenance Activation.” Master Thesis, Air Force Institute of Technology, March 2014.

Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. “Report to Congress on Distribution of Department of Defense Depot Maintenance Workloads for Fiscal years 2013 to 2015.” <http://www.acq.osd.mil/log/mpp/plans.html>.

Owning the Technical Baseline for Acquisition Programs in the U.S. Air Force, A Workshop Report. National Research Council. The National Academy Press, 2015.

Ray, Mike W. “Sustainment Planning in Progress as Production Starts on KC-46A.” *Air Force Print News*, 4 October 2013. <http://www.tinker.af.mil/news/story.asp?id=123366678>