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5000.02 on Joint Program Executive
Office--Chemical Biological Defense
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JOINT APPLIED PROJECT

**EFFECTS OF DEPARTMENT OF DEFENSE
INSTRUCTION 5000.02 ON JOINT PROGRAM
EXECUTIVE OFFICE – CHEMICAL
BIOLOGICAL DEFENSE (JPEO-CBD)
EFFECTIVENESS**

September 2016

By: Emily C. Whaley

**Advisors: Michael Boudreau
Kate Ong**

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**EFFECTS OF DEPARTMENT OF DEFENSE INSTRUCTION 5000.02 ON JOINT
PROGRAM EXECUTIVE OFFICE – CHEMICAL BIOLOGICAL DEFENSE
(JPEO-CBD) EFFECTIVENESS**

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Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN PROGRAM MANAGEMENT

from the

**NAVAL POSTGRADUATE SCHOOL
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**EFFECTS OF DEPARTMENT OF DEFENSE INSTRUCTION 5000.02
ON JOINT PROGRAM EXECUTIVE OFFICE – CHEMICAL
BIOLOGICAL DEFENSE (JPEO-CBD) EFFECTIVENESS**

ABSTRACT

This project provides an analysis on the expected effects of DoDI 5000.02, the most recent guidance that seeks to reform DOD acquisition. Specifically, it researches and analyzes the effects of other acquisition reform items on the JPEO-CBD portfolio, and the expected trend of the newest guidance toward achieving greater effectiveness in acquisition. Methodology includes a comparative analysis of items that may indicate effectiveness, such as project schedules and number of documents required.

Data and analysis indicate that DoDI 5000.02 may not have increased acquisition efficiency throughout the military services. Additional data collection specific to smaller acquisition programs, as well as targeting study of leading rather than lagging indicators, may provide greater insight into the effects of recent acquisition reforms.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACAT	Acquisition Category
ACC	Army Contracting Command
ADM	Acquisition Decision Memorandum
AoA	Analysis of Alternatives
APG	Aberdeen Proving Ground
BBP	Better Buying Power
BSCAV-P	Bioscavenger - Plasma
CBD	Chemical and Biological Defense
CDD	Capability Development Document
DAMIR	Defense Acquisition Management Information Retrieval
DASD	Deputy Assistant Secretary of Defense
DAWIA	Defense Acquisition Workforce Improvement Act
DOD	Department of Defense
DoDI	Department of Defense Instruction
EO	Executive Order
FARA	Federal Acquisition Reform Act
FASA	Federal Acquisition Streamlining Act
FY	Fiscal Year
IPR	In-Process Review
IT&NSS	Information Technology and National Security Systems
IUID	Item Unique Identification
JBTD	Joint Biological Tactical Detection System
JPEO-CBD	Joint Program Executive Office for Chemical and Biological Defense
JPM	Joint Project Manager
LCMP	Life Cycle Management Plan
LFT&E	Live Fire Test & Evaluation
LRIP	Low Rate Initial Production
MAIS	Major Automated Information Systems
MDA	Milestone Decision Authority

MDAP	Major Defense Acquisition Program
MDD	Milestone Development Decision
MS	Milestone
NDIA	National Defense Industrial Association
NEPA	National Environmental Policy Act of 1969
NGCD	Next Generation Chemical Detector
NGCD	Next Generation Chemical Detector
NGDS	Next Generation Diagnostic System
OMS/MP	Operational Mode Summary/Mission Profile
OPETS	Omnibus Program, Engineering and Technical Support
OT&E	Operational Test & Evaluation
OTA	Operational Test Agency
PARCA	Performance Assessments and Root Cause Analysis
PESHE	Programmatic Environmental, Safety, and Health Evaluation
RFP	Request for Proposal
SBIR	Small Business Innovation Research
SEP	Systems Engineering Plan
STAR	System Threat Assessment Report
STTR	Small Business Technology Transfer Program
TEMP	Test & Evaluation Master Plan
TOA	Total Obligation Authority
USD (AT&L)	[Office of the] Under Secretary of Defense for Acquisition, Technology, and Logistics
WSARA	Weapon Systems Acquisition Reform Act

I. INTRODUCTION

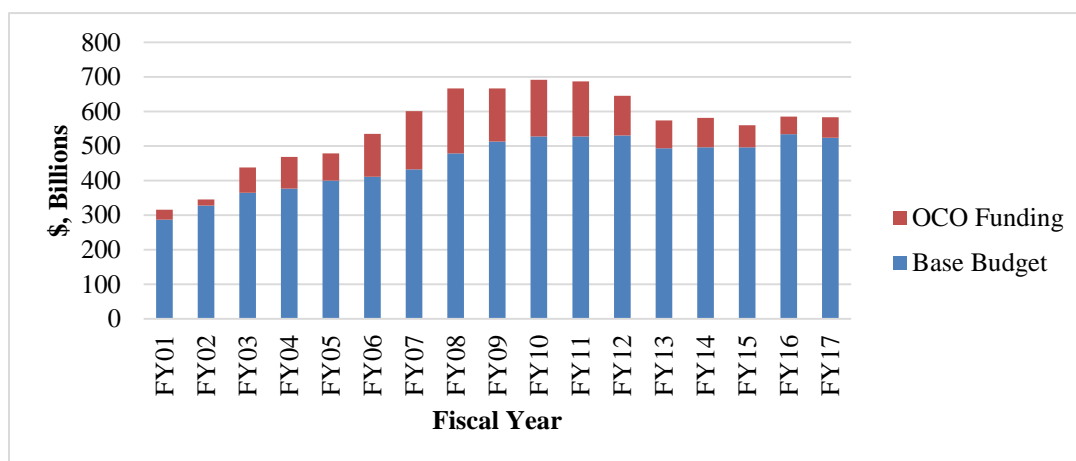
While the United States achieves its national security missions by equipping its military forces with the best weapons systems in the world, questions continue about the performance of the defense acquisition system. How effective is it? How can that effectiveness be objectively measured? Can we use those measures to affect behaviors with appropriate incentives or determine which policies and procedures improve results and which turn out to be misguided?

Answering these questions requires more than opinion. It requires analysis of unbiased data to discover insights into underlying effects. These, in turn, will inform better policy and programmatic decisions.

—Hon. Frank Kendall (2013)

A. BACKGROUND

Many efforts have been made over the past twenty-five (25) years to increase the effectiveness of acquisition of goods and services within the Department of Defense (DOD). Funding requirements are increasing, yet program resources seem harder to find. Capability gaps remain unaddressed, yet the DOD base budget has generally shown continued growth through 2013, as shown in Figure 1 (Office of the Under Secretary of Defense [Comptroller], 2014, 2015).



Note: Funding is shown in Current Year dollars; FY17 is planned.

Figure 1. Department of Defense Budget, Fiscal Years (FYs) 2001–2017.

As current capabilities age out of the field, the DOD workforce must become adept at doing “more without more” (Carter, 2011, p. 1). To drive towards this balance, attempts to reform the acquisition system have continued.

One of the most recent of these acquisition reform efforts is the recent update to DOD Instruction (DoDI) 5000.02, released in January 2015. The DoDI 5000.02 update is intended to enhance discussion and thoughtfulness regarding acquisition program planning and management, and to encompass the acquisition reform efforts initiated since the 2008 version of the DoDI 5000.02.

B. PROJECT OBJECTIVES

The primary objective of this research is to determine, based on an analysis of historical trends, what the expected effect of the January 2015 DoDI 5000.02 will be on acquisition effectiveness of the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) portfolio. Effectiveness will be measured primarily in terms of schedule from project inception to delivery of a capability to the warfighter, including possible changes with respect to number of in-process reviews and decision points, as well as secondary metrics including number of acquisition documents required.

A secondary objective of this research is to determine the extent to which other recent acquisition reforms also generate both intended and unintended potential impacts on overall acquisition performance, specifically in the JPEO-CBD community.

C. PROJECT ACTIVITIES

1. Problem Identification

This project will analyze, based on historical trends in acquisition reform, the extent to which the January 2015 issuance of DoDI 5000.02 will likely increase acquisition effectiveness within the JPEO-CBD community, and the extent to which it may place additional burdens on the JPEO-CBD to deliver capability to the warfighter.

2. Informed Foundation

This project will leverage the annual *Performance of the Defense Acquisition System* reports as the basis for trend analysis and discussion. The three reports that will be referenced are from 2013, 2014, and 2015.

It is important to note that each of the annual reports highlights a different focus:

- 2013: total life-cycle cost performance
- 2014: contract incentive techniques and their effects on cost, schedule, and technical performance
- 2015: analysis of broader factors that influence acquisition outcomes.

3. Data

In addition to the *Performance of the Defense Acquisition System: 2013 Annual Report*, this project will use a sampling of documentation collected from various programs and projects within the JPEO-CBD portfolio. This data will include schedules depicting acquisition phase length, funding requirements, and other acquisition documents. This project will also demonstrate changes in contractual workload within two of the Chemical Biological Defense (CBD) contracting divisions.

4. Analysis

Analysis methodology will include a literature review of the relevant documents, as well as other research findings concerning the effectiveness of these various reform measures. Additionally, this project will include a comparative analysis of items that may indicate other proximate measures of effectiveness, such as project schedules and number of documents required.

D. PROJECT BENEFIT

As acquisition reform efforts have intensified, DOD is adjusting to “doing more without more.” The information contained in this project will help establish the foundation for JPEO-CBD to achieve its mission with fewer resources. It will broaden understanding of the present and future acquisition environments through exploration and analysis of the effectiveness of past and current reform measures. This project will

explore the current strategies and provide recommendations to ensure that JPEO-CBD is able to fulfill warfighter needs as effectively as possible.

E. ORGANIZATION OF RESEARCH

This research is organized into three (3) basic sections: (1) background information, (2) data, and (3) analysis.

First, background information is available to help the reader understand some of the most recent reform efforts. Additional background information is provided to help the reader understand the CBD enterprise organizational structure, with further definition of elements of the JPEO-CBD structure. This is important to effectively narrow the scope of the research to the level of the program management offices within the JPEO-CBD and the DoDI 5000.02's expected effects therein.

Following the background information, the data and analysis are grouped into three (3) phases: (1) Pre-Better Buying Power (BBP) 1.0, (2) Between BBP 1.0 and 2.0, and (3) BBP 2.0 through DoDI 5000.02. These topics are organized in such a way that trend analyses can be performed, where appropriate, on metrics demonstrating effectiveness. BBP 3.0 is discussed only in the background section for completeness. However, data from this phase and beyond is not analyzed nor discussed separately as the guidance contained therein is both geared towards technical excellence rather than acquisition program or process efficiency and too recent to discern any noticeable effects as of the writing of this report.

II. BACKGROUND

In these times of extreme budget pressures and uncertainty...improving the performance of the defense acquisition system is essential for the DOD.

—Hon. Frank Kendall (2014)

A. RECENT REFORM EFFORTS

Modern acquisition reform intensified in the 1990s with the passing of the Defense Acquisition Workforce Improvement Act (DAWIA) in 1990, the Federal Acquisition Streamlining Act of 1994 (FASA), and the Federal Acquisition Reform Act (FARA) in 1996. These acts were intended to drive more effectiveness into the Department of Defense’s acquisition processes. Following the FARA, DoDI 5000.02 was released in 2003 and again in 2008. More recent endeavors include the Weapon Systems Acquisition Reform Act (WSARA) (2009) and the BBP guidance memorandums of 2010 and 2012. The most recent additions to guidance reform are the January 2015 version of DoDI 5000.02 and the third installment of BBP, released in 2015 and referred to as BBP 3.0. The timeline of these reform efforts is shown in Figure 2, Evolution of Recent Acquisition Reform.

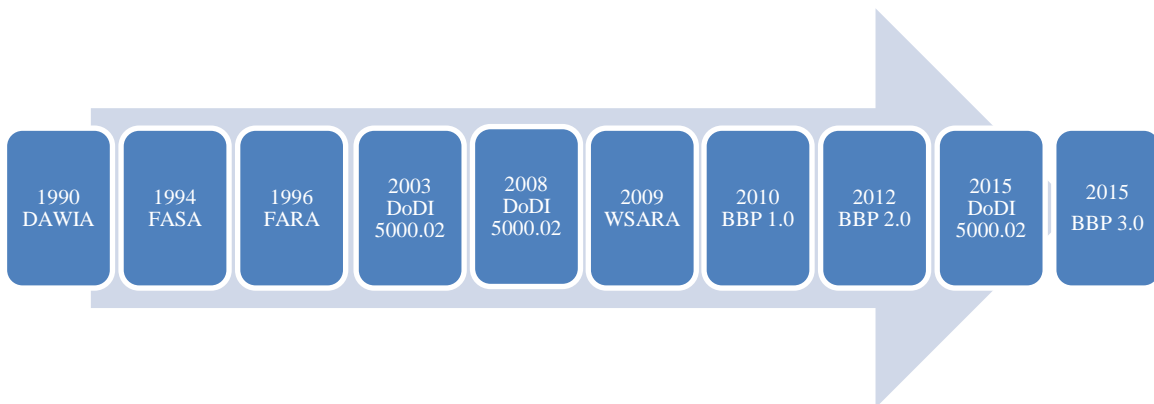


Figure 2. Evolution of Recent Acquisition Reform

1. Defense Acquisition Workforce Improvement Act

The Defense Acquisition Workforce Improvement Act (DAWIA), established in 1990, sought to establish consistent training and professional certification standards for the acquisition workforce. It emphasized the need to offer civilians greater opportunities for professional development and advancement (Garcia et al., 1997, p. 1). Garcia et al. also note that “DAWIA implementation allowed DOD Components to move forward to meet the daily acquisition challenges with a more highly trained and better equipped workforce” (p. 11).

In addition to growing the civilian workforce in terms of professional development, DAWIA also reduced the size of the acquisition workforce in order to increase efficiency (Hunter et al., 2015, p. 6).

2. Federal Acquisition Streamlining Act

Established in 1994, the Federal Acquisition Streamlining Act (FASA) resulted from recognition that the acquisition process had become too complex. Strategically, FASA sought “to develop a more equitable balance between government-unique requirements and the need to lower the government’s cost of doing business” (Barry, 1995, p. 3). FASA intended to decrease acquisition burden primarily through system procurement by implementing a performance-based approach. FASA further “reduced unique purchasing requirements, increased the use of simplified acquisition procedures for low-cost procurements through raising the simplified acquisition threshold to \$100,000, and sought to obtain goods and services faster in order to reduce the in-house costs of doing business” (O’Connell, 2012, para. 4). Additionally, FASA eliminated or modified many obsolete and redundant laws and directed the use of commercial specifications instead of military standards and specifications wherever practical.

3. Federal Acquisition Reform Act

The Federal Acquisition Reform Act (FARA) of 1996, later renamed the Clinger-Cohen Act, “provided [additional] guidance to ensure a fair and open competitive process for contractor support ... and allowed contracting officers more discretion when making

competitive range determinations. Additionally, the FARA established the Chief Information Officer role” (Acquisition Community Connection, 2015, para. 1).

4. Department of Defense Instruction 5000.02

The DoDI 5000.02 issued in 2003 made major changes to the acquisition framework that had been in place since 1971. It expanded phases and decision points, and added over thirty (30) additional documents to the process. DoDI 5000.02 was then reissued in 2008, primarily changing the early phases of the acquisition process. It placed additional emphasis on systems engineering, as well as integrated test and evaluation throughout the program (SM&A, 2009).

The 2008 version also instituted the following changes from the 2003 version:

- Major efforts and decision points were renamed:
 - Materiel Development Decision (MDD) replaced the Concept Decision, and “became required regardless of where the program enters the acquisition process” (GAO, 2009, p. 20)
 - Pre-Milestone (MS) A became the Materiel Solution Analysis phase
 - Pre-MS B phase renamed to Engineering and Manufacturing Development
 - Post-Critical Design Review replaced the Design Readiness Review
- Requirements for analysis of materiel and non-materiel solutions changed; and the Milestone Decision Authority began approving the materiel solution at MS A or program point of entry.
- Competitive prototyping became mandatory during the Technology Development phase. (2009, p. 20).

5. Weapon Systems Acquisition Reform Act

The Weapon Systems Acquisition Reform Act (WSARA) of 2009 brought about major reforms to the acquisition process. Additional director positions within the Office of the Secretary of Defense were created to oversee and influence acquisition processes. Some of these positions include the director of cost assessment and program evaluation,

Deputy Assistant Secretary of Defense (DASD) for developmental test & evaluation, DASD for systems engineering, and director of performance and root cause analysis. WSARA emphasized more rigor in determining requirements, including trade-off considerations, and influenced acquisition strategies by promoting competition throughout a system's life cycle. Furthermore, Congressional reporting requirements increased. Hunter et al. note that "In signing the bill, President Obama said, 'The purpose of this law will be to limit cost overruns before they spiral out of control. It will strengthen oversight and accountability by appointing officials who will be charged with closely monitoring the weapons systems we're purchasing to ensure that costs are controlled'" (2015, p 12).

6. Better Buying Power 1.0

The first BBP memorandum, signed by Mr. Ashton Carter in 2010 and known as BBP 1.0, emphasized life-cycle affordability and controlling program cost growth. BBP 1.0 provided specific guidance to achieve greater affordability through "[incentivizing productivity and innovation in industry, [promoting] real competition, [improving] tradecraft in acquisition services, and [reducing] non-productive processes and bureaucracy" (Carter, 2011, p. 6).

7. Better Buying Power 2.0

The follow-on BBP memorandum, signed by Mr. Frank Kendall in 2012 and known as BBP 2.0, again focused on life-cycle affordability. Containing stronger language than BBP 1.0, BBP 2.0 increased emphasis on elimination of unproductive processes and bureaucracy. Additionally, BBP 2.0 added guidance to "improve the professionalism of the total acquisition workforce" (Kendall, 2012, p. 7).

8. Better Buying Power 3.0

The third installment in the Better Buying Power series, known as BBP 3.0 and issued in 2015, emphasizes technical excellence and innovation. Initiatives contained in BBP 3.0 continue to drive towards affordability, savings opportunities, and effective incentives. It provides new focus areas in "technical excellence, innovation, and

dominant military capabilities” (Kendall, 2015, p. 2). According to Deputy Secretary of Defense Bob Work and Undersecretary of Defense for Acquisition, Technology and Logistics Frank Kendall III, “whereas BBP 1.0 and 2.0 focused on reforming [the] acquisition processes and making them more efficient, BBP 3.0 is primarily about providing dominant capabilities to the warfighter to try to maintain the technological overmatch that [the United States has] always enjoyed and, if anything, to try to extend it if at all possible” (2015, para. 16).

9. DOD Instruction (DoDI) 5000.02

The 2015 reissuance of DOD Instruction 5000.02, initially presented in an interim version in November 2013 and released in its current version in January 2015, is one of the most recent acquisition reform efforts. There are four (4) overarching objectives:

- “Decrease emphasis on ‘rules’ and increase emphasis on process intent and thoughtful program planning
- Provide program structures and procedures tailored to the dominant characteristics of the product being acquired and to unique program circumstances
- Enhance the discussion of program management responsibility and key supporting disciplines
- Institutionalize changes to statute and policy since the last issuance of DoDI 5000.02.” (National Defense Industrial Association [NDIA], 2015, p. 2)

The 2015 DoDI 5000.02 focuses on critical thinking, program tailoring, and codifying the reform efforts contained in the BBP guidance documents. Changes include, but are not limited to:

- “Core document tone to more clearly communicate management intent, from compliance to thoughtful planning
- Notes added to tables to clarify requirements
- Rewritten and refocused acquisition process procedures, and

- Substantial revisions to all enclosures, to
 - Accommodate [acquisition] community concerns
 - Clarify/streamline procedures.” (NDIA, 2015, p. 3)

B. UNDERSTANDING THE PERFORMANCE OF THE DEFENSE ACQUISITION SYSTEM ANNUAL REPORTS

1. Performance of the Defense Acquisition System: 2013 Annual Report

The Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)) published the *Performance of the Defense Acquisition System: 2013 Annual Report* in June 2013. The purpose of this report is to “provide improved insights into key aspects of total life-cycle cost performance to inform policy decisions about the overall acquisition system and institution” (Office of the Under Secretary of Defense, Acquisition, Technology and Logistics [OUSD AT&L], 2013, p. 2). The 2013 Annual Report focuses on the development and early production life-cycle phases, as data is most readily available for these phases.

2. Performance of the Defense Acquisition System: 2014 Annual Report

Published in June 2014, the second annual report both updates the prior year’s analysis and newly focuses on contract incentives for development and early production contracts. The report “examines various incentive techniques to see how effective they are at driving cost, schedule, and technical performance” (2014, p. iii).

3. Performance of the Defense Acquisition System: 2015 Annual Report

USD (AT&L) published the third annual report in September 2015. This 2015 Annual Report continues to build upon prior year analyses. This continuity provides additional confidence that changes seen in the prior year reports are real. OUSD AT&L notes that “new analyses have been added to begin examining further inputs, factors that affect outcomes, and trends in inferred measures of complexity and risk” (2015, p. xiv).

4. Data Interpretation of the Annual Reports

Each of the three annual reports presents the results of data-driven analysis; however, “interpretation of performance and the implication for policies are left largely to the reader” (2013, p. 2). Many analyses in each report are in the initial stages and indicate areas for future work. However, others are beginning to provide a consistent data set and provide increasing confidence in the trends shown therein.

The analyses presented in the report consist of two main types of performance data: program-level data, and contract-level data.

5. Scope of the Annual Reports as it Relates to JPEO-CBD

Each annual report uses data from several Major Defense Acquisition Programs (MDAPs), which are defined as programs that meet or exceed the Acquisition Category (ACAT) I requirements as defined in DoDI 5000.02. Although the JPEO-CBD does not have any ACAT I programs, the trends can be reasonably applied to programs and projects within the JPEO-CBD’s portfolio.

Therefore, the intent of this thesis is to analyze and interpret these results as they pertain to the JPEO-CBD. This information will be presented in Chapter III.

Following the presentation of the report findings, I will correlate these results to the changes in DoDI 5000.02. Are the changes to DoDI 5000.02, as presented in the January 2015 version, based on sound analyses?

C. CBDP ENTERPRISE STRUCTURE

Established in 1994, the CBDP was founded to prioritize CBD efforts within the DOD and to improve coordination of CBD doctrine, requirements, research, development, and acquisition among DOD and the military services (Gebicke, 1996, p. 3). Figure 3 shows the current Enterprise structure of the CBDP, through the General Officer/Senior Executive Service Level. These organizations work together, under the guidance of the Army as the Executive Agent, to ensure that warfighters are properly prepared to respond to medical and non-medical CBD hazards.

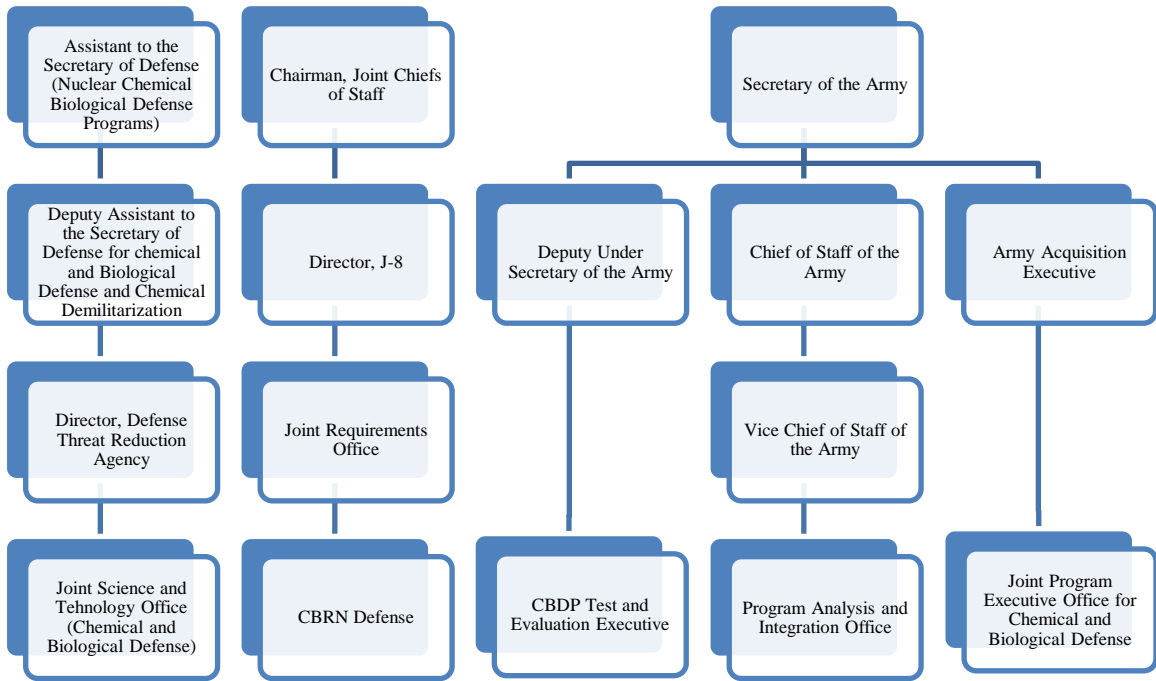


Figure 3. CBDP Enterprise Organization

D. JPEO-CBD ORGANIZATIONAL STRUCTURE

Prior to BBP 1.0, the JPEO-CBD was organized into eight (8) Joint Project Manager (JPM) offices. Various offices within JPEO-CBD supported the JPMs. Prior to BBP 2.0, the JPEO-CBD reorganized into seven (7) JPM offices and supporting headquarter functions, as shown in Figure 4. This organizational structure remained in place until March 2016.

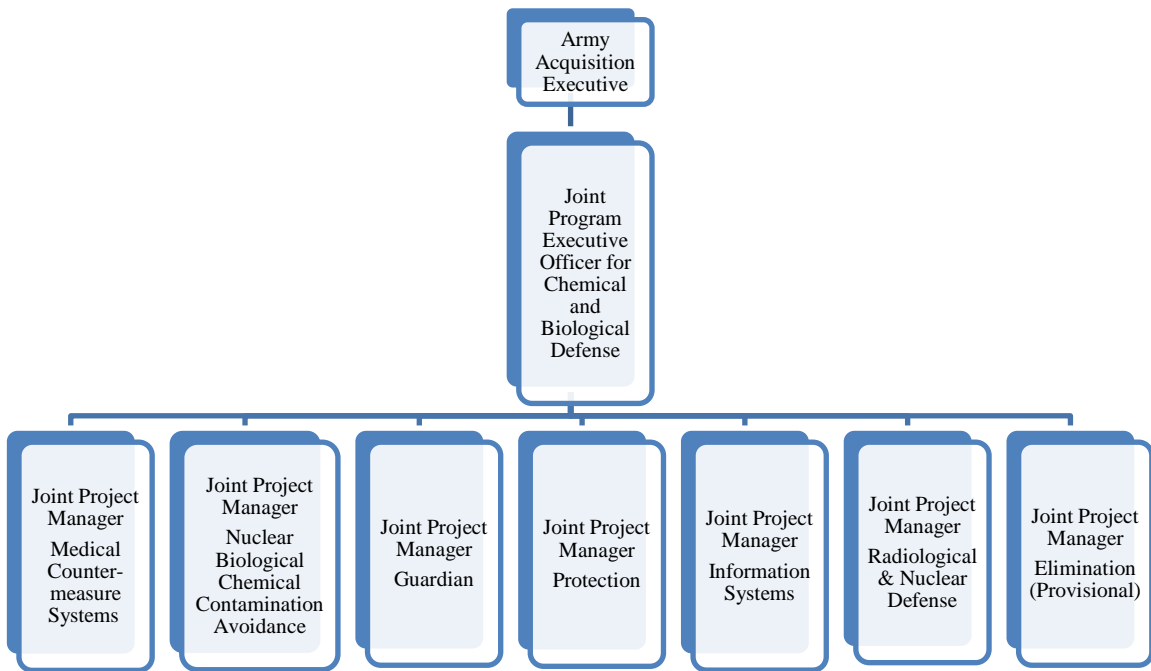


Figure 4. JPEO-CBD Organizational Structure through February 2016.

Figure 5 depicts the most recent changes to the JPEO-CBD organizational structure. This reorganization occurred in March 2016, and decreased the number of JPM offices from seven (7) to five (5). JPM Guardian, JPM Radiological & Nuclear Defense, and JPM Elimination were consolidated into one JPM, called JPM Guardian. The other four (4) JPMs remain intact. The reasons for these reorganizations are not relevant to this project, and are provided to increase reader understanding of the Chemical Biological Defense Enterprise.

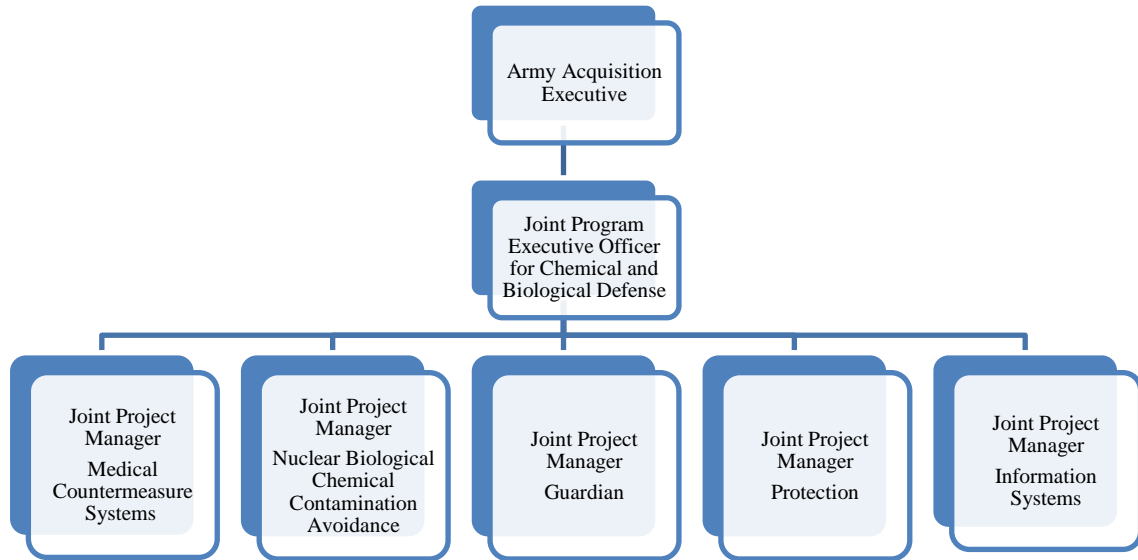


Figure 5. JPEO-CBD Organizational Structure after March 2016

These JPM offices can be categorized into medical acquisition and non-medical materiel acquisition. This distinction is important, as each has unique requirements. Medical acquisition programs, managed and funded under Medical Countermeasure Systems, have additional requirements through other federal entities such as the Food and Drug Administration that the non-medical programs and projects are not required to adhere to.

III. ACQUISITION REFORM DATA AND ANALYSIS

A. PRE-BBP 1.0

1. Contract Total Cost Growth Trends: Development Phase Data

The 2013 Annual Report analyzed total cost growth from 1992–2011. Total cost growth is a function of both work scope increase and cost-over-target growth. The contract total cost growth in then-year dollars is shown in Figure 6.

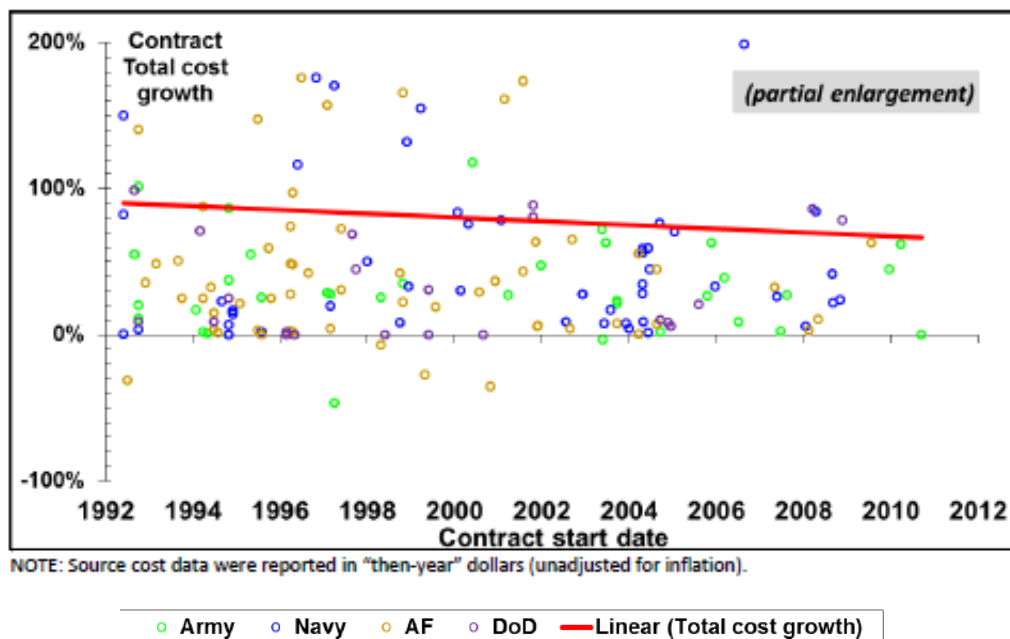


Figure 6. DOD Total Cost Growth: Development Contracts (1992–2011).
Source: OUSD AT&L (2013, p. 43).

Although this data is through 2011, it is included in the Pre-BBP 1.0 section for two (2) reasons: 1) the vast majority of the data represents the time before BBP 1.0 was issued, and 2) the changes influenced by BBP 1.0 would not have had noticeable effect on any trends only one (1) year after issue. Note that the trend line is a simple linear regression through all cost growth points. The 2014 and 2015 annual reports each provided one additional data point regarding the total cost growth for development

contracts. The trend line remains statistically significant, according to the 2015 Annual Report, and continues to trend downwards.

2. Contract Cost Growth Trends: Development Phase Analysis

The graph shown in Figure 6 shows a slight downward trend in contract total cost growth for development phase contracts. The reduction was 18 percentage points over 19 years. It is important to note that many of the more recent contracts have not yet been completed, and are at risk of ending with higher cost growth than currently anticipated, thus potentially altering the trend line.

The data shows that total contract cost growth has been trending favorably for over twenty (20) years. The authors of the 2013 Annual Report also note that no single contract type yields better cost control (2013, p. 109). As with the 2013 data, there are significant differences in cost-growth among development contracts within both the 2014 and 2015 data sets. OUSD AT&L notes that “the outlier cases must be prevented going forward” (2014, p. 49).

B. BETWEEN BBP 1.0 AND BBP 2.0

1. Performance Assessments and Root Cause Analyses (PARCA) Data

The Office of Performance Assessments and Root Cause Analyses (PARCA) is responsible for conducting root cause analyses for all “critical” Nunn-McCurdy breaches and those requested by the Secretary of Defense. Per the final report, *Performance of the Defense Acquisition System: 2013 Annual Report*, PARCA conducted 18 such analyses, from 2010 to 2012, that are summarized in Table 1.

Table 1. PARCA Root Causes Analyses (Statutory and Discretionary; 2010–2012)
 Source: OUSD AT&L (2013, p. 34).

<i>Dominant Cause</i>	
10 of 18	Poor management performance <ul style="list-style-type: none"> • Poor requirements traceability • Ineffective use of contractual incentives • Poor Risk Management • Poor Situational Awareness within the chain of command
5 of 18	Baseline cost and schedule estimates <ul style="list-style-type: none"> • Invalid framing assumptions
4 of 18	Change in Procurement Quantity
<i>Infrequent</i>	
1 of 18	Immature technology, excessive manufacturing or integration risk
2 of 18	Unrealistic performance expectations
1 of 18	Unanticipated design, engineering, manufacturing, or technology issues
None	Funding inadequacy or instability

In just over half of the cases analyzed, the root cause can be categorized as poor management performance or effectiveness (2013).

The *Performance of the Defense Acquisition System: 2015 Annual Report* provides additional insight into the frequency of Nunn-McCurdy Breaches, as shown in Figure 7.

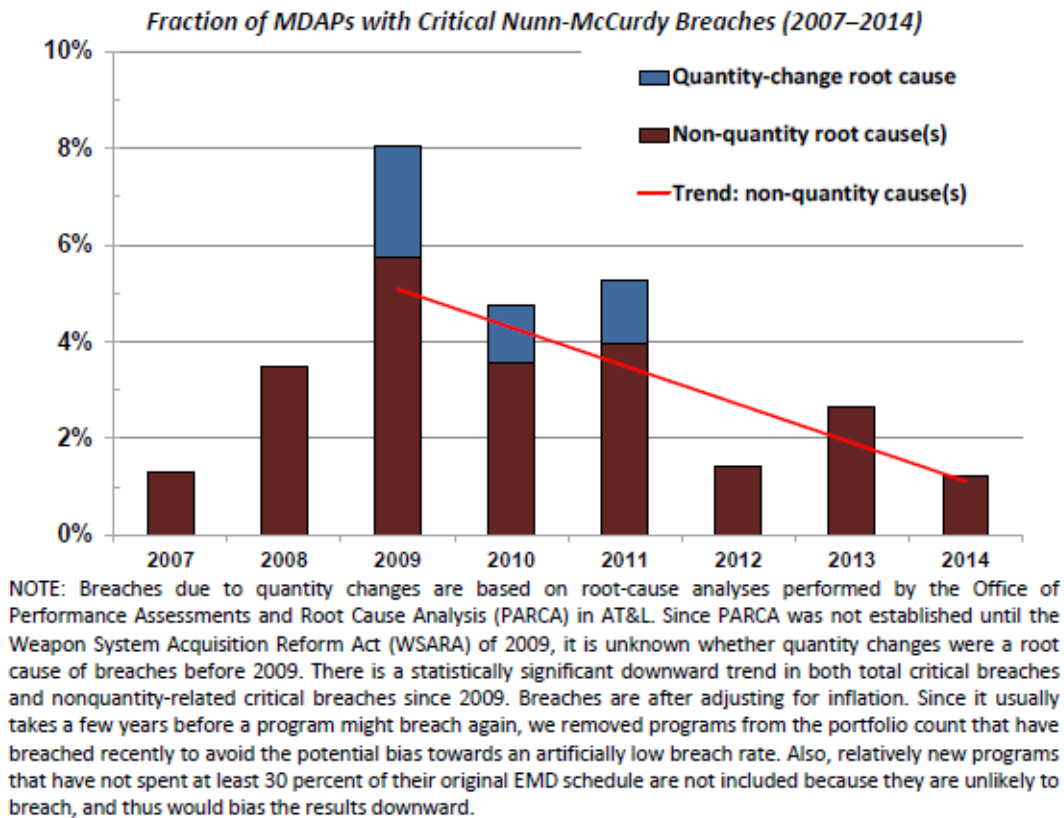


Figure 7. Program Cost-Related Performance: Nunn-McCurdy Breaches (2007–2014). Source: OUSD AT&L. (2015, p. xxii).

2. PARCA Analysis

The 2013 PARCA data shows a disturbing trend: “poor management performance or poor management effectiveness is the root cause of just over half of all breaches analyzed. Problem areas include poor systems engineering to translate user requirements into testable specifications, ineffective use of contractual incentives, poor risk management, poor situational awareness across the life-cycle, unrealistic cost and schedule estimates, and quantity changes” (2013, p. 34).

However, the 2015 Report provides a more positive outlook. Although non-quantity changes are the primary root cause of all Nunn-McCurdy breaches, and those causes remain generally the same as the 2013 report, the frequency of those breaches is decreasing as shown in Figure 7. The report notes that there is anecdotal evidence that

programs are showing improved execution, which may be tied to initiatives such as BBP that continue to raise cost consciousness.

C. POST-2015 DODI 5000.02

1. JPEO-CBD Program Schedules

a. Medical Acquisition Portfolio Programs

The JPEO-CBD medical acquisition portfolio contains a number of programs. One such program is a therapeutics program called Bioscavenger-Plasma (BSCAV-P). BSCAV-P is a plasma-derived prophylactic regimen designed to protect the warfighter from incapacitation and death caused by traditional and non-traditional nerve agents.

Data is available for BSCAV-P beginning in FY 2011. In December 2010, the BSCAV program office presented an In-Process Review (IRP) decision briefing to the Milestone Decision Authority (MDA), which presents MS B as occurring in 1QFY12 and MS C occurring in 3QFY17. The MS B decision and resulting APB occurred in 4QFY12, more specifically September 2012. The program Life Cycle Management Plan (LCMP), signed by the MDA in December 2011, presents MS B occurring in 3QFY12 and MS C in 1QFY18. According to an updated APB from November 2013, the objective date for MS C Low Rate Initial Production (LRIP) is 1QFY19. These dates are presented in Table 2.

Table 2. BSCAV-P Schedule

Event	Schedule as of 2011	Schedule as of 2012	Schedule as of 2013	Delta
Milestone B	1QFY12	3QFY12	4QFY12	+ 3 Quarters
Milestone C	3QFY17	1QFY18	1QFY19	+ 4 Quarters

Another medical acquisition program is the Next Generation Diagnostic System (NGDS). The NGDS is a portable biological pathogen diagnostic and identification system that will replace the currently fielded Joint Biological Agent Identification and Diagnostic System. Increment 1 is a direct replacement; Increment 2 will address

objective threats using multiple capability sets. There are multiple increments, which are combined for simplicity.

The NGDS Increment 1 LCMP, signed in June 2012 at MS A, indicates multiple IPRs on the path to MS C, scheduled to occur in 2QFY15. As of the March 2016 IPR brief, MS C for Increment 1 is scheduled for 1QFY17. This brief also indicates that MS B for Increment 2 was scheduled for 3QFY16. According to updated information received from JPEO-CBD, the current schedule for MS B for Increment 2 is 3QFY17. These dates are presented in Table 3.

Table 3. NGDS Schedule

Event	Schedule as of 2012	Schedule as of 2015	Schedule as of 2016	Delta
Milestone B Increment 2		3QFY16	3QFY17	+ 4 Quarters
Milestone C (FRP) Increment 1	2QFY15	4QFY16	1QFY17	+ 7 Quarters

b. Non-Medical Acquisition Portfolio Programs

The Next Generation Chemical Detector (NGCD) program is contained within the JPEO-CBD non-medical acquisition portfolio. The program began in FY 2011 to improve the warfighter’s ability to detect and identify non-traditional agents, chemical warfare agents, and toxic industrial chemicals in air and on surfaces. The NGCD schedule is shown in Table 4.

Table 4. Next Generation Chemical Detector Schedule

Event	Schedule as of 2011	Schedule as of 2015	Delta
Milestone A	3QFY13	3QFY13	No change
Preliminary Design Review	4QFY16	4QFY16	No change
Milestone B	1QFY17	3QFY17	+ 2 Quarters

The Joint Biological Tactical Detection System (JBTDS) program, designed to provide a tactical biological warfare agent detection, collection, identification, and networking capability to the Joint warfighter, also began in FY11. The MS B Decision Review, presented to the MDA in October 2014, indicates that MS B occurred at that time with MS C scheduled in 4QFY17. The program office presented an IPR decision brief in March 2016 indicating that MS C is delayed until 4QFY18. The JBTDS schedule is shown in Table 5.

Table 5. Joint Biological Tactical Detection System Schedule

Event	Schedule as of 2014	Schedule as of 2015	Delta
Milestone B	1QFY15	1QFY15	No change
Milestone C	4QFY17	4QFY18	+ 4 Quarters

All program data was compiled from multiple sources within JPEO-CBD, as the data was not available from a single database or repository.

2. Program Schedule Analysis

The schedules shown in Tables 2 through 5 are a small representative sample of both the medical and non-medical portfolios within JPEO-CBD. All four programs experienced at least six (6) months, or two (2) quarters, of schedule growth between 2011 and 2016.

The cause of these schedule changes remains unclear, however. Although no program appears to have gained efficiency, which would be reflected in a negative schedule change, it is not obvious what caused these schedule slips. One possibility for the schedule growth may be additional requirements provided in the 2015 DoDI 5000.02. Other possible causes for these schedule changes could be additional user requirements, more stringent or new testing requirements, or less funding in the intervening years to complete the same work.

Additionally, a number of programs within both the medical and non-medical acquisition portfolios have not had any schedule changes in recent years. However, there were no programs within JPEO-CBD that experienced positive schedule impacts. In other words, no program schedules showed milestones occurring earlier than originally planned. This indicates that recent acquisition reforms have not caused program schedules within the JPEO-CBD portfolios to increase in efficiency and provide capability to the warfighter sooner than planned.

3. Documentation Requirements Data

Table 6 compares documentation requirements for selected documents necessary, either by statute or regulation, for ACAT III programs as stated in the 2008 and 2015 versions of DoDI 5000.02. Data focuses on ACAT III programs, as these are the most common ACAT level in JPEO-CBD.

Table 6. Selected Document Comparison, DoDI 5000.02 (2008) vs. DoDI 5000.02 (2015)

Information Requirement	DoDI 5000.02 Issue Date	Life Cycle Event							
		MDD	MS A	CDD Val	Dev RFP release	MS B	MS C	FRP/ FD Dec	Other
Acquisition Decision Memo (ADM)	2015	X	X		X	X	X	X	X
	2008		X			X	X	X	
Acquisition Program Baseline	2015				X	X	X	X	X
	2008					X	X	X	
Acquisition Strategy	2015		X		X		X	X	
	2008					X	X	X	
Affordability Analysis	2015	X	X		X	X	X	X	
	2008					X	X		
Analysis of Alternatives (AoA)	2015		X		X		X		X
	2008		X			X	X	X	
AoA Study Guidance & Study Plan	2015	X							
	2008	X							
Capability Development Document (CDD)	2015		X	X	X		X		X
	2008					X			
Capability Production Document	2015						X		
	2008						X		

Table 6 (continued)

Clinger-Cohen Act Compliance	2015 2008	X X		X X	X X	X X	
Cooperative Opportunities	2015 2008	X X	X		X X		
Core Logistics Determination	2015 2008	X	X		X X		
Cyber Security Strategy	2015 2008	X	X	X	X	X	X
Exit Criteria	2015 2008	X X	X	X X	X X		X
Information Support Plan	2015 2008		X		X X		X
IT & NSS Interoperability Certification	2015 2008						X X
Initial Capabilities Document	2015 2008	X			X X		
IUID Implementation Plan	2015 2008	X X	X	X X	X X		
Life-Cycle Sustainment Plan	2015 2008	X	X	X X	X X	X	X
LFT&E Report	2015 2008					X X	X

Table 6 (continued)

LRIP Quantity	2015			X	X		
	2008				X		
Market Research	2015	X	X	X			
	2008		X		X		
OTA Report of OT&E Results	2015						X X
	2008				X	X	X
OMS/MP	2015		X	X		X	
	2008						
PESHE and NEPA/ EO 12114 Compliance Schedule	2015				X	X	X
	2008				X	X	X
Post Implementation Review	2015						X
	2008						X
Program Protection Plan	2015		X	X	X	X	X
	2008		X		X	X	
Request for Proposal (RFP)	2015		X	X		X	X
	2008						
Should-Cost Target	2015		X	X	X	X	X
	2008						
SBIR/STTR Program Technologies	2015		X	X	X	X	X
	2008						

Table 6 (continued)

Spectrum Supportability Risk Assessment	2015	X		X	X		X
	2008	X		X	X		
System Threat Assessment Report (STAR)	2015	X	X		X	X	
	2008			X	X		
Systems Engineering Plan (SEP)	2015	X	X	X	X		
	2008	X		X	X		
Technology Readiness Assessment	2015		X	X	X		
	2008			X	X		
Test & Evaluation Master Plan (TEMP)	2015	X	X	X	X	X	
	2008			X	X	X	

Table 6 presents thirty-four (34) selected documents and eight (8) potential decision points that may require those documents. In each DoDI 5000.02 version, 2008 versus 2015, there are 272 occurrences where documents could be required. Of the potential occurrences, seventy (70) documents or document updates were required for ACAT III programs in the 2008 version of DoDI 5000.02; one-hundred-twenty-two (122) documents or document updates were required in the 2015 version

4. Documentation Requirements Analysis

Over all of the eight decision points, documentation requirements increased by almost 20% between the 2008 and 2015 versions of DoDI 5000.02. Some documents, such as the Acquisition Decision Memorandum (ADM) and Capability Development Document (CDD) updates are required more often now than in the past. There are also some new documents required, such as the Cyber Security Strategy and Should-Cost Targets.

The expected effect of the increased documentation requirements is not an overall increase in acquisition effectiveness or efficiency. More program staff will be required to complete the documents, which will drive up the cost of a program. Alternatively, no additional staff will be hired and the work will be completed by current team members. Because the new documents are additional duties, the program schedule may slip as staff will have to prioritize this additional work. In the worst case, important management or oversight may be neglected due to shifting priorities.

5. CBD Contractual Workload Data

Throughout the CBDP enterprise, there are a number of contracting commands that provide services. The Army Contracting Command-Aberdeen Proving Ground (ACC-APG) is the parent contracting organization for ten (10) contracting centers that provides a number of contracting-related services to the Army. Of these ten (10) contracting centers that service the Army, five (5) provide full-spectrum contracting services to JPEO-CBD. Figure 8 shows the ACC-APG and subordinate command organizational structure that the JPEO-CBD uses. Additional centers not shown in

Figure 8 include ACC-Adelphi, ACC-Denver, ACC-Ft. Detrick, ACC-Orlando, and ACC-Tobyhanna.

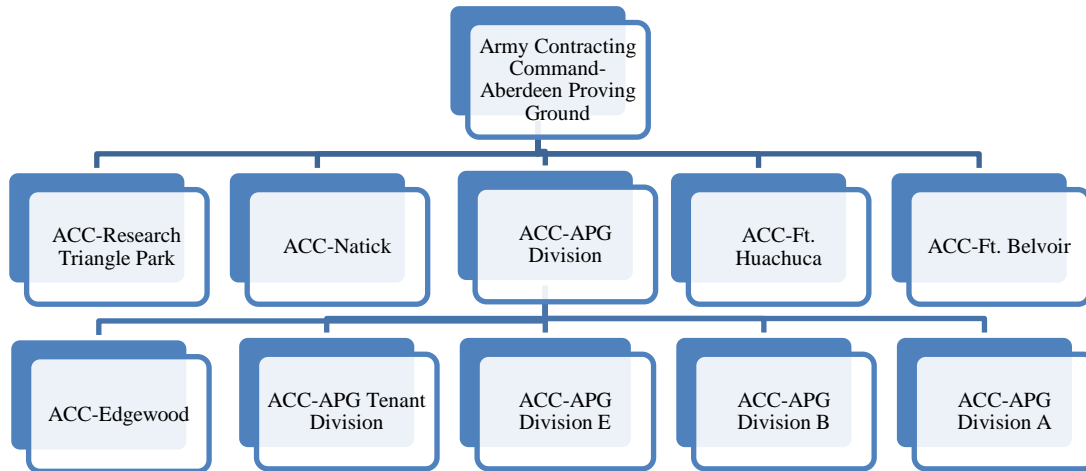


Figure 8. ACC-APG Organizational Structure Supporting JPEO-CBD

ACC-APG provided comprehensive data for FY12-FY15 for this project. As the organizational structure, and therefore record keeping, changed in FY12, comprehensive data is not available for FY11 and prior. Table 7 provides a summary of the total number of actions performed by ACC-APG; the total number of those actions that can be attributed to JPEO-CBD; the total funds obligated by APG-ACC; the funds obligated that can be attributed to JPEO-CBD; and the percentage of work, measured in both number of actions and funds obligated, that are attributed to JPEO-CBD.

Table 7. ACC-APG and JPEO-CBD Contract Actions and Funding Obligations, FY12-FY15

Fiscal Year	Total ACC Actions	JPEO Actions	JPEO Actions (%)	Total Obligations (\$)	JPEO Obligations (\$)	JPEO Obligations (%)
FY12	37,153	1,083	2.91%	\$15,106,694,543	\$740,867,335	4.90%
FY13	31,248	1,221	3.91%	\$12,680,685,618	\$590,214,092	4.65%
FY14	30,356	1,494	4.92%	\$10,897,392,830	\$430,112,125	3.95%
FY15	30,533	1,637	5.36%	\$9,975,741,791	\$502,444,353	5.04%

Another way to consider this same data is represented in Figures 9 and 10. Figure 9 shows the total number of ACC-APG contract actions on the primary Y-axis and the contract actions attributed to JPEO-CBD on the secondary Y-axis.

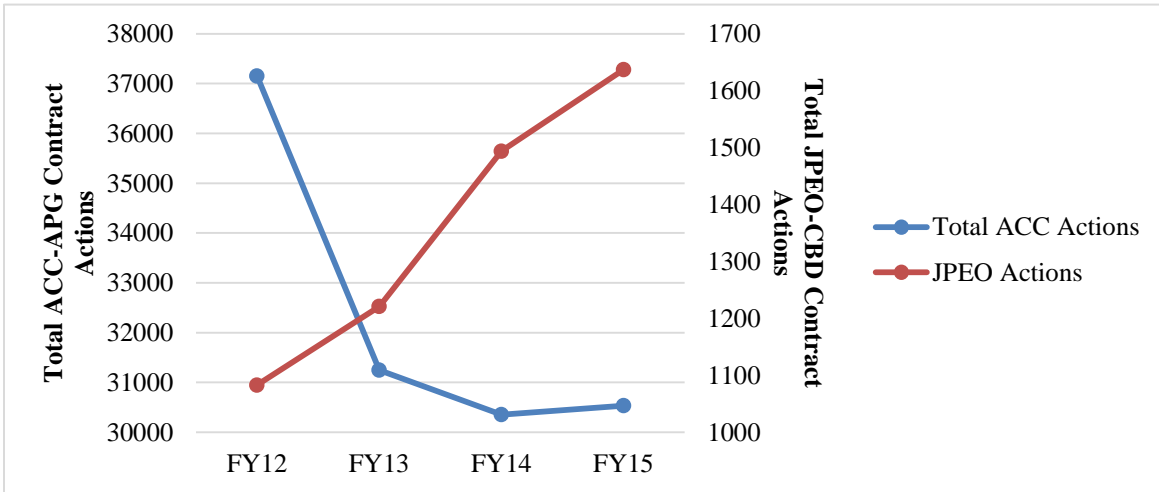


Figure 9. ACC-APG and JPEO-CBD Contract Actions, FY12-FY15

Figure 10 shows the total ACC-APG funding obligations, in \$M, on the primary Y-axis and the funding obligations attributed to JPEO-CBD on the secondary Y-axis, also in \$M.

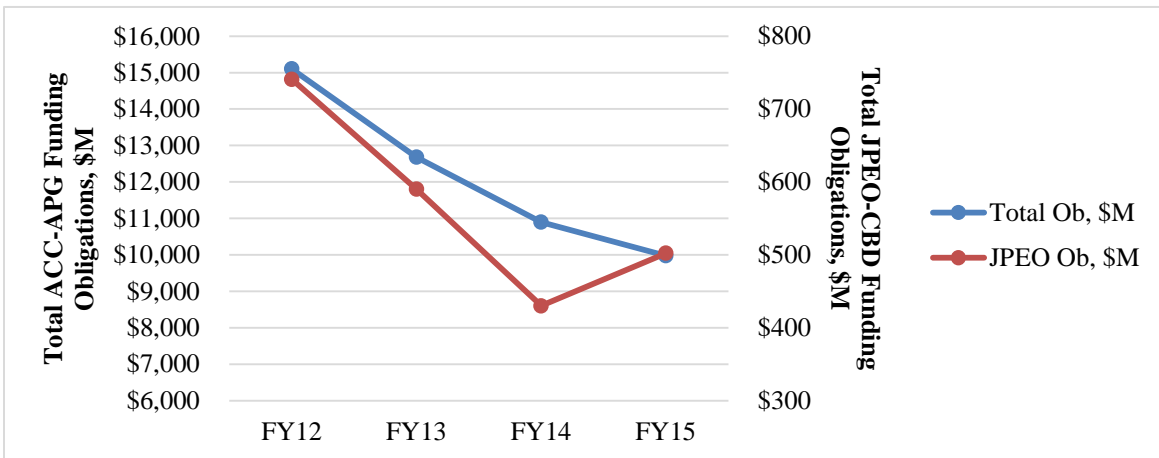


Figure 10. ACC-APG and JPEO-CBD Funding Obligations, FY12-FY15

Another way to consider this same data is by the individual contracting divisions. Although there are nine (9) divisions that service JPEO-CBD, this report will consider only the four (4) most active in the JPEO-CBD portfolio. These divisions are: ACC-Belvoir, ACC-Edgewood, ACC-Natick, and ACC-APG Tenant. The remaining five (5) divisions have processed fewer than five (5) actions in each FY for the JPEO-CBD.

a. ACC-Belvoir

ACC-Belvoir, located at Fort Belvoir, VA processed twenty-five (25) contracting actions for JPEO-CBD between FY12 and FY15. The overall JPEO-CBD funding obligations total -\$565,415, meaning that the contracting office largely deobligated funding from contracts. One of the reasons this occurs is that the contract has reached the end of its period of performance, and the contractor did not spend all of the funds available. This happens for a variety of reasons, including cost under-runs or lessening the scope of the contract. ACC-Belvoir performed zero (0) contract actions for JPEO-CBD in FY14. This data is presented in Figure 11.

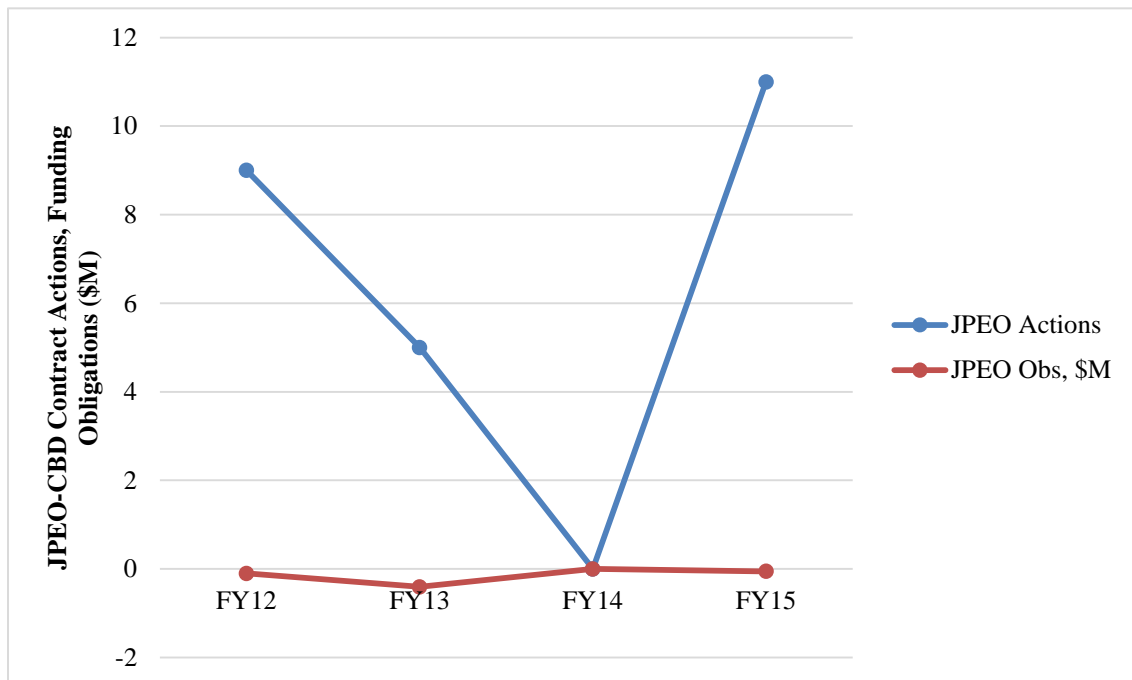


Figure 11. ACC-Belvoir Contract Actions and Funding Obligations for JPEO-CBD, FY12-FY15

b. ACC-Edgewood

ACC-Edgewood, located at Aberdeen Proving Ground, MD processed 1,020 contracting actions for JPEO-CBD between FY12 and FY15. The overall JPEO-CBD funding obligations total \$958.8M. This data is presented in Figure 12.

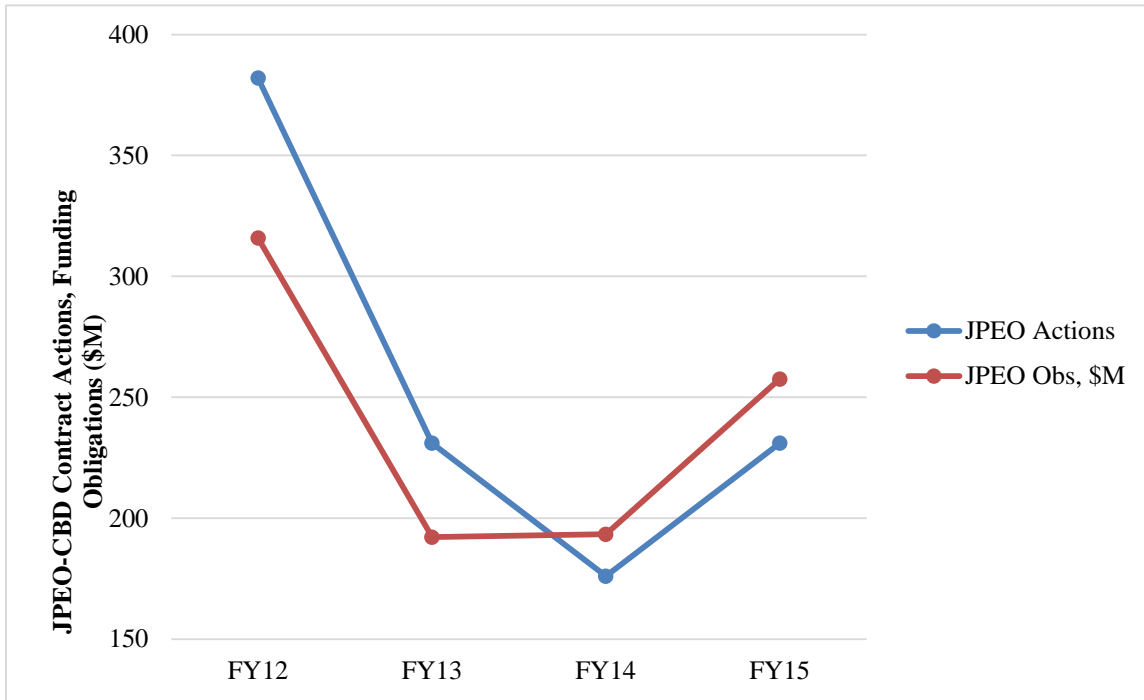


Figure 12. ACC-Edgewood Contract Actions and Funding Obligations for JPEO-CBD, FY12-FY15

c. ACC-Natick

ACC-Natick, located in Natick, MA, processed 4,300 contracting actions for JPEO-CBD between FY12 and FY15. The overall JPEO-CBD funding obligations total \$1,264.6M. This data is presented in Figure 13.

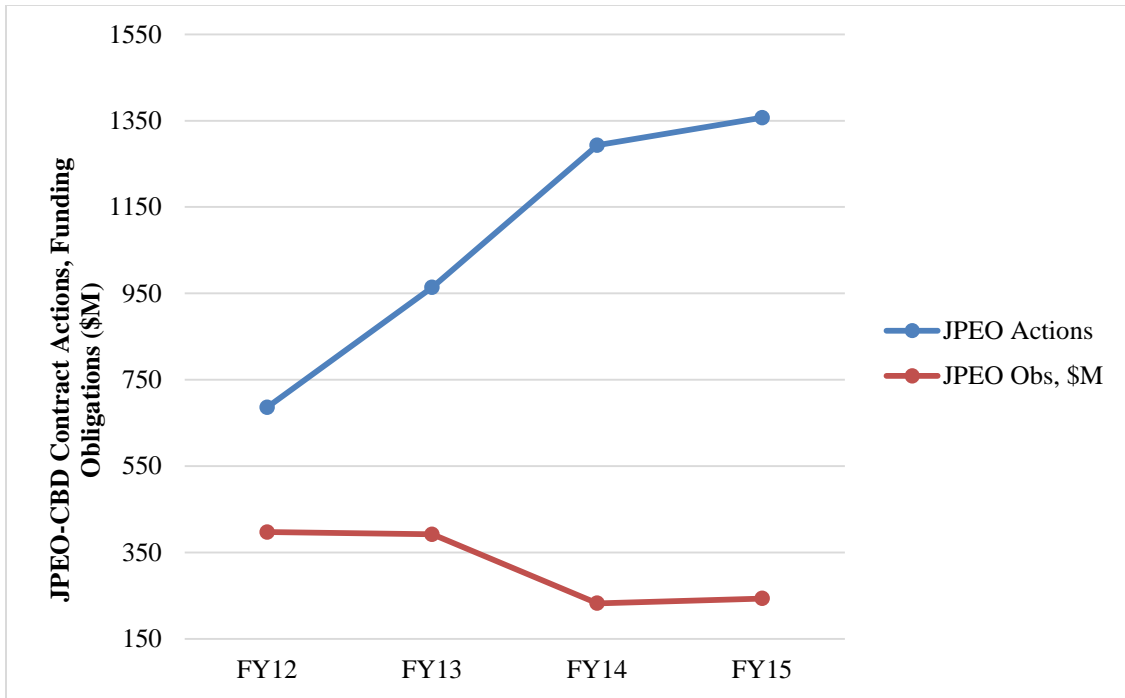


Figure 13. ACC-Natick Contract Actions and Funding Obligations for JPEO-CBD, FY12-FY15

d. ACC-APG Tenant

ACC-APG Tenant, also located at Aberdeen Proving Ground, MD, processed sixty-five (65) contracting actions for JPEO-CBD between FY12 and FY15. The overall JPEO-CBD funding obligations total \$5.0M. This data is presented in Figure 14.

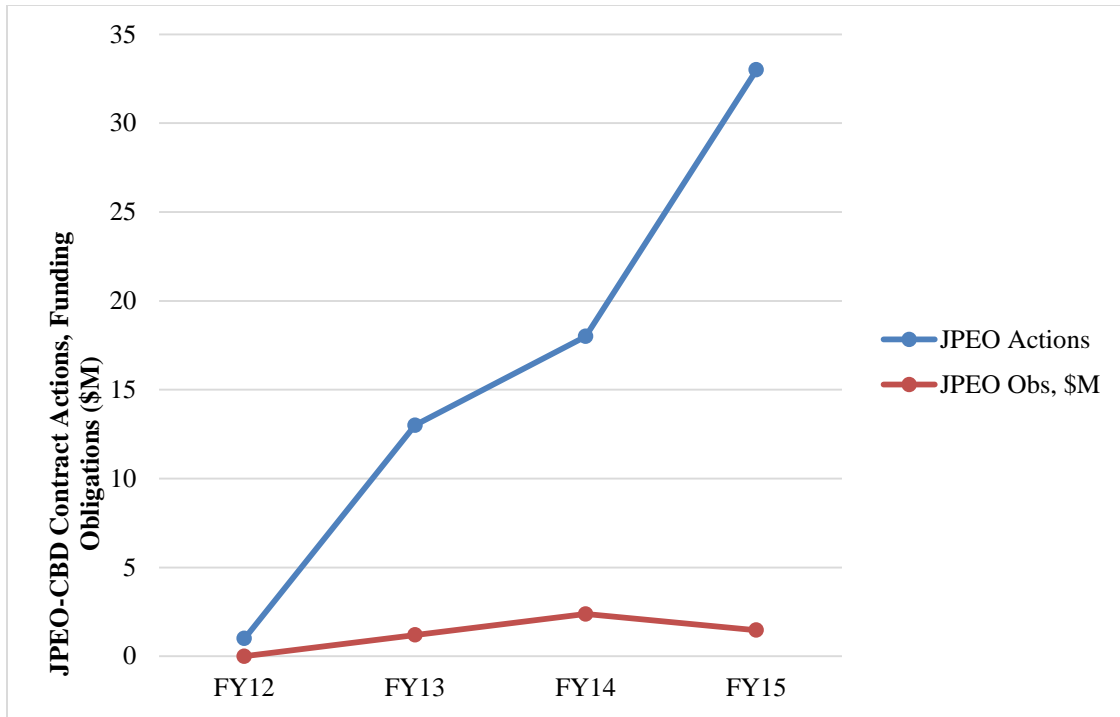


Figure 14. ACC-APG Tenant Contract Actions and Funding Obligations for JPEO-CBD, FY12-FY15

e. ACC-Combined

For a more comprehensive look at the four (4) divisions that service JPEO-CBD most often, data for these divisions, hereafter referred to as APG-Combined, is combined and presented in Figure 15.

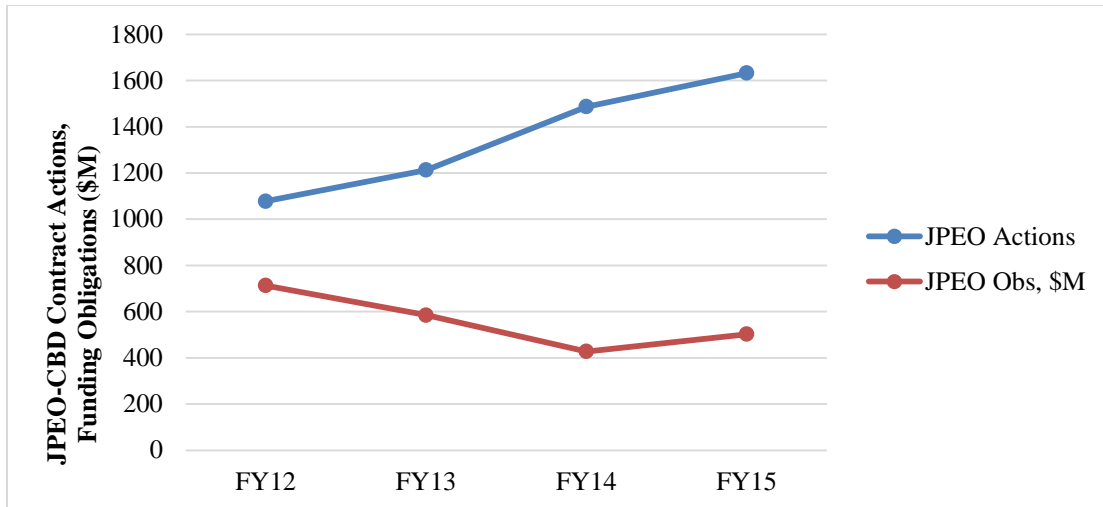


Figure 15. ACC-Combined Contract Actions and Funding Obligations for JPEO-CBD, FY12-FY15

6. JPEO-CBD Contractual Workload Analysis

Figures 9 through 15 show a variety of data and trends. First, compare the total number of contract actions of ACC-APG versus the number of contract actions completed for JPEO-CBD (Figure 9). The number of contract actions performed by ACC-APG appears to have steadied over FY13-FY15, while the number of JPEO-CBD contract actions has continued to increase.

Without insight into the full scope of programs ACC-APG supports, it is difficult to determine why the number of contract actions at ACC-APG has leveled off. One possibility is that there is less work being performed by contractors as funding resources have become scarcer, meaning that fewer contract actions are required to initiate or continue work. Another possibility is that various program offices have become more efficient in their contracting approach, and thus require fewer actions to complete the planned effort.

The growth in number of JPEO-CBD contract actions shown in Figure 9 is clearer. In the first quarter of FY13, JPEO-CBD issued its first omnibus contract. The JPEO-CBD designed its Omnibus Program, Engineering and Technical Support services (OPETS) mechanism to meet the intent of BBPs 1.0 and 2.0 by reducing overhead costs

across the portfolio and increasing competition and flexibility. Task orders are awarded as Firm Fixed Price awards, which reduces the risk to the government.

Through ACC-Natick, JPEO-CBD issued seventy (70) contract awards through OPETS. Figure 13 shows the 30% growth in number of contract awards between FY12 and FY13 at ACC-Natick, due largely to the initial OPETS award. However, the total amount of funding awarded by ACC-Natick in the same time period has fallen. It is difficult to draw conclusions on the cause of the decline in obligations, and whether or not it is a consequence of the BBP initiatives and acquisition reform efforts. This decline in obligations may also be due to declining JPEO-CBD total obligation authority (TOA) in those years.

Figure 10, showing ACC-APG and JPEO-CBD funding obligations, provides a similar comparison. Between FY12 and FY15, total funding obligated by ACC-APG shows a clear downward trend beginning the year that BBP 2.0 was released, although it is difficult to attribute this trend to the measures that BBP 2.0 focused on. As with the ACC-Natick data, possible explanation could be that obligations decreased due to declining TOA. Further analysis is needed to determine if there is a correlation between the reforms implemented with BBP 2.0 and the downward obligation trend at ACC-APG. There is also no apparent reason for the increase in JPEO-CBD obligations in FY15, as the FY15 TOA did not increase over prior years.

Taken individually, Figures 11–14 do not show any clear trends. Combined in Figure 15, however, the data becomes clearer. Between FY12 and FY15, the number of contract actions attributed to JPEO-CBD increased, while the overall funding obligations decreased over the same time period.

One of the likely causes of this trend is the BBP 1.0 requirement to develop the cost estimate showing what the program “should-cost.” Should-cost estimates target controlling program cost growth. Within the CBD enterprise, the new should-cost requirement presented the JPEO and JPMs with additional challenges; both the JPMs and the contractors now need to develop two (2) cost estimates. This manifests in the data above as ACC-Combined contracting officers had to issue additional contract

modifications regarding the requirement without an increase in funding obligations. This demonstrates that, at least in the short term, BBP 1.0 did not improve efficiency in the acquisition process through the use of should-cost management. Instead, workload to execute the program increased.

Although these comparisons indicate that BBP 1.0 rather than the 2015 DoDI 5000.02 caused a downturn in program efficiency, it is essential to note that one of the primary objectives of the DoDI 5000.02 is to codify policy and guidance changes made after the 2008 DoDI 5000.02. This indicates that, at a minimum, the 2015 DoDI 5000.02 will not have a positive impact on program efficiency.

IV. CONCLUSIONS AND RECOMMENDATIONS

As fiscal constraints continue to impinge upon the DOD's ability to field capability to the warfighter, changing the way the DOD does business becomes increasingly important. The 2015 DoDI 5000.02 is the most recent acquisition reform effort to increase acquisition process effectiveness and efficiency.

Data from the 2013 Annual Report, provided in Chapter III.A.1, shows that DOD contracts have been trending toward decreasing cost for over twenty (20) years—well before 2015. This demonstrates that the 2015 DoDI 5000.02 is likely to have limited effect on driving contract costs down throughout the DOD, as they began declining long before the release of the updated DoDI 5000.02.

Although more work and understanding are needed to continue to reduce the number of critical and significant Nunn-McCurdy breaches described in Chapter III.B.1, the Department of Defense has implemented stronger guidance and policies through the release of DoDI 5000.02. Specifically, the DOD 2015 report states that “the DOD has made significant progress in improving our systems engineering practices.” There is not yet enough data available to support the assertion that significant progress has been made, although it may in time, if metrics can be established to verify that effects can be demonstrated.

Within the JPEO-CBD, it is difficult to determine the likely effect on contract cost. Data presented in Chapter III.C.1 provides limited insight into how DoDI 5000.02 may have influenced the representative program schedules. While the increased schedules may have been due to the 2015 document, there are also other factors in play.

A more clear indication that DoDI 5000.02 may not have the desired effect of greater efficiency is described in Chapter III.C.3. There has been a 20% increase in the number of documents or document updates required at various milestones and decision points. This is not likely to increase efficiency within the acquisition process. More documents require more time and/or more resources to prepare and staff the documents. The author does concede that some of the changes will likely increase the effectiveness of

a program and facilitate positive outcomes, such as adding OMS/MP documentation requirement. Overall, however, additional documentation requirements will likely cause negative schedule impacts.

The data presented in Chapter III.C.5 demonstrate that CBD enterprise contract costs have been decreasing over prior years. Between FY12 and FY15, the number of contract actions attributed to JPEO-CBD increased, while the overall funding obligations decreased over the same time period. In other words, increased contract workload obligated fewer funds. Further study will be needed in future years to determine what impact DoDI 5000.02 will have on these trends.

Within the JPEO-CBD community, this latest effort in acquisition reform is likely to produce few positive changes for program efficiency or effectiveness. While the instruction was developed to “increase emphasis on process intent and thoughtful program planning rather than on rules and compliance,” this is subjective (NDIA, 2015, p. 2). The JPEO-CBD has begun placing more emphasis on tailoring each program, yet program tailoring had also been discussed in previous versions. Additionally, tailoring often involves requesting waivers for certain requirements, which may not serve to drive efficiency into the program as waiver processes can be equally time-consuming. Moreover, one needs to determine what metrics may be suitable for measuring process intent and thoughtful program planning to determine whether the 2015 DoDI 5000.02 has been successful.

Additionally, as the data and analysis indicate, there has been an increase in the work required to bring programs through development and into fielding. While poor management performance remains the leading cause of Nunn-McCurdy program breaches, program and contracting offices are required to use additional resources to accomplish less work as the DOD struggles to do more without more.

Developing new acquisition reform efforts every year has not delivered capabilities to the warfighter faster. In many cases, these efforts may have had the opposite effect. The DOD would benefit from allowing additional time between issuing new guidance to allow for increased analysis regarding whether the previous reform

efforts were successful in their intent. Additional study time would allow the DOD to develop more effective reform initiatives. This can be difficult to accomplish, however, given that acquisition occurs in a constantly changing environment.

One limitation of this project is that trends can be difficult to analyze, as most of them are based on lagging indicators such as historical cost and schedule trends. The DOD needs to determine realistic and feasible leading indicators that can predict outcome and instill proactive effort rather than the reaction to emerging problems that is necessary when using lagging indicators.

Another limitation is the lack of discussion on tailoring various aspects of a program from inception through development to fielding. This project focused solely on contracts and funding. Other areas of study that might provide additional insight are areas such as test and evaluation, logistics, and systems engineering. For example, one of the known complications of JPEO-CBD program schedules and funding are the test requirements imposed by the Army test community. JPEO-CBD programs are largely ACAT III, yet are tested to the level and with the thoroughness of ACAT I programs. These requirements drive both the schedule and the resources required, and should be studied in further detail to provide greater insight into how the DoDI 5000.02's emphasis on tailoring might help deliver capabilities to the warfighter more rapidly.

Finally, measuring the effectiveness of acquisition reform is difficult due to a number of factors. Each organization or program office conducts acquisition differently; targeting one variable for change and measuring the success of that change across different military services and organizations is impossible. This is especially true when data is not collected nor maintained in a standard manner.

Therefore, one recommendation is to consider creating a standard method for data collection from all programs, regardless of size. Although the Defense Acquisition Management Information Retrieval (DAMIR) database is intended to be a repository for acquisition program information, it is used only for MDAPs and Major Automated Information Systems (MAIS) programs. Expanding the DAMIR database to include more programs would provide a more robust look at the data and trends of all acquisition

efforts rather than the large-scale efforts of MDAPs and MAIS programs. This additional data collection burden placed on small program offices requires a cost-benefit analysis prior to policy change implementation.

Additionally, while the *Performance of the Defense Acquisition System* reports were valuable in discussing performance trends, specifically in contract performance, it is difficult to understand whether these analyses compare directly to smaller programs. As with the DAMIR database, these reports focus only on MDAP and MAIS programs. One recommendation is to consider expanding the scope of these reports in future iterations to include the smaller acquisition programs. Although adding significant burden to workload of level II and III programs, this would allow the DOD acquisition community to better understand the implications and outcomes of reform measures more completely.

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