

***Defense Science Board***  
***2005 Summer Study***  
  
on  
  
**Transformation:  
A Progress Assessment**



**VOLUME II: SUPPORTING REPORTS\***

**April 2006**

**Office of the Under Secretary of Defense  
For Acquisition, Technology, and Logistics  
Washington, D.C. 20301-3140**

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The DSB is a Federal Advisory Committee established to provide independent advice to the Secretary of Defense. Statements, opinions, conclusions, and recommendations in this report do not necessarily represent the official position of the Department of Defense.

This report is unclassified.



DEFENSE SCIENCE  
BOARD

OFFICE OF THE SECRETARY OF DEFENSE  
3140 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3140

12 April 2006

MEMORANDUM FOR UNDERSECRETARY OF DEFENSE (ACQUISITION,  
TECHNOLOGY, & LOGISTICS)

SUBJECT: Report of the Defense Science Board (DSB) 2005 Summer Study on  
Transformation: A Progress Assessment (Volume II)

I am pleased to forward Volume II of the final report of the Defense Science Board 2005 Summer Study on Transformation: A Progress Assessment. This volume contains supporting papers on the study which examined the Department of Defense's progress towards transformation in combat operations and operational capabilities, with recommendations on how to meet emerging challenges. These papers provide in-depth discussion of some of the issues that underlie the recommendations offered in the main report for improving the Department's organizational capabilities to meet the challenges of the 21<sup>st</sup> century.

I encourage you to review their report.

A handwritten signature in black ink, reading "William Schneider, Jr.", is positioned above the typed name.

Dr. William Schneider, Jr.  
DSB Chairman



## TABLE OF CONTENTS

|                                                             |     |
|-------------------------------------------------------------|-----|
| PART 1: DoD BUSINESS PRACTICES PANEL REPORT .....           | 1   |
| PART 2: JOINT CONCEPTS PANEL REPORT .....                   | 115 |
| PART 3: MULTI-AGENCY INTEGRATION PANEL REPORT .....         | 169 |
| PART 4: FORCE CAPABILITY EVOLUTION PANEL REPORT .....       | 197 |
| PART 5: DEFENSE INDUSTRY AND ACQUISITION PANEL REPORT ..... | 241 |
| PART 6: HUMAN RESOURCES PANEL REPORT .....                  | 283 |



## PART 1: DoD BUSINESS PRACTICES PANEL REPORT

|                                                |    |
|------------------------------------------------|----|
| Chapter I. Overview .....                      | 3  |
| Chapter II. Business Planning.....             | 9  |
| Chapter III. Logistics .....                   | 15 |
| Chapter IV. Personnel.....                     | 33 |
| Chapter V. Management Information Systems..... | 37 |
| Chapter VI. Agency Support.....                | 41 |
| Chapter VII. Recommendations.....              | 45 |

### PART 1 APPENDICES

|                                                                               |     |
|-------------------------------------------------------------------------------|-----|
| Appendix A. Panel Membership.....                                             | 49  |
| Appendix B. Guest Briefers.....                                               | 50  |
| Appendix C. Acronym Index.....                                                | 52  |
| Appendix D. 1998 DoD Budget Breakdown .....                                   | 55  |
| Appendix E. Memo on COO Duties .....                                          | 107 |
| Appendix F. Memo on Defense Business System Management Committee (DBSMC)..... | 108 |
| Appendix G. Department of Defense Appoints.....                               | 112 |
| Appendix H. Market-Based Sourcing Results.....                                | 113 |





## I. OVERVIEW

### *INTRODUCTION*

One of the truly incredible benefits of Society in the United States has been the ability to create, stimulate, and propagate the continued efficiency and productivity of the industrial and business community in the private sector to power the economy. The Department of Defense (DoD) has a great opportunity to capitalize on the practices of this community. The Business Management processes of the Department are complicated and conflicting, and the systems that support them are inadequate, relative to the private sector. Improvement in this area offers a great opportunity for the Department to operate more effectively and efficiently to provide national security to its citizens.

The objective of the present study is to “Assess the Department’s progress towards transformation in areas of business processes, their interrelationships, their management structures, and recommend actions for improvements”. The business process areas considered by the Task Force began with the most critical area – Development of the strategy and objectives of the Department for the missions it has to support for the National Security objectives; and then moved to the Use and Management of the Department’s Resources (money and people) to support those objectives. The Task Force’s studies included the management and process systems that cover the areas of finance, acquisition, logistics, personnel, and medical.

Task Force membership is shown in Appendix A. The Task Force is composed of leaders with both private sector and government experience at senior levels.

### *KEY ASSESSMENTS*

The Task Force’s review concluded the following key assessments of the business processes and the systems that support them:

1. The Department does not have an effective multi-year business plan that aligns the resources of the Department, both personnel and financial, to its missions.
2. The capability-needs process continues to be dominated by the force providers and the Joint Staff, and is under-represented by the COCOM needs.
3. Logistics performance is well behind world-class standards in responsiveness, dependability, cost, and inventory management. The system is sub-optimized for each structural organization’s accountability, and many items are lost or mishandled at organizational hand-offs.
4. The allocation of the personnel resources of the Department, both civilian and military, does not reflect on mission priorities.
5. The Department management does not focus on outputs and metrics of performance with the same energy and focus as it does on acquiring resources; and accountability for performance-to-objectives is weak.

6. The Department needs integrated business management systems to support the management of resources and tracking for their use. The current systems are not interoperable and they do not reflect best practices.
7. The Department needs better methods for measuring and assuring Defense Agencies' performance.

In the remainder of this report the Task Force reviews the status of the business management processes and systems in the Department; expands on the above observations; and makes key recommendations based on these assessments. The Task Force's recommendations are summarized below.

## *FIVE MAJOR RECOMMENDATIONS*

The Department should:

1. Create a resource-constrained, output-metric-based, multi-year business plan (with effective COCOM involvement).
2. Create a Joint Logistics Command to assure end-to-end optimization of the management of the DoD supply chain.
3. Achieve better personnel resource utilization by shifting all non-inherently governmental support to competitive sourcing.
4. Achieve a horizontally-integrated Defense Management Information System using COTS systems and processes.
5. Enhance the use of customer feedback and commercial best practices for defense agency management by establishing agency management advisory committees.

## *CONSISTENT WITH PREVIOUS DSB STUDIES*

The current task force assessments and recommendations on business practices are consistent with previous Defense Science Board (DSB) studies. The problems of business process transformation have been long standing, and although conceptual solutions are well known, they have been very difficult to accept and implement in the DoD for reasons embedded in complexity, culture, and management.

The 2003 DSB Report on Enabling Joint Force Capabilities recommended changing the PPBE process to have a stronger role for joint priority setting. Three of its recommendations are as follows:

1. Assign and enforce clear responsibilities and accountability for force capabilities among the joint world (Joint Chiefs, Joint Staff, combatant commands); force providers (military departments and defense agencies); and the Office of the Secretary of Defense (OSD).
2. Strengthen the influence of the combatant commanders in identifying joint force needs and setting priorities for filling those needs.
3. This report also recommends that the DoD adopt a multi-year business plan with responsibilities and accountability for mission execution, and a baseline against which performance can be measured.

The 2002 DSB Report on The Impact of e-Business on DoD Acquisition Processes dealt with the IT infrastructure in the DoD and recommended the adoption of commercial software and practices. This study compared DoD systems and practices with those in industry, and concluded that there would be great benefits to having common, interoperable, commercial business software in the Department. Advantages would include lower initial cost, lower maintenance cost, and increased interoperability. Few systems were seen as needing to be service specific.

The 1996 DSB Report on Outsourcing and Privatization recommended shifting all non-inherently-governmental support to utilize competitive forces for better performance at lower costs. Among its conclusions, the report states, “The task force believes that all DoD support functions should be contracted out to private vendors except those functions which are inherently-governmental, are directly involved in warfighting, or for which no adequate private sector capability exists or can be expected to be established.”

There have been three recent DSB studies on Logistics Transformation:

- “Logistics Modernization”, 1996;
- “DoD Logistics Transformation”, 1998; and
- “Logistics Transformation Phase II”, 2001.

In 1996, the DSB Task Force recommended providing “unified and specified” CINCs with the authority and resources to pull required support from the logistics system. In 1998, the DSB Task Force encouraged DoD to empower a logistics systems architect – an owner of the logistics process. The DSB Task Force in 2001 reiterated that unless the logistics system’s architect controls the budget, real improvement will not be possible.

The Task Force’s logistics recommendations are very consistent with these previous studies. Thus, the Task Force’s recommendations are not totally new, as the DSB and others have recommended many before. The question is: why has none of this been done? First, there has been no perceived compelling reason to manage efficiently (similar to P&L in the private sector). Second, decision times are too long, driven in part by risk avoidance and diffusion of authority. Third, the system focuses on allocation of resources to the Service Providers, versus to the mission priorities. Finally, there is little incentive to use output metrics to monitor effective resource utilization. Sub-optimization is more consistent with organizational assignments. In fact, there is little consequence for not meeting – or even setting – targets.

In this report, the Task Force has sought ways to:

1. Focus resource allocation against mission priorities;
2. Implement resource constraints;
3. Implement a mission-based personnel allocation system;
4. Manage using output metrics; and
5. Assure clear accountability.

## *DIRECTIONALLY CONSISTENT WITH DOD LEADERSHIP*

All of the major recommendations contained herein are completely consistent with prior DSB studies, and – very encouragingly – recent actions by the DoD have begun to take significant steps in the directions recommended by this report. Specifically:

1. At the overall management level, making it explicit that the Deputy Secretary of Defense is the COO of the DoD – as recommended by the “Defense Business Board” on June 13, 2005, with the clear delineation of responsibilities (that cover Business management systems modernization, integrated supply chain management, financial management and auditable financial data, DoD personnel, etc. – as shown in Appendix E).
2. Initiating steps toward a more top-down, resource-constrained, multi-year, mission (vs. supplier)-focused, business planning process – including a new PPBE calendar (that links programming and budgeting together).

It can be expected that this new process (initiated over the past year, in response to a 2003 Secretary of Defense-directed study of the DoD resource allocation process, chaired by former USD (AT&L) Pete Aldridge) will meet significant resistance; but it is clearly moving the DoD in the direction advocated by this report’s proposed planning process.

3. Establishment of the “Defense Business Systems Management Committee,” chaired by the DepSecDef and with the USD (AT&L) as the Vice Chair.<sup>1</sup> This group of senior DoD leaders (Services, Agencies, OSD and JCS) will be responsible for assuring “world-class business operations in support of the warfighter.” It is intended to be the “governing board” to assure “cross-Department, end-to-end interoperability of business systems and processes.” Implementation of this “horizontally-integrated,” Enterprise Management Information System (a revised version of the Business Management Modernization Program (BMMP)) has been made the responsibility<sup>2</sup> of the USD (AT&L) – with the full support of the CIO, the Comptroller, the USD (P&R) and the Services and Agencies clearly going to be required for successful implementation.
4. Identifying United States Transportation Command (TRANSCOM) as the responsible organization for DoD’s “synchronized transportation, distribution, and sustainment.” Officially announced on September 25, 2003, TRANSCOM was appointed as the “Distribution Process Owner” (DPO) (see Appendix G for the announced purpose of this change).

While this doesn’t cover the end-to-end full logistics process, since it is focused on distribution, it is an important, and necessary, step.

5. Secretarial direction to “shift non-warfighting military portions to civilians.”<sup>3</sup> When combined with the DoD’s response to President Bush’s Management Initiative #5 (to shift all non-inherently-governmental work to competitive sourcing) these represent a clear step toward a major shift in personnel resources; resulting in a more effective and efficient focus on the DoD mission.

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<sup>1</sup> See Appendix F for full membership and charter.

<sup>2</sup> Via DepSecDef memo dated March 28, 2005.

<sup>3</sup> Refer to Secretary Rumsfeld’s statement before the House Armed Services Committee, February 16, 2005.

6. The DoD has recognized the value of having senior management advisory boards for its defense agencies, and has been working to establish one for the Defense Logistics Agency (which manages an annual budget of \$27 Billion).

However, over the past year, due to political pressure, a number of Defense Agencies have eliminated (or are in the process of eliminating) their advisory boards. Since effective and efficient management of the 14 Defense Agencies is so important to the DoD mission, this report recommends that an external advisory board can be of great value – and the members must be appointed solely on the basis of their expertise.

These six steps are explicitly recognized by the DoD as to the desirability of this report's recommendations. In addition, these six steps are a sign of their necessity, and their achievability with leadership and perseverance. Initial steps are already underway, while recognizing the possibility of encountering severe resistance, especially since they go further than the steps taken to date.

**While these steps are directionally correct, this Task Force believes that they do not go nearly far enough to achieve significant transformation of the management of the Department's business processes to align resources with the Department's missions.**



## II. BUSINESS PLANNING

### *CURRENT DoD FISCAL POSITION*

DoD is in the difficult fiscal position of having to do more with fewer available resources. There is a fiscal train wreck looming on the horizon – federal entitlements/non-discretionary funding is likely to grow in the out-years, which will adversely impact DoD’s available topline. This “discretionary funding challenge” is further complicated by the Administration’s commitment to “fix” (i.e. hold steady) other potential sources of available topline, e.g. tax cuts, as a means to halve the federal deficit by 2009. Given the rising nature of military personnel compensation costs, annual health care costs, and facilities programs, one discovers that a sizable portion of “defense discretionary” spending is not so discretionary. All these factors combine to produce a daunting fiscal environment for the Defense Department.

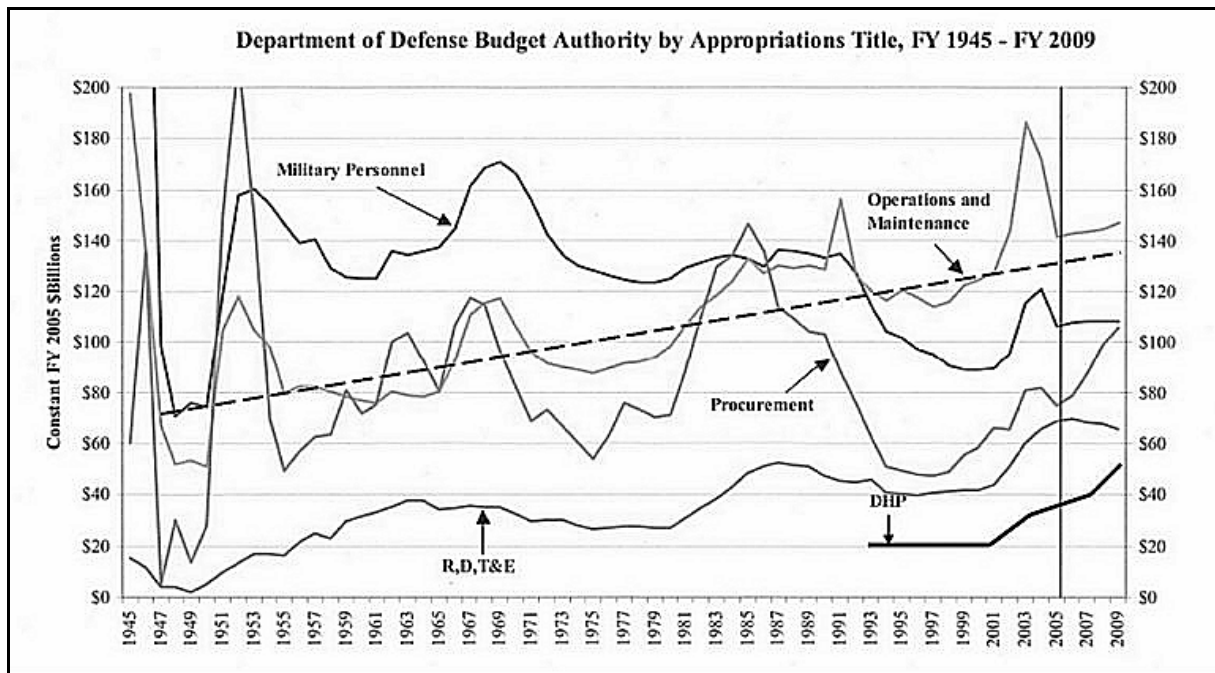


**Figure 1. DoD Defense Budget Authority**

As depicted by the chart, above, there are five pressures concerning DoD budget authority. The first is the fact that MILPERS accounts will be rising for the next decade. The cost of maintaining a highly qualified workforce in a competitive environment ensures that expenditures will continue steady growth. Second, O&M is growing at a rapid rate and will remain a significant expenditure over the near future. Third, RDT&E will continue to move along as weapons development costs increase and Congress receives pressure for continued spending on new programs in their respective districts. Fourth, expenditures for the Defense Health Program (DHP) are rising rapidly. Conversely, procurement is trailing behind its necessary state and full recapitalization will not occur until at best 2018. Fifth, long-term research continues to be cut, to pay for the urgent, short-term needs of the Services. Herein lies the burning platform for genuine transformation.



## AUTHORITY AND ACCOUNTABILITY

Figure 2 simplistically presents the basic definitions of authority and accountability. Key responsibilities are underlined for emphasis. Responsibility and accountability overlap. As an example of that overlap, while it is OSD's responsibility to make overall priority solutions and allocate resources, the SecDef and his staff cannot do that competently without full access to the in-depth expertise of the force providers. Moreover, OSD should also interface closely with the customer, the combatant commanders, to determine force capabilities and needs.

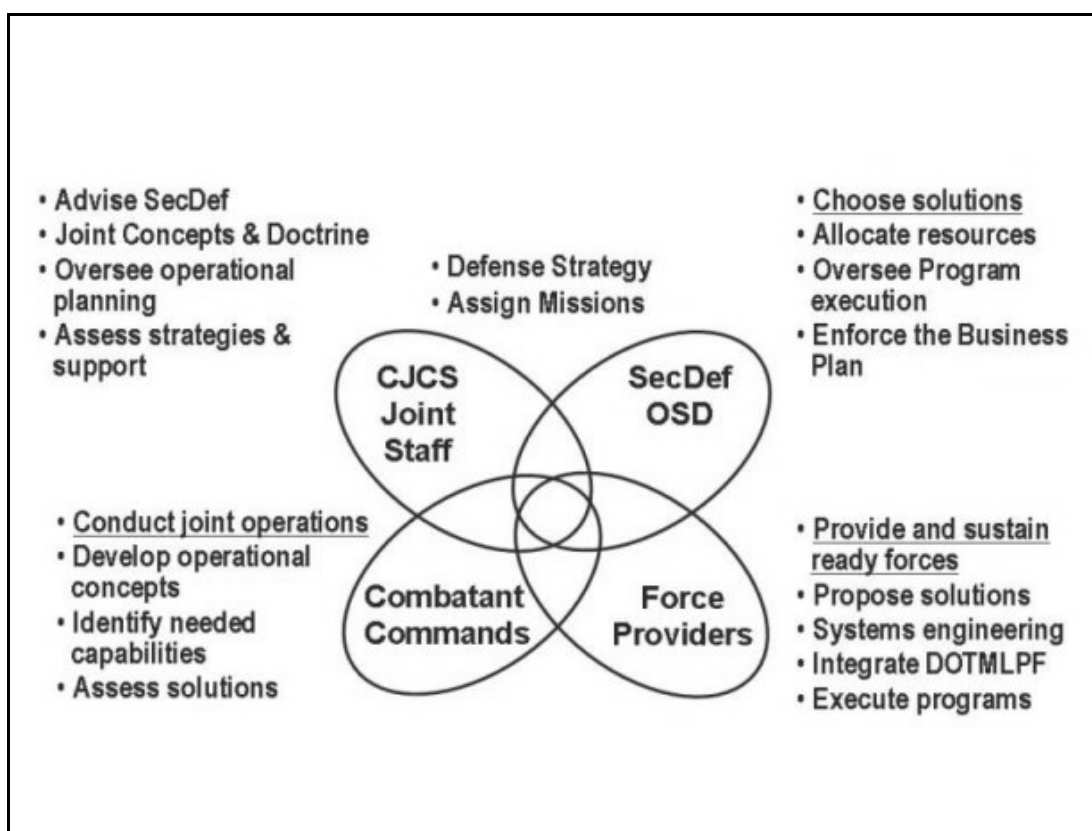


Figure 2. Defense planning and programming lead responsibilities

By contrast, and will be discussed further, the force providers dominate the current process for defining the right capabilities. While Figure 2 represents the desired state, in execution, the force providers collect “requirements,” translate them into recommended individual (and Service-centric) programs, aggregate the proposed programs into proposed budgets, and usher them through the joint, OSD, and Congressional gauntlet. During this process, combatant commanders’ views of their own capability needs and excesses have marginal impact on most major materiel program decisions. The issue is whether the major materiel programs that are identified as new requirements are the most appropriate platforms and weapons to execute an integrated, unified military approach to joint warfighting needs, rather than the approach of each single Service. A similar problem exists regarding the allocation of human resources (as will be discussed later).

It seems clear that the combatant commanders need more influence on the priorities of needed capabilities and associated resources. Only the combatant commanders have operational requirements

that employ all the armed forces as a joint team. The decisions over what to buy for that joint team must be made from a joint perspective, with OSD exercising far more authority on resource allocation, early in the process. The mechanism for ensuring programs deliver the expected value for the resources expended is a multi-year, output-driven DoD Business Plan.

### THE BUSINESS PLAN CONSTRUCT

The interactive, resource-constrained construct for creating and executing the Business Plan is depicted in Figure 3.

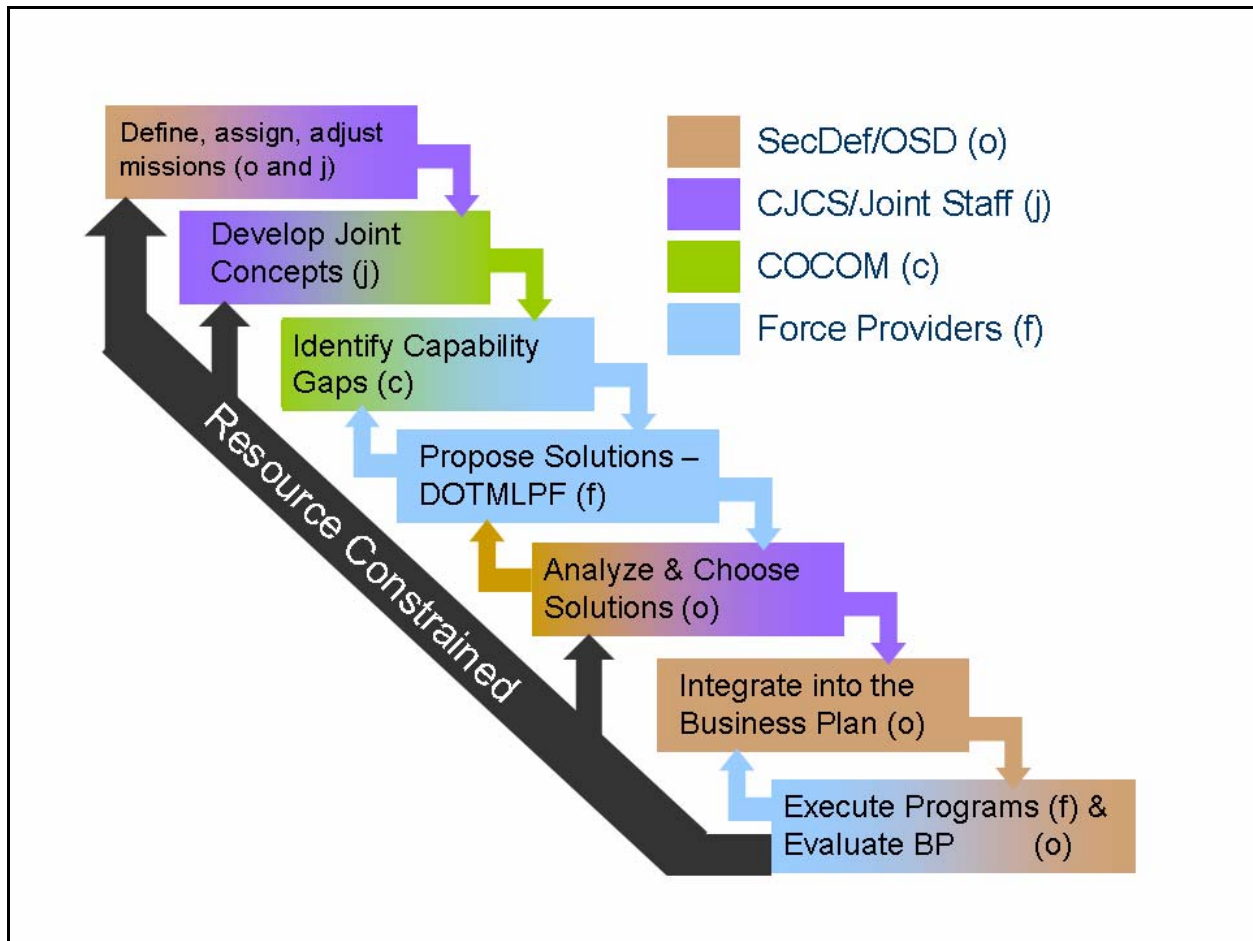


**Figure 3. OSD multi-year, resource-constrained, output-based Business Plan construct**

The critical aspects of the figure include shared responsibilities for most of the activities. Although there is a clear lead role (as indicated by the bold underline font), feedback throughout the process, the thesis is that all activities must be conducted in a resource-constrained environment. The result is disciplined resource allocation to the missions promulgated in the national military strategy and the formulation of military requirements with a mechanism for coherent execution.

## JOINT CAPABILITY REQUIREMENTS AND FINANCING PROCESS

To address the issues of an organization to identify, prioritize, and approve joint capability needs, it is useful to compare the old process, which had been dominated by the military departments and defense agencies, with a more balanced process that recognizes ‘up-front and early’ OSD/JCS/COCOMs resource-constrained decisions, as illustrated in Figure 4.

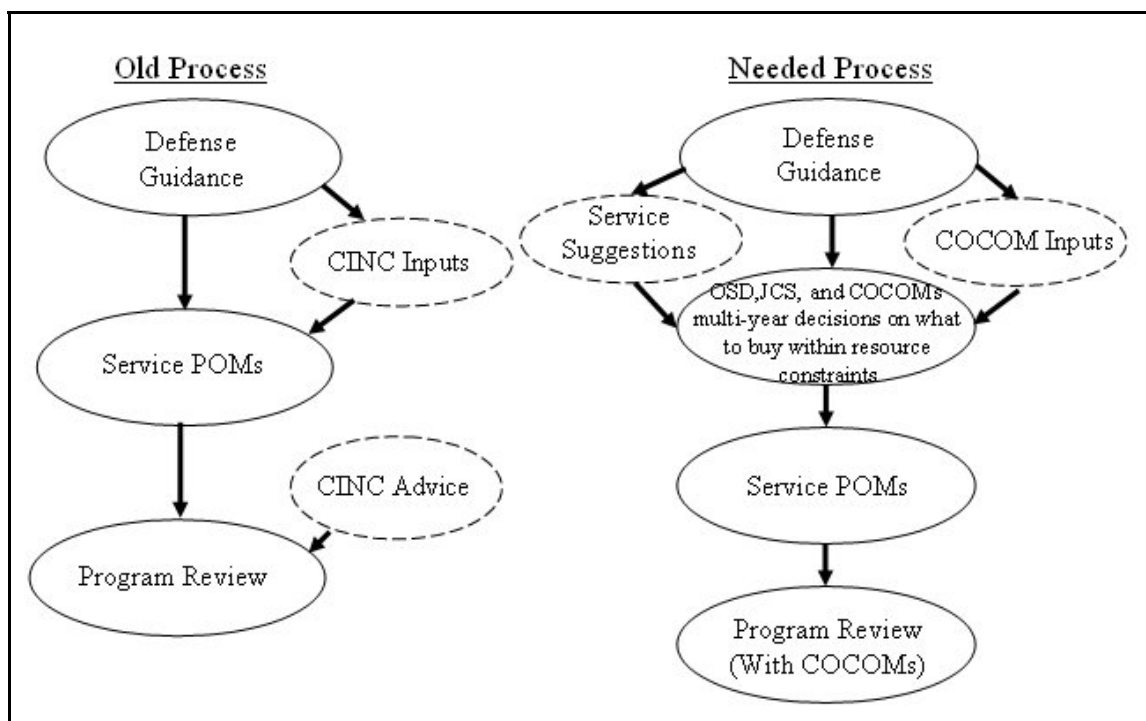


**Figure 4. Moving to a Balanced Process**

The “needed process” (to which the DoD has recently begun to move – as described later) retains the basic responsibility of the force providers to organize, train, and equip forces for deployment by combatant commands. As recognition of their expertise and institutional continuity, the force providers remain the principal source of proposed solutions for long range joint capability needs. The force providers also remain as the competent source of delivering the prioritized, approved capabilities. In this resource-constrained environment, the force providers also have a significant responsibility for providing rough-order costs to fill near-term capability shortfalls to the combatant commands to facilitate resource-informed priorities and trades.

The objective of this “needed process” is to make the combatant commands more equal partners with the force providers from the beginning of the process, particularly when identifying capabilities needed to carry out the Department’s operational missions. The challenge is to create a process that makes these inputs sufficiently credible to (1) strongly influence force planning at all levels; (2) identify from the outset the joint warfighting areas in the Department’s program and budgets so that the needed capabilities can be compared in value, cost, and schedule with single-Service programs; and (3) to do all of this in a resource-constrained environment – which forces the “tough decisions” to be made. This proposed approach also provides a process for translating individual combatant command priorities into a set of prioritized capability needs that are relevant to individual and multiple theater and global operations – that

is, a process for aggregating and harmonizing joint capability needs and for producing a binding, resource-constrained business plan that directs the force providers to create and field the approved capabilities.

### *THE BUSINESS PLAN – RELATING RESOURCE ALLOCATION TO COMBATANT COMMAND MISSIONS*

The SecDef Business Plan describes agreed-upon capability needs and the means for meeting those needs. It portrays and aggregates the military capabilities – joint and component forces – needed to execute the combatant command missions across the range of contingencies covered in the National Defense Strategy. It explicitly identifies the resources allocated to each mission capability set, and to each program within a capability set.

It also provides the metrics, in value terms, which form the basis for overseeing program execution. The value assessment includes capability provided, resources required, and schedule. The value assessment will ultimately be expressed in terms of resources allocated to acquire the capability by a certain date.

The value-cost-schedule linkage is the underpinning for a mission-oriented Business Plan, and valid cost and schedule projections are the keys to executing and enforcing the Business Plan. Those who identify capability gaps and advocate filling them will need access to at least rough estimates of the cost and schedule realities for various solutions to their capability needs. Because of the overall resource-constraint, planners will be required to identify and remove some alternative programs in order to insert theirs into the totals. As alluded to in discussing the “needed process” for joint capability requirements and financing, a closer interface between the combatant commanders and the force providers is necessary to support this iterative priorities and trades process.

The combatant commanders have an essential role in defining new capability needs. This role demands a structure and process that will allow the commanders to provide meaningful inputs regarding the capabilities required to accomplish their missions in the future. These inputs can be meaningful only if based on an understanding of the overall set of capabilities that contribute to a relevant set of missions.

The combatant commands need to go through a process that considers the set of capabilities directly relevant to the force structure needs of their future mission(s). As is the case with the military departments, associating program costs with an individual combatant command mission will be an imperfect approach, but it can be sufficient for the need. Even an imperfect allocation can serve the purpose of applying the combatant commanders’ special understanding to the tradeoff of resources within their allocated resource set. Figure 5 provides a suggested management approach, and Appendix F provides an example of a possible allocation.

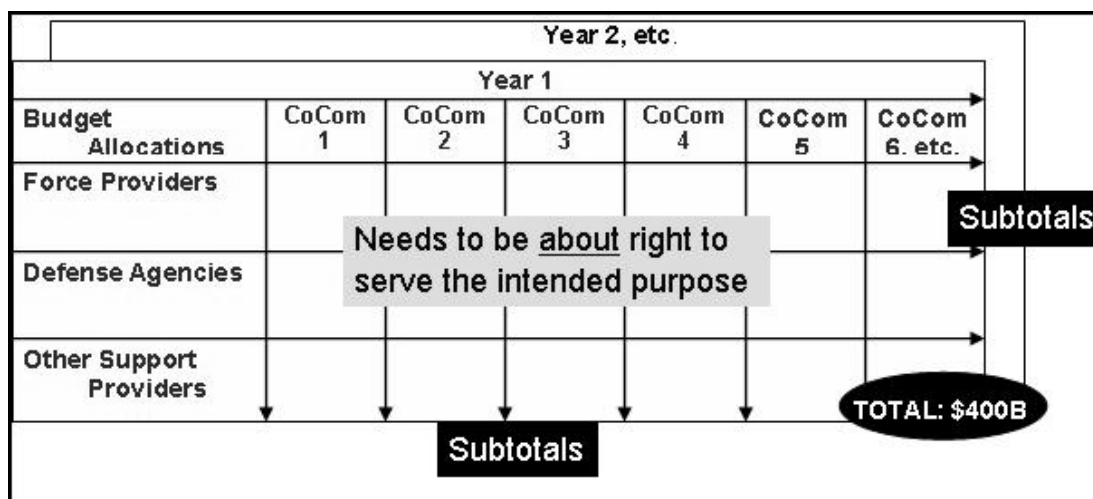


Figure 5. Multi-year, resource-constrained mission capability/resource matrix

## RECOMMENDATIONS

The Business Plan defines the responsibilities and accountability for mission execution in the Department and provides the baseline against which performance can be measured. The techniques for evaluation will include exercises, simulation, analysis, program progress reports, management assessment, and, occasionally, real combat.

The Secretary of Defense and Chairman of the JCS will need to establish a formal process for evaluating the performance of each of the combatant commands, military departments, and defense agencies against the assignments defined in the business plan. The mechanisms for doing this are largely in place: the JROC process, the Defense Acquisition Board milestone approval process, and some aspects of the Joint Capabilities Integration and Development System, to name a few. Hence the primary weakness in enforcing adherence to the current value-cost-schedule relationship is not due to process. It is due to inadequate discipline and the lack of a guiding Business Plan.

Development of a multi-year, output-driven, metric-based Business Plan, updated bi-annually, that accounts for each increment of capability to be acquired, the cost and schedule for that capability, and a process to measure performance against the plan's objectives will provide the discipline necessary to balance investment requirements against (a) available funding and (b) acceptable operational risk to get the greatest value for the taxpayers.

### III. LOGISTICS

#### *LOGISTICS TRANSFORMATION PROGRESS*

Despite decades focused on logistics reform and improvement, DoD logistics has achieved only incremental progress – with logistics responsiveness (for items on the shelf) currently averaging 21 days (and still with considerable uncertainty), vs. best commercial practices that averages 1 to 3 days (with high confidence); and this is in spite of the fact that DoD logistics costs represent 20-22% or more of the Defense Budget, as compared to the best-practice commercial supply chains which range from 4 to 12% of sales per annum. Closing this performance and cost gap provides significant opportunities for DoD. A 21<sup>st</sup> century Defense supply chain for the DoD should focus on control, velocity, leverage, and on demand models; not supply-based and asset intense models (as has been the DoD approach).

In November 1996, the DSB endorsed several recommendations to facilitate systematic improvements in defense strategy pertaining to supply chain and logistics management for the DoD.<sup>4</sup> However, while the Secretary of Defense acknowledged a need to right-size the DoD logistics system, a systematic approach has not been undertaken, despite many years of research findings, reports, and commercial best practices that support such an approach. The following represents key themes from previous reports highlighting the consequences of leaving critical logistics issues unresolved.

Four areas in particular require immediate attention. Specifically, the DoD must: 1) implement a single accountable authority to act as a leader; 2) empower this Chief with the ability to reform the logistics system to deploy and sustain forces; 3) reduce the logistics overhead required by DoD operations; and 4) assess and reduce the risk of logistics infrastructure vulnerabilities.

The following section outlines these four key areas requiring significant improvements, and provides supporting evidence from prior studies and recent DoD experiences to substantiate what needs to be addressed – through renewed aggressive transformation efforts.

- **Accountability and Oversight** – Designate a focal point of authority with accountability.<sup>5</sup>
  - Eliminate duplication of requisitions and circumvention of the supply system by implementing unified modern systems and procedures to address asset visibility issues.
  - Cut costs and improve velocity of distribution to optimize redeployment and surge capabilities.
  - In Kuwait, hundreds of pallets, containers, and boxes of surplus supplies and equipment were shipped by units deploying to Iraq without required content descriptions and shipping documentation. In addition, materiel was found to be in disarray, spread over many acres; including a mix of broken and usable parts and unidentified items in containers that had not been inventoried.

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<sup>4</sup> “Industry Week Value Supply Chain.” *Business and Defense Week*, 2003.

<sup>5</sup> United States. General Accounting Office. Operation Desert Storm: Lack of Accountability Over Material During Redeployment. GAO/NSIAD-92-258; Washington, DC: 23 September 1992.

- o Create an effective theater distribution capability to manage and transport large amounts of supplies and equipment.
- o During Operation Iraqi Freedom, DoD did not have a sufficient distribution capability. Often, distribution of supplies to forward units was delayed because adequate transportation assets, such as cargo trucks and materiel handling equipment, were not available.<sup>6</sup>
- o Develop an effective process for prioritizing cargo for delivery.
- o During Operation Iraqi Freedom, most Army and Marine Corps logistics personnel and equipment did not deploy to the theater in a timely manner – doing so well after combat troops arrived. In addition, a considerable number of logistics support personnel were not adequately trained in operating equipment and managing theater distribution centers.
- o Develop a centralized, lessons-learned knowledge-base to effectively disseminate lessons learned.
- o During Desert Storm, military operations that were different than those trained for, contributed to the logistics support problems. Many such problems were documented by the GAO. For example, the September 1992 report concluded that the lack of container documentation and an inadequate transportation system hindered timely distribution of supplies. Also, logistics efforts were hindered by long processing time for supply requisitions, which resulted in the loss of confidence and discipline in the supply system; the abuse of the priority designation process; and the submission of multiple requisitions.<sup>7</sup> Additionally, recent after-action report from operations in Kosovo concluded that military leaders had limited visibility over supplies, due to the lack of communications support, which was needed to fuse data from multiple collection points.<sup>8</sup> Why did these problems have to be repeated in Operation Iraqi Freedom?
- o “Empower a chief supply chain commander to define and enforce an integrated system.”<sup>9</sup> The 1996 DSB Task Force recommended providing “unified and specified” CINCs with the authority and resources to pull required support from the logistics system.
- o The 1998 DSB Task Force encouraged DoD to empower a logistics systems architect.<sup>10</sup> While USD (AT&L) and the Joint Staff J-4 supported the recommendation, it was not embraced by others in OSD.
- o The 2001 DSB Task Force reiterated that unless the logistics systems architect controls the budget, real improvement will not be possible.<sup>11</sup> The Task Force went on to state that

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<sup>6</sup> United States. General Accounting Office. Operation Desert Storm: Lack of Accountability Over Material During Redeployment. GAO/NSIAD-92-258: Washington, DC: 23 September 1992.

<sup>7</sup> United States. Department of Defense. Conduct of the Persian Gulf War: Final Report to the Congress. Washington, DC: April 1992).

<sup>8</sup> United States. Department of Defense. Kosovo/Operation Allied Force After-Action Report: Report to the Congress. Washington, DC: 31 January 2000.

<sup>9</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Modernization. Washington, DC: July 1996.

<sup>10</sup> United States. Department of Defense. Defense Science Board 1998 Summer Study Task Force on Logistics Transformation Volume I. Washington, DC: December 1998. <<http://www.acq.osd.mil/dsb/reports/logtran.pdf>>.

<sup>11</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Transformation Phase II. Washington, DC: January 2001. <<http://www.acq.osd.mil/dsb/reports/log2.pdf>>

“the position review and approve applicable service and agency logistics transformation projects.”

- **Deployment and Sustainment** – Improve the ability of the logistics system to deploy and sustain forces by resolving the following issues:
  - o According to the 1992 DSB study, preliminary observations on the effectiveness of logistics activities during Desert Storm revealed significant operational problems:
    - Inadequate asset visibility and transportation constraints created a backlog of hundreds of pallets and containers of materiel at various distribution points.
    - \$1.2 billion materials discrepancy between what was shipped to the Army in the theater and the amount acknowledged they received.
    - Millions of dollars in late fees associated with leased containers or replacement of DoD-owned containers due to distribution backlogs or losses.
    - Cannibalization of vehicles and potential reduction of equipment readiness due to the unavailability of parts that either were not in DoD’s inventory or could not be located because of inadequate asset visibility.
  - o Then, the 1995 DSB study found that current warfighting systems/processes have not crossed the ‘digital Rubicon’ and are inadequate.<sup>12</sup>
    - Although naval forces arrived in theater with self-sustained logistic support capabilities, inventories of laser guided bomb kits were limited, and the aviation fuels provided by USAF airborne tankers posed safety problems. Logistics messages were delayed by other operational traffic in the overworked communications system. These problems highlight the importance of balancing demand with a reform agenda requiring a smaller, more effective footprint for the combat logistics force (CLF).<sup>13</sup>
    - The 1996 DSB study stated that DoD should, “Enhance the deployment and sustainment capability of the logistics system.”<sup>14</sup> But when the 2001 DSB Task Force reviewed current initiatives designed to improve the logistics system, they determined that the total effect of such efforts was “modest”. Both reports called on DoD to exploit commercial capabilities and accelerate the pace of change. In particular, recommendations were made to increase reliance on commercial lift in peacetime and during contingencies to improve performance and leverage a superior infrastructure.<sup>15</sup>
- **Demand Reduction** – Reduce the logistics overhead required by DoD operations.

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<sup>12</sup> United States. Department of Defense. Defense Science Board Task Force on Defense Mapping for Future Operations. Washington, DC: September 1995. <<http://www.acq.osd.mil/dsb/reports/defensemapping.pdf>>

<sup>13</sup> “Dessert Storm: Lessons Learned.” 17 September 1997.  
<<http://www.history.navy.mil/wars/dstorm/ds6.htm>>

<sup>14</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Modernization. Washington, DC: July 1996. < <http://www.acq.osd.mil/dsb/reports/logisticsmodernization.pdf> >

<sup>15</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Transformation Phase II. Washington, DC: January 2001. <<http://www.acq.osd.mil/dsb/reports/log2.pdf> >



- o The 1992 GAO study identified that equipment supplied (by the logistics system) was not adequately configured to match unit needs. Frequently, parts in inventories were not sufficient to meet the needs of the units that relied on them (but in other areas, supplies were excessive).
- o The 1996 DSB report recommended increased operational flexibility and improved cost-cutting efforts through reducing the logistics demand.<sup>16</sup>
- o Subsequently, the 2001 Task Force identified significant logistics overhead in DoD operations; however, little was done to curb the inefficiencies. The problem stems from the lack of a long-term perspective that acknowledges full life-cycle and maintenance costs.<sup>17</sup>
- **Logistics Survivability** – Assess and reduce risk of logistics infrastructure vulnerabilities.
  - o Security at ports and distribution centers in theater were not always adequately secured. Army officials have identified numerous cases involving unauthorized access and theft of expensive communications and computer equipment from various distribution centers in Kuwait.<sup>18</sup>
  - o The 1996 DSB Task Force recommendations included adding vulnerability assessments to the CINCs war plans and training exercises and to develop plans to minimize damage of attacks. The report provided a detailed assessment of chemical/biological threats, and reiterated the need to continue supporting the joint program for chemical/biological defense. The report highlighted potentially devastating effects of chemical/biological vulnerabilities in theater logistics.
  - o It also recommended modifying war games and exercises to include courses of action to deal with the chemical and biological threats.<sup>19</sup>
  - o The 2001 DSB Task Force noted that no action has been taken over the past three years to minimize systemic critical logistics infrastructure vulnerabilities. The Task Force advised the Chairman of the Joint Chiefs of Staff (CJCS) to review existing assessments and plans and ensure that prompt remedial actions be taken. In addition, the report stated that future exercises and simulations should include logistics. Conducting gaming and assessment efforts to predict and develop strategy for responding to warfare and chemical and biological weapons is compromised if incorrect assumptions are made that logistics support operates flawlessly.

The aforementioned examples, dating back through Desert Storm, highlight repetitive themes and accentuate fairly specific issues that require resolution/implementation: total asset visibility (implementation of RFID); increased transportation/distribution capacity (incentivize/revitalize

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<sup>16</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Modernization. Washington, DC: July 1996. < <http://www.acq.osd.mil/dsb/reports/logisticsmodernization.pdf> >

<sup>17</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Transformation Phase II. Washington, DC: January 2001. <<http://www.acq.osd.mil/dsb/reports/log2.pdf> >

<sup>18</sup> United States. General Accounting Office. Operation Desert Storm: Lack of Accountability Over Material During Redeployment. GAO/NSIAD-92-258: Washington, DC: 23 September 1992.

<sup>19</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Modernization. Washington, DC: July 1996: page 59. < <http://www.acq.osd.mil/dsb/reports/logisticsmodernization.pdf> >

CRAF/VISA programs); and inadequate communications system (implementation of Global Combat Support System (GCSS) and Enterprise Integrated Data Environment (EIDE)). Additionally, these examples reinforce the failure of DoD improvement strategies to date, which have been primarily focused on incremental improvement within traditionally-defined logistics structures and organizations. Based on recent operational experience in Iraq, emerging transformational concepts of war (such as adaptive networks) and likely future budget limits, the nation can no longer afford this incremental strategy. Logistics is the combat enabler, and failure to transform logistics now will relegate DoD logistics to the Achilles heel of net-centric operations.

To move forward, the DoD must streamline command of the supply chain and logistics operation in order to ensure adequate visibility and authority to effectively orchestrate change. Once a chief supply chain commander (the new Director of the Joint Logistics Command) is appointed to lead both DLA and cover the traditional TransCom mission fully integrated with component logistics structures, a strategy can be developed to improve the logistics system to support and sustain the forces. Implementation of a unified supply chain system will minimize duplication of orders, thereby eliminating artificial demand. Finally, a comprehensive vision of the supply chain system will allow the assessment of risk across the supply chain, while providing flexibility and mitigation to these risks.

## *STRATEGIC IMPERATIVE – WHY NOW?*

The transportation model utilized by DoD has remained virtually unchanged for the last several decades while global corporations such as FedEx and UPS have shifted away from traditional logistics in favor of market-driven (“demand pull”) supply chain management. These efforts have significantly improved performance and reduced operating expenses to record lows (4-12% of budget). Conversely, as noted above, DoD operates under a high cost structure, exceeding 22% of budget. Clearly, DoD’s \$90 billion annual logistics business with over 1.1 million government personnel and 40,000 suppliers has considerable room for improvement.

In the past fifty years almost every military or humanitarian mission has suffered from insufficient logistics planning and execution. Consequently, Defense Secretary Donald H. Rumsfeld designated Air Force General John Handy, as the distribution process owner for DoD in 2003. However, General Handy’s oversight is limited to strategic infrastructure (vs. theater) and does not encompass the entire DoD logistics or distribution system. Consequently this did not resolve longstanding logistics problems. Recently, General Handy stated that the “military lack(s) an efficient supply chain and distribution system to support the warfighter.”<sup>20</sup> The root cause of DoD’s logistics problems is inherent lack of visibility throughout the pipeline; no simple, integrated process; and management of data across 600 disparate systems.

Unnecessary reprioritization of shipments, duplication of orders, and downstream bottlenecks represent several of the logistics imbalances DoD experiences. For example, “boxes of bubble wrap, filing cabinets and DVDs show[ed] up among ‘Triple Nine’ cargo – a number that designates DoD’s

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<sup>20</sup> Sgt. 1st Class Doug Sample, “TRANSCOM Commander Addresses Supply Chain Problems.” *USA American Forces Press Service*, 6 August 2005.  
<[http://www.defense.gov/news/Dec2003/n12112003\\_200312111.html](http://www.defense.gov/news/Dec2003/n12112003_200312111.html)>.

highest priority shipment that usually is assigned to military units in places like Iraq; while other soldiers wait for critical combat gear. Frequently, when supplies were shipped from the United States to Iraq, they arrived in Kuwait relatively quickly, but remained in containers until they could be sorted out and ground transportation could be coordinated. This undermined soldiers' confidence in the distribution system, forcing them to work around the supply shortages, often by obtaining equipment from local vendors or cannibalizing parts from other vehicles."<sup>21</sup>

Therefore, it is strategically imperative for the military to transform its logistics system to better support the warfighter. The old-fashioned military logistics infrastructure and policies cannot keep pace with critical requirements for an agile, responsive, resilient warfighter in our evolving world. In addition, the legacy infrastructure does not conform to industry-leading practices and is far from being cost-effective.

## *THE LOGISTICS OPPORTUNITY*

As noted above, Department of Defense logistics is a \$90 billion annual business that involves over 1.1 million government personnel and 40,000 suppliers. DoD manages \$67 billion in inventory; however, supply data indicates considerable overcapacity and visibility problems. For example, Operation Iraqi Freedom, the largest recent US military action, consumed \$4 billion in inventory (\$2.5 billion used, \$0.5 billion disposed, \$1 billion condemned). Of the 1.5 million items in inventory, 923,000 of the supplies were not requested.<sup>22</sup> Fractionated business processes, supported by over 600 disparate information systems contributed to this problem and continue to impede transformation efforts. Databases supporting complex processes provide poor visibility into information and pipeline data across the entire distribution system. For example, distribution transactions related to procurement frequently can not be reconciled with the financial system. A modern, comprehensive inventory management system with a focus on process, people, and technology would address these impediments and provide support and visibility for all DoD operations; thereby improving responsiveness and lowering supply chain operating costs.

The US Air Force Procurement Supply Chain Management (PSCM) initiative designed to transform disjointed operations has achieved some success. However, additional cost savings can be realized by developing sustainment supply concurrent with initial weapon systems; and financial accountability can be improved if process visibility is enhanced. Clearly, commercially-available supply chain tools to properly manage inventories would be helpful.

Focused, performance-based logistics offers future, real-time net-enabled, integrated information systems, providing accurate, actionable visibility throughout the distribution system. The Focused Logistics Joint Functional Concept (FL JFC) serves as a model for DoD to effectively sustain the services. It delineates key attributes and capabilities; however, many of the components of the model are not feasible with the current logistics support infrastructure and configuration. By addressing these

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<sup>21</sup> Erwin, Sandra I. "Logistics Reforms Aim to Fix Supply Bottlenecks." *National Defense*. January 2004. <<http://www.nationaldefensemagazine.org/issues/2004/Jan/Logistics.htm>>.

<sup>22</sup> "Army Participation in the Defense Logistics Agency Weapon System Support Program." 8 November 2002. <[http://www.army.mil/usapa/epubs/pdf/r711\\_6.pdf](http://www.army.mil/usapa/epubs/pdf/r711_6.pdf)>.

problems, DoD can resolve a considerable number of organization challenges and improve its cost structure.

A recent US Army report indicates that the following process, policy, technology and organizational challenges exist:<sup>23</sup>

- Stakeholders lack visibility throughout the supply chain.
- No single entity manages the supply base.
- Disjointed databases inhibit the creation of an integrated big picture.
- Acquisition practices are adversarial and do not promote development of long term relationships with more capable suppliers.
- Contract monitoring is reactive and organizationally separate since operational data are not linked to contracting data.
- Supply chain managers are responsible for supply chain performance, but are not empowered with the appropriate tools.
- Supply chain managers are not adequately trained in supply chain best practices.
- These process disconnects are symptoms of at least six underlying supply chain management issues.
- No one entity is responsible for managing the supply base and supplier relationships.
- Sourcing is largely tactical rather than strategic.

The supply chain management challenges highlighted above represent an interconnected class of problems that are related to culture, process and technology acceptance. Inherent disincentives created by the organizational structure cause both civilian and military personnel to make decisions without having adequate information. Often personnel portray weapon systems in an overly optimistic manner, which results in later increases in procurement expenses, additional asset management requirements, and a build up of excess inventory. These problems are compounded by inadequate inventory management tools. Lack of technology to track goods through the distribution network, prevents effective scheduling, notification of cargo arrival, and planning in order to ensure that shipments that are received are properly consumed, stored, or maintained. By addressing these limitations, DoD can eliminate many of the bottlenecks that prevent its distribution system from operating like a world-class enterprise. DoD can achieve metrics comparable to large commercial logistics enterprises through the applicable commercial best practices. Figure 6 depicts the differences in cycle times for procurement, distribution, and repairs for large commercial enterprises and the DoD. These large industrial corporations, including Motorola, Boeing, and Caterpillar, have achieved considerable performance advantages over the DoD even though, in many cases, the same or similar products are involved. In fact, Caterpillar's distribution system can turnover product in just a day, while the DoD requires nearly three weeks.<sup>24</sup>

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<sup>23</sup> Paulus, Robert D. "Delivering Logistics Readiness to the Warfighter."  
<[http://www.almc.army.mil/alog/issues/JanFeb04/Delivering\\_Logistics.htm](http://www.almc.army.mil/alog/issues/JanFeb04/Delivering_Logistics.htm)>

<sup>24</sup> <http://gbr.pepperdine.edu/032/supplychain.html>

| Large Opportunity for Improved Performance at Lower Cost |                                |                         |                                 |                                  |
|----------------------------------------------------------|--------------------------------|-------------------------|---------------------------------|----------------------------------|
| Process                                                  | DoD                            | Commercial Companies    |                                 |                                  |
| Distribution<br>(for in-stock items)                     | 21 days<br>(DoD average)       | 1 day<br>(Motorola)     | 3 days<br>(Boeing)              | 2 days<br>(Caterpillar)          |
| Repair<br>(cycle time)                                   | 4-144 days<br>(DoD average)    | 3 days<br>(Compaq)      | 14 days<br>(Boeing electronics) | 14 days<br>(Detroit Diesel)      |
| Repair<br>(shop time)                                    | 8-35 days<br>(Army tank/truck) | 1 day<br>(Compaq)       | 10 days<br>(Boeing electronics) | 5 days<br>(Detroit Diesel)       |
| Procurement<br>(administrative lead time)                | 88 days<br>(DLA)               | 4 days<br>(Texas Inst.) | 0.5 days<br>(Portland General)  | Minutes<br>(Boeing, Caterpillar) |

Source: RAND, Others  
(some of this data are from 1996 DSB Summer Study)



**Figure 6. Comparison of DoD and Commercial Supply Chain Performance**

## *PERFORMANCE BASED LOGISTICS (PBL)*

Historically, DoD's acquisition and sustainment metric focused on detailed logistics elements and internal processes, which often resulted in neglect of warfighter requirements. The Integrated Logistics Support model realigns DoD's strategy with military requirements in a coordinated approach. The PBL balanced approach – which focuses on output measures of weapon system availability for military operations (vs. internal logistics metrics), and utilizes contractor support wherever most effective – carefully considers acquisition requirements and sustainment-support issues creating a linkage between supportability measures and warfighter needs. PBL provides greater flexibility because it incorporates a hybrid approach—the best of DoD and the private sector.

Application of a lifecycle model firmly links acquisition and sustainment activities into an integrated process. The approach resolves many longstanding disincentives and short-term tactical maneuvering by creating a structure that shifts focus to long-term relationships. Ideally, according to the Center for the Management of Science and Technology, at the University of Alabama in Huntsville, PBL promises, “an integrated acquisition and sustainment strategy for enhancing weapon system capability and readiness, where the contractual mechanisms will include long-term relationships and appropriately-structured

incentives with service providers, both organic and non-organic, to support the end user's (warfighter's) objectives.”<sup>25</sup>

However, a combination of cultural, political, and structural problems has prevented many new and existing programs from successfully implementing PBL. Figures 7 and 8 indicate the leading obstacles obstructing PBL efforts, as well as those that enable it. Most PBL implementation failures are associated with one of the following problems: funding, regulatory, culture, infrastructure, data rights, inadequate training, and lack of depot incentives. DoD has already achieved over \$700 million in savings from the use of a prime vendor program and other inventory-related reduction efforts for defense medical supplies through PBL.<sup>26</sup>

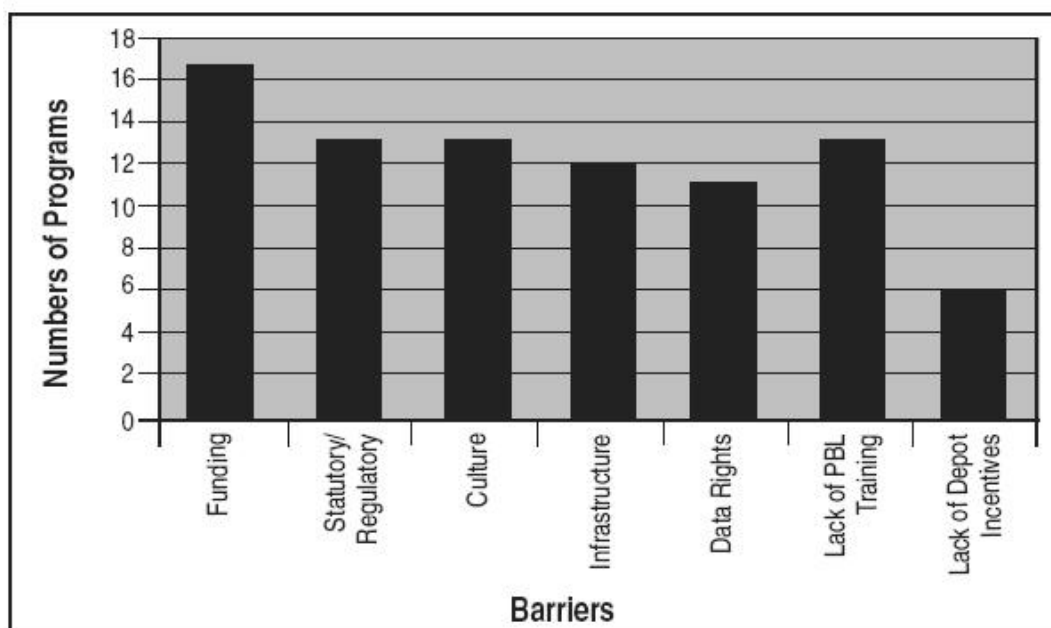


Figure 7. Barriers to PBL

<sup>25</sup> Devries, Dr. Hank J. “Performance-Based Logistics—Barriers and Enablers to Effective Implementation.” <http://www.dau.mil/pubs/arq/2005arq/2005arq-37/DEVRIES.PDF>.

<sup>26</sup> Outsourcing DOD Logistics: Savings Achievable But Defense Science Board's Projections Are Overstated (Letter Report, 12/08/97, GAO/NSIAD-98-48). <http://www.globalsecurity.org/military/library/report/gao/nsiad98048.htm>

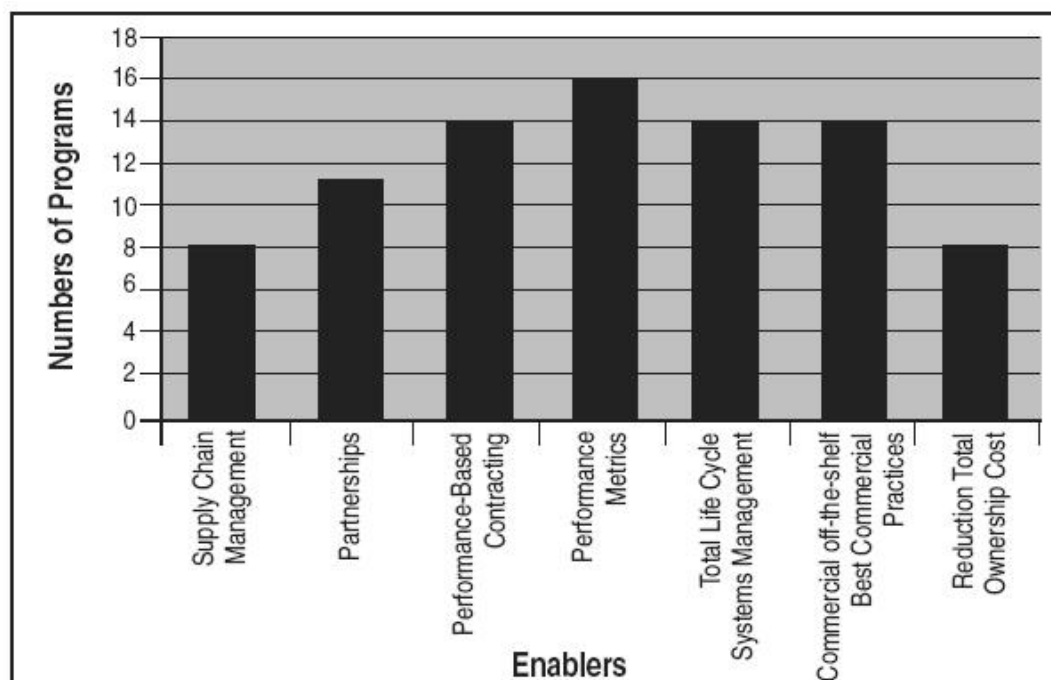


**Figure 8. Enablers to PBL**

DoD has conducted several PBL pilot projects. The Navy has undertaken an aggressive program to demonstrate the effectiveness of PBL. The Services are working in conjunction with each other to implement PBL on some joint programs; and the Navy is leading this effort. Thus far, implementation of this new logistics strategy has significantly increased product availability and reliability through technology insertion and obsolescence management, while (simultaneously) significantly lowering total cost. Applying this set of commercial practices – such as common packaging and shipping, technology, and augmenting existing support structures – has proven the benefits of utilizing contractors, and is an initial step towards a Contractor Logistics Support (CLS) model. PBL significantly improved results because suppliers gained inventory management control and visibility (including monitoring of stock levels, configuration control, orders/receipts/stocks/issues). In these cases, the Navy closely monitors supplier performance to ensure contract requirements are achieved.<sup>27</sup>

The Navy's success with PBL serves as a model for other programs in the Navy and the other Services to follow. Figure 9 illustrates significant improvements in five Navy programs. Prior to implementation of PBL, confidence in materials availability resulted in cannibalization of materials as well as aggressive acquisition practices by military personnel. However, in the post-PBL environment, supplies were more accessible, with availability rates exceeding 85%. In addition, logistics response time was reduced from months to days.<sup>28</sup>

<sup>27</sup> Implementation of Performance Based Logistics (PBL). 16 November 2000.

<<http://www.dtic.mil/ndia/systems/Kuehn.pdf>>

<sup>28</sup> 2005 Defense Science Board Summer Study: Current Logistics Systems Assessment.

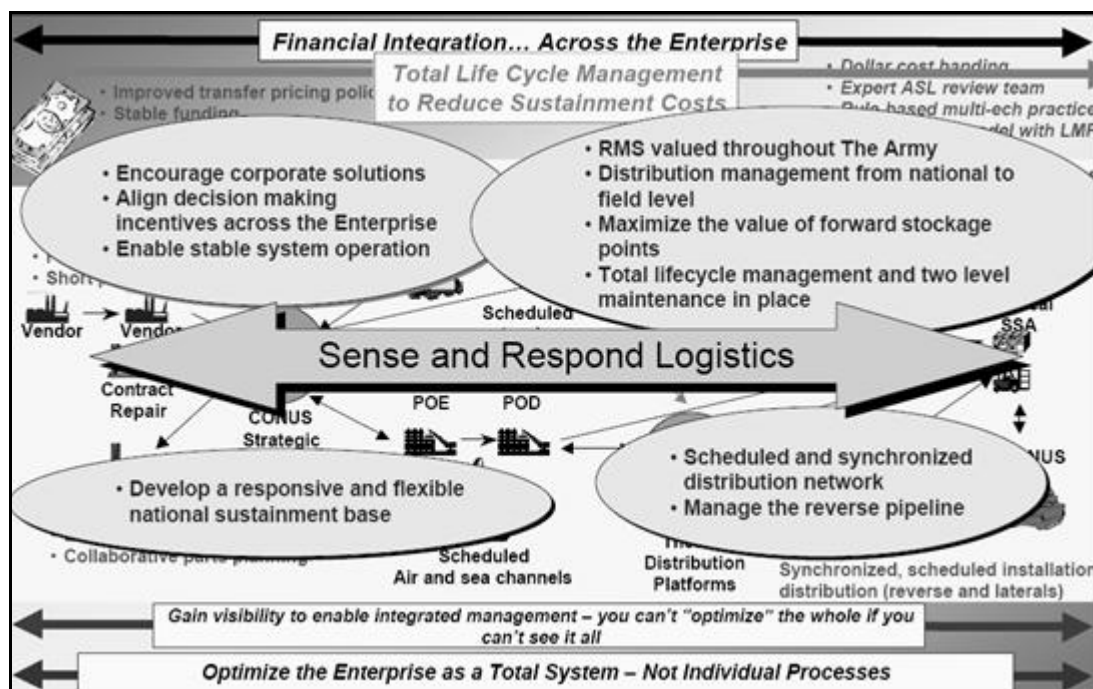
| <b>Navy Program</b>                                                                                                  | <b>Material Availability</b> |                 | <b>Logistics Response Time</b> |                               |
|----------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|--------------------------------|-------------------------------|
|                                                                                                                      | <b>Pre-PBL</b>               | <b>Post-PBL</b> | <b>Pre-PBL</b>                 | <b>Post-PBL</b>               |
|  F-14 LANTIRN                       | 73%                          | 90%             | 56.9 Days                      | 5 Days                        |
|  H-60 Avionics                      | 71%                          | 85%             | 52.7 Days                      | 8 Days                        |
|  F/A-18 Stores<br>Mgmt System (SMS) | 65%                          | 98%             | 42.6 Days                      | 2 Days CONUS<br>7 Days OCONUS |
|  Tires                              | 70%                          | 85%             | 28.9 Days                      | 2 Days CONUS<br>4 Days OCONUS |
|  APU                                | 65%                          | 90%             | 35 Days                        | 6.5 Days                      |

**Figure 9. Performance Based Logistics Availability and Response Time**

Piloting PBL has resulted in a number of successes for the Navy; but a logistics transformation that optimizes enterprise-wide resources requires organizational, process and technological changes. Nonetheless, significant performance improvements, such as advanced “sense and respond” capabilities are achievable to meet the warfighter’s needs, while reducing inventory maintenance and related costs. “Sense and Respond Logistics”<sup>29</sup> aligns decision makers with strategic goals. Accordingly, stable supply operations can be maintained to maximize distribution from the national to field level. In addition, a responsive national sustainment base can be monitored, and the distribution pipeline can be managed from factory to foxhole, and back to warehouse for storage. The Army diagram below, Figure 10, details the value of an integrated DoD distribution system that would apply sense and response capabilities.

<sup>29</sup> Sense and Respond techniques enable an enterprise to dynamically adapt to market conditions for its logistics and supply chain infrastructure.



Figure 10. Sense and Respond<sup>30</sup>

While overcoming product shortages sometimes requires stocking excess inventory, the primary reason why DoD maintains over 923,000 excess supplies is due to order duplication and lack of supply visibility throughout the system. Instead of redirecting supplies within the distribution network, often stock is ordered from third-party external suppliers. The 600 fractionated information systems supporting supply chain business processes are responsible for these inefficiencies. A comprehensive inventory management system would address many of these problems, and also resolve several impediments that hinder progress towards a world-class “sense and respond” distribution system.<sup>31</sup> Figure 11 outlines the major logistics problems – including overcapacity, surplus employment, and long lead times – and the two major areas requiring change i.e. a transformed process and an integrated information system.

<sup>30</sup> <http://www.dtic.mil/ndia/2002apbi/thompson.pdf>

<sup>31</sup> “Army Participation in the Defense Logistics Agency Weapon System Support Program.” 8 November 2002. <[http://www.army.mil/usapa/epubs/pdf/r711\\_6.pdf](http://www.army.mil/usapa/epubs/pdf/r711_6.pdf)>.

## Current Logistics Systems Assessment

- Approximately \$67B in inventory
    - Don't know what we have; don't know where it is; much is obsolete
  - \$90B per year in resource spending
    - 80% tied to Weapon System Support
    - 20 day customer wait time on priority parts
  - Employs over 1 million people (active duty, reserve, civilian)
- 
- Logistics transformation highly dependent upon process, business systems, and personnel transformation
    - Focus on warfighter needs
    - Eliminate/reduce internal transactions
    - Remove financial incentives that sub-optimize end-to-end processes
  - Enabling information systems infrastructure remains a significant challenge
    - Business processes continue to be fractionated
      - Supported by over 600 disparate information systems
      - Impeding rather than enhancing business transformation
    - “Systems architectures” reflect legacy practices (not “best practices”)

**Figure 11. Logistics Assessment**<sup>32</sup>

During the Persian Gulf Conflict, for example, identical parts that Caterpillar supplies domestically or overseas in one to four days took the DoD logistics systems nearly 50 to 60 days to acquire. In addition, Caterpillar delivers equipment utilizing fewer people and far less inventory. Modern, secure, global networks provide Caterpillar and global transportation firms such as FEDEX and UPS, continuous and total asset visibility.<sup>33</sup> In fact, FEDEX handles millions of packages each day, and some of them are delivered the same day.<sup>34</sup> Clearly, there is room to improve efficiency and reduce cost for DoD's logistics operations by implementing a unified system that applies “sense and respond” capabilities.

## *TRANSFORMATION BEST PRACTICES*

During the late nineties many large corporations switched from using traditional logistics practices to “supply chain management” to improve process and profits. From these experiences, DoD can learn valuable lessons to improve its operations. For example, in 2001, IBM suffered from duplicate spending and redundant inventory that cost the company \$4 billion annually. A series of expansion efforts across product lines and across geographies resulted in 30 supply chains, each attempting to optimize their own business, often at the expense of other business units. Numerous councils created to coordinate activities

<sup>32</sup> “Transformation Assessment”. Defense Science Board 2005 Summer Study on Transformation: A Progress Assessment. 2005.

<sup>33</sup> <http://gbr.pepperdine.edu/032/supplychain.html>

<sup>34</sup> <http://www.fedex.com>

among the 30 supply chains yielded few results. Like DoD, the lack of end-to-end supply chain processes wreaked havoc, and the business struggled to respond effectively to end-market demands. For IBM, separation of supply chain operations, such as planning and demand forecasting, prevented the company from effectively responding to market conditions. As a result, when the firm reported component shortages for its AS/400 systems, the stock price declined 16% in a single day. Ineffective workforce management and fragmented physical and labor supply chains made it difficult to meet targets, losing \$250 million each day with inventory that was outstanding.<sup>35</sup> To create a 21<sup>st</sup> century world-class supply chain distribution network, IBM embraced the following principles:

1. **Outsource noncore functions;** to drive focus, flexibility, quality, and cost competitiveness.
2. **Implement core strategic processes across the globe;** to achieve unit synergies and offer a unified interface to customers.
3. **Extend supply chain principles;** to proactively balance supply chain demand with labor resources.
4. **Integrate development and delivery capabilities;** to support integrated technology products and services.

This was no simple task for IBM's 92-year-old supply chain operation; however, performance improvements achieved through this transformation demonstrate the value of such an undertaking. Ultimately, IBM became a responsive, flexible, focused, and resilient supply chain that could satisfy customer needs. Specifically, it now has the following – highly desirable – characteristics:

- **Responsive** – visibility into any point in the supply chain, with the ability to sense and respond to the environment, and make adjustments when, where, and how they are needed;
- **Variable** – the extended supply chain can vary capacity to meet new requirements simultaneously and instantaneously – working virtually as one team;
- **Focused** – concentration on core competencies, and using tightly integrated partners to handle select non-mission-critical activities;
- **Resilient** – services must be able to anticipate capacity or supply issues, assess impacts of decisions, and flex the extended and global supply chain – in real time.

The improved quality of the supply chain operations was achieved through outsourcing, implementation of unified processes, management of labor demands, and support of development and distribution of integrated solutions. This strategy was led by a newly-appointed Chief Supply Chain Officer. According to Forrester Research, a single point of authority and accountability was a key factor in the transformation success.

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<sup>35</sup> Radjou, Navi. "IBM Transforms Its Supply Chain To Drive Growth." 24 March 2005.

<<http://www-1.ibm.com/services/us/bcs/pdf/ibm-transforms-supply-chain-to-drive.pdf>>

## SUMMARY AND RECOMMENDATIONS

To meet the demands of modern military operations (e.g. increased agility, reduced profiles, synchronized capabilities, etc.),<sup>36</sup> the DoD must transform its supply chain and logistics operations to have “complete visibility” to track orders from factory to foxhole and reorient their metrics to focus on response to the warfighter’s needs. To achieve this, the Joint Force must develop, mobilize, leverage, and synchronize its organization with commercial best practices, utilizing modern information systems.

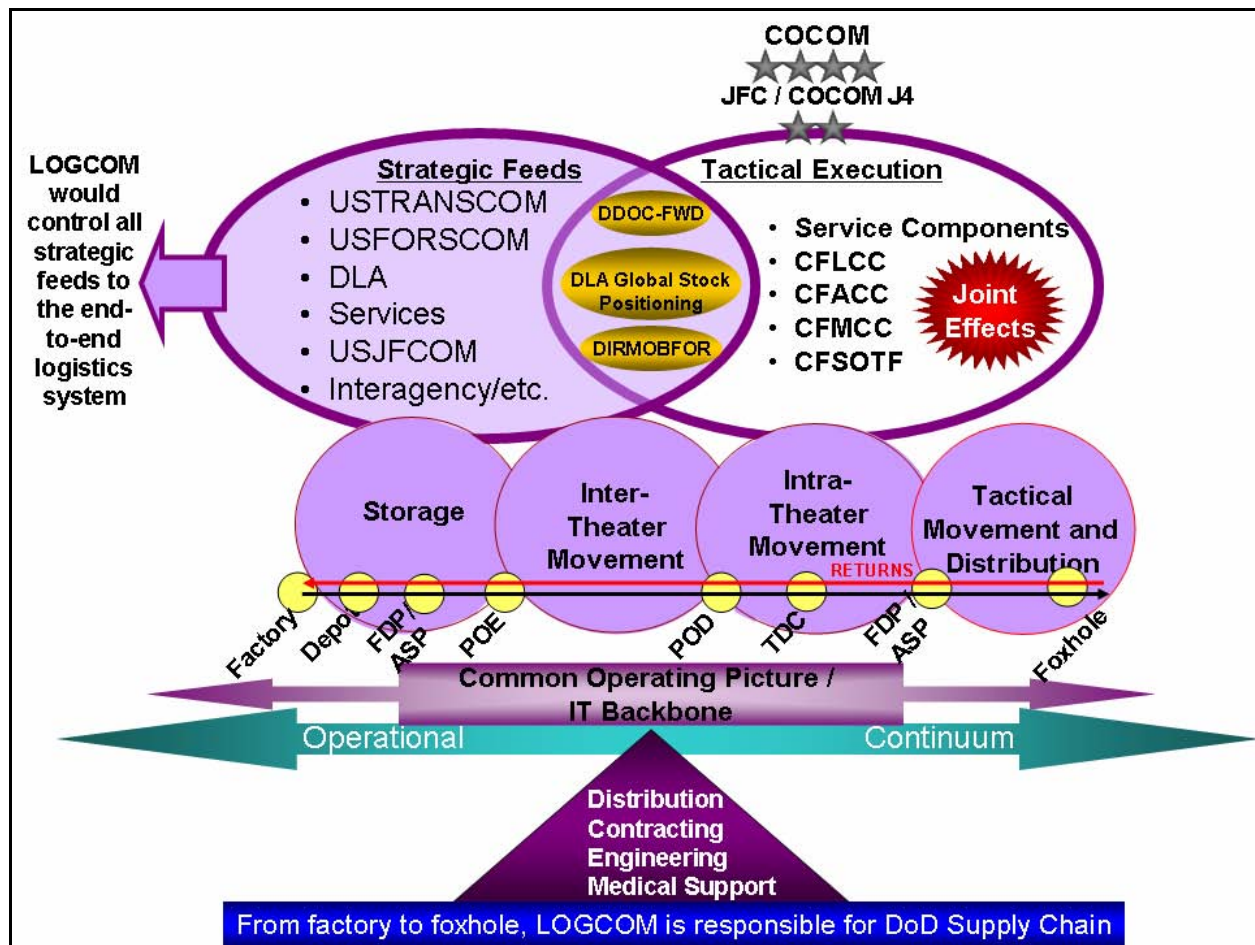


Figure 12. LOGCOM Roles

DoD military strategy demands simultaneous deployment of units (force deployment/projection), replacement personnel (redeployment), and supplies (sustainment) – across multiple theaters, day in and day out, with a constant reprioritization and/or shift in response to rapidly changing operational demands. By law, U.S. Transportation Command (TRANSCOM) is responsible for the transportation pipeline, and in September 2003, SecDef designated TRANSCOM as the Distribution Process Owner (DPO), controlling the simultaneous movement of forces and supplies to and from the theater. While this has proven to be a good first step, placing responsibility for the global DoD supply chain under a single Command structure would yield much greater benefit to the warfighter in terms of readiness and

<sup>36</sup> United States. Department of Defense. *Joint Operational Concepts*. Washington, DC: November 2003 pgs 13-14.

operational availability. To transform the deployment and distribution processes, and manage the seams between strategic and operational logistics, the Task Force recommends the establishment of a Logistics Command, responsible and accountable for end-to-end DoD Supply Chain.

In June 2003, the Defense Business Board (DBB) recommended the establishment of an Under Secretary of Defense for Global Supply Chain Integration (GSCI) to integrate logistics endeavors across the Department. Unfortunately, in execution, the Deputy Undersecretary of Defense (Logistics & Material Readiness) was given the GSCI role (established as the Assistant Undersecretary of Defense for Supply Chain Integration). The sub-panel would recommend elevating the leadership for DoD Global Supply Chain Integration to the 4-Star/Undersecretary of Defense level with accountability and responsibility for the Department's Logistics Command (LOGCOM). TRANSCOM and Defense Logistics Agency (DLA) would report directly to LOGCOM. LOGCOM's staff would be built from the existing staffs in OSD, TRANSCOM, and DLA. LOGCOM would be empowered with the authority required to effect DOD-wide logistics integration.

Leveraging the Joint Deployment Distribution Operations Center (JDDOC) construct under COCOM operational control and LOGCOM administrative control, the Joint Force Commander retains operational control of the DDOC established forward for tactical logistics supporting the operational mission.

Air Force General John Handy (head of TRANSCOM) has acknowledged the need to ease supply and demand imbalances by optimizing the distribution structure; standardize decision making; improve acquisition and distribution links; and reduce warehousing by coordinating storage and transportation activities. In addition, supply chain finance processes, including funding and billing, must be standardized.

The following long-term vision would dramatically improve DoD's supply and distribution infrastructure.<sup>37</sup>

- **Consolidate all Logistics and Supply Chain Functions under a single commander.**
  - Consolidate all DoD logistics functions – including supply, transportation, maintenance, distribution, and procurement.
  - Integrate the different supply systems across the Services and DLA and drive joint material support solutions by consolidating all material management functions – policy, standards, training, etc.
  - Form a global public/private-partnership to achieve commercial-industry (“world-class”) performance.
  - Reduce cycle time, improve velocity and remove duplication of effort by deploying a Lean Enterprise model for the new integrated supply chain.

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<sup>37</sup> United States. Department of Defense. Defense Science Board Task Force on Logistics Transformation Phase II. Washington, DC: January 2001. <<http://www.acq.osd.mil/dsb/reports/log2.pdf> >

It is recognized that the creation of the Joint Logistics Command will be strongly resisted, so the Task Force recommends that the initial step in this process should be to establish the Joint Logistics Command by:

1. Coalesce the functions of TRANSCOM and DLA – an immediate first step toward this end is the codification of the roles, responsibilities, and business rules of the Distribution Process Owner;
2. Assign the Commander full responsibility for the end-to-end supply chain (performance and costs);
3. Designate the Commander responsible for all logistics policy, standards, training needs, etc. for the DoD;
4. Establish the Service Logistics Command organizations (to include distribution and maintenance organization) as “component commands” reporting to and under the direction of the Joint Logistics Command (similar to the component commands in the other COCOMs);
5. Specify that the Joint Theater Commanders retain operational control of the flow of in-theater logistics;
6. Specifying that the Joint Theater Logistics Commander (who is “dual-hatted” to the JLC and the Theater Commander) has control of the DDOC<sup>38</sup> and the “dual-hatted” Service Theater Logistics Commands;
7. Assuring that the Program Managers retain responsibility for lifecycle logistics support planning, configuration control, logistics demands, etc.;
8. Maximize the use of Performance-Based Logistics (utilizing private and/or public sector via competitive sourcing, and/or direct contractor-support, as appropriate);
9. Shift to an “on demand” Business Model (“Sense and Respond”);
10. Deploy an integrated logistics information system as soon as possible – utilizing commercial software and revising DoD practices to fit – and beginning to work on the diverse databases in parallel. (Currently DoD is spending nearly \$2 Billion on 5 distinct modernization programs that are not interoperable);
11. Moving to “total asset visibility” as soon as possible (fully utilizing commercial RFID as it evolves);
12. Right-size the logistics manpower footprint. Careful analysis and planning may enable workforce reduction from 1.1M to 600,000 or lower. These reductions must be carefully planned, and (given the impending retirement of many DoD logistics personnel) programmatically eliminating or simply not hiring non-tactical logistics support and depot support would significantly curb costs and personnel impacts. In addition, combat capabilities can be increased by shifting military involvement that is inherently non-military activity to the private sector.
13. Appoint an external advisory board of industry supply chain experts to assist the Commander of the JLC in this transformation.

Finally, because the USD (AT&L) is ultimately responsible to the Secretary for the overall logistics operation of the DoD, it is necessary to establish a set of output metrics, and a process for measuring and

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<sup>38</sup> Army Science Board FY04 Task Force, Oct. 2004.

reporting on them, that will clearly show the resultant military mission improvements and overall cost benefits that will come from this transformed DoD logistics operation.

The chart in Figure 13 summarizes the Task Force's recommendations. Only with a transformed logistics system will the DOD be able to truly have a transformed warfighting capability. The time to begin this logistics transformation is now! In order to maximize the potential radical improvement and reduction in costs, the following recommendations should be implemented immediately.

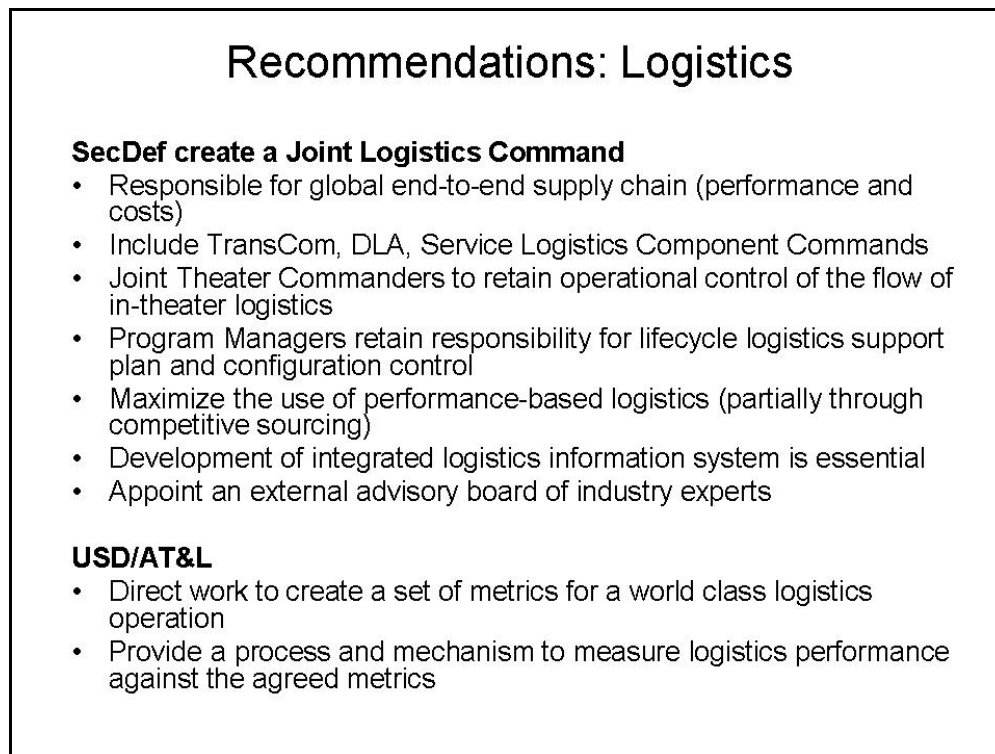


**Figure 13. Logistics Recommendations**

## IV. PERSONNEL

### CIVILIAN AND MILITARY PERSONNEL

The most valuable, and scarce, resource for the Department of Defense is skilled manpower – military and civilian. Thus, it is critical that these people are used in the most effective and efficient fashion as possible (e.g. military for warfighting, and civilians for such inherently-governmental issues as policy and decision-making, management and oversight). However, as the data in Figure 14 shows, DoD has been doing a poor job of managing its manpower.

| Occupation                                   | # Civ     |          | # Mil      |            | Total      |            | %          |            |
|----------------------------------------------|-----------|----------|------------|------------|------------|------------|------------|------------|
|                                              | 1996      | 2005     | 1996       | 2005       | 1996       | 2005       | 1996       | 2005       |
| Maintenance/Engineering                      | 233       | 198      | 445        | 402        | 678        | 600        | 27%        | 29%        |
| Administration                               | 262       | 270      | 119        | 207        | 382        | 476        | 16%        | 23%        |
| <b>Combat</b>                                | <b>12</b> | <b>8</b> | <b>324</b> | <b>296</b> | <b>336</b> | <b>304</b> | <b>14%</b> | <b>15%</b> |
| Service, Supply, and Procurement (Logistics) | 132       | 92       | 152        | 127        | 283        | 218        | 12%        | 11%        |
| Health/Medical                               | 28        | 28       | 131        | 112        | 159        | 140        | 6%         | 7%         |
| Technical                                    | 114       | 76       | 91         | 50         | 205        | 128        | 8%         | 6%         |
| Comm/Intelligence                            | 6         | 7        | 137        | 118        | 143        | 125        | 6%         | 6%         |
| Other/Unknown                                | 50        | 8        | 180        | 60         | 229        | 69         | 9%         | 3%         |
| Total                                        | 874       | 687      | 1,599      | 1,370      | 2,472      | 2,057      | 100%       | 100%       |

Figure 14. Military-civilian employee comparison (in thousands)

Here we see a comparison of the job authorization categories (military and government civilians) as officially provided by OSD's Program Analysis and Evaluation organization (PA&E). The baseline of 1996 was chosen to conform to the Defense Science Board Summer Study of that year, in which the same point—of the misallocation of this critical resource—was made. The data show (for example):

- That the total (military plus civilian) people in the “combat” category are only 15% of the over 2 million population.
- That from 1996 to 2005 the number of military people in the “combat” category went down (from 324 thousand to 296 thousand).



- That from 1996 to 2005 the number of military in “administration” increased from 119 thousand to 207 thousand.
- That, in 2005, there were 402 thousand military in “Maintenance/Engineering”.

Such statistics clearly indicate that this valuable resource is not being focused effectively, or efficiently, on the areas of critical DoD needs.

Of course, many of the functions now being performed by these people (both military and government civilian) will still have to be performed, but most of those non-combat military positions could be performed by civilians; and many of the non-inherently-governmental positions (now occupied by military or government civilians) could be open to competitive sourcing (i.e. competition between the public and private sector).

The DoD has run thousands of such competitions, (known as “A-76 studies,” based on the OMB circular defining the process to be used) and has found that the average savings have been over 30%, and with significantly improved performance! Or, on a more current set of data, for 286 competitions from 1995-1999 the DoD reported average savings of 39% (per GAO-01-20); and another set of data found that 314 competitions, from 1997-2000, had an average savings of 35%, on 36,987 positions (per DoD CAMIS data). Importantly, these results were found whether the public or the private sector won the competitions.<sup>39</sup>

|                  | Competitions Completed | Average Annual Savings (\$M) | Percent Savings |
|------------------|------------------------|------------------------------|-----------------|
| Army             | 510                    | \$470                        | 27%             |
| Air Force        | 733                    | \$560                        | 36%             |
| Marine Corps     | 39                     | \$23                         | 34%             |
| Navy             | 806                    | \$411                        | 30%             |
| Defense Agencies | 50                     | \$13                         | 28%             |
| Total            | 2,138                  | \$1,478                      | 31%             |

**Figure 15. Results of DoD A-76 Cost Comparisons: 1978 – 1994<sup>40</sup>**

Based on such results, President George Bush, in issuing his “Management Agenda” for his first administration, listed competitive sourcing as one of his top 5 management initiatives.

## **RECOMMENDATIONS**

The 1996 DSB Summer Study provided analysis to determine what the potential reduction in manpower—and thus people and dollars available to be shifted to combat and equipment modernization—would be if all DoD non-inherently-governmental positions were subjected to competition. It was found that the impact from introducing such competition would be over \$30 Billion

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<sup>39</sup> For detailed information on DoD competitive sourcing results (performance, costs, personnel impacts, percent wins by public and private sector bidders, etc.) see the references in Appendix H.

<sup>40</sup> From the DoD “Defense Reform Initiative Report” of November 1997.

annually. As Figure 16 shows (using the same categories studied in 1996), the total dollars (even after adjusting for inflation) in 2005 have grown by approximately 50%; so the impact of introducing competition in these areas today would be a potential resource shift of well over \$40 Billion a year.

Perhaps even more important, it would free up hundreds of thousands of military personnel for combat positions—a shift initiated by Secretary Rumsfeld in his Directive to move non-warfighting military positions to civilians.

| Study Category             | FY 1997    | FY 2006      | Comments                                                                                                                                                                                      |
|----------------------------|------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Equipment-Related</b>   |            |              |                                                                                                                                                                                               |
| CONUS Logistics            | 12.1       | 15.3         | Includes entire “Central Logistics” Infrastructure Category except for Commissaries and Exchanges. Does not include the cost of installation-level supply operations called for by the study. |
| Test & Evaluation          | 1.9        | 2.8          | Includes entire “Test & Evaluation” Infrastructure Category.                                                                                                                                  |
| Science & Technology       | 7.4        | 11.1         | Includes entire “Science & Technology” Infrastructure Category.                                                                                                                               |
| <b>People-Related</b>      |            |              |                                                                                                                                                                                               |
| Education & Training       | 18.4       | 26.9         | Includes entire “Training” Infrastructure Category.                                                                                                                                           |
| Base Support               | 17.0       | 20.7         | Includes all “Installation Support” Infrastructure Category except Family Housing.                                                                                                            |
| Housing                    | 9.5        | 16.2         | Includes “Family Housing Activities” Infrastructure Category plus the Basic Allowance for Housing not visible in the FYDP.                                                                    |
| Medical                    | 15.2       | 26.2         | Includes the “Central Medical” Infrastructure Category.                                                                                                                                       |
| Commissaries               | 1.0        | 1.1          | Includes the “Commissaries and Exchanges” Infrastructure Category.                                                                                                                            |
| <b>Central Support</b>     |            |              |                                                                                                                                                                                               |
| ADP                        | 0.7        | 2.8          | Includes “Information Management/Services” Infrastructure Category.                                                                                                                           |
| C41 Central                | 4.4        | 8.2          | Includes the “Central C3” Infrastructure Category except the “Information Management/Services” Infrastructure Category.                                                                       |
| <b>Finance &amp; Admin</b> |            |              |                                                                                                                                                                                               |
| Headquarters               | 10.4       | 15.2         | Includes the Force Management” Infrastructure Category less DWCF DFAS.                                                                                                                        |
| Personnel                  | 10.3       | 15.2         | Includes entire “Personnel” Infrastructure Category.                                                                                                                                          |
| Finance                    | 1.7        | 1.7          | Includes DWCF cost of DFAS operations.                                                                                                                                                        |
| Acquisition Mgt            | 1.0        | 2.5          | Includes entire “Acquisition” Infrastructure Category.                                                                                                                                        |
| <b>Total</b>               | <b>111</b> | <b>165.9</b> |                                                                                                                                                                                               |

Figure 16. November 1996 DSB O&S Cost Categories (FY 1997 dollars in billions)

Based on the above data, a major initiative by the Secretary of Defense to change the personnel resource system could have a dramatic impact on both warfighting and the allocation of dollars within the DoD. Specifically, the policy to be adapted would be:

- **Use military people for military functions only**
- **Use civilian government personnel for inherently-governmental functions only** (unless “competitive sourcing” finds government civilians to be more effective and efficient)
- **Use civilian contractors based on competitive awards, for all other functions**

Certainly, such a significant personnel resource allocation change can be expected to receive considerable resistance; but it can be overcome. Numerous other successful “cultural changes” have shown what is required for their achievement; namely:

- Strong, and consistent leadership
- Widespread recognition of the need
- A clear, and simple vision of the change
- A time-phased plan with metrics and accountability
- Continuous communication of the message

The responsibility for the implementation of the personnel resource allocation change should be assigned to the Under Secretary Of Defense for Personnel and Readiness (USD (P&R)), and the first step in implementation should be a full baseline audit of military, civilian and contractor personnel – in terms of their current positions and their full costs (Making sure that each truly military job is clearly identified, along with each civilian, inherently-governmental position – and that contractors are not doing work that is, in fact, inherently-governmental). Priority will need to be given to warfighting needs; and where government civilians or contractors are involved in working in dangerous areas, further policy changes may be required (to clarify the chain-of-command, etc.). Most important, is for the USD (P&R) to develop and monitor a time-phased plan, with measurable milestones, to achieve the needed realignment of personnel resources.

The payoff, from this shift in personnel resources, is clearly worth the required effort, in terms of enhanced warfighting effectiveness and efficiency. And the time to begin is now!

## V. MANAGEMENT INFORMATION SYSTEMS

### *BUSINESS MANAGEMENT INFORMATION SYSTEMS*

Business management software systems are central to transformation of business practices in the DoD. The current situation in the Department is such that there are hundreds of such diverse systems which have evolved over a period of decades. Many of these systems are service-unique, are non-interoperable, have been based upon customized software, are expensive to maintain, and are incompatible with a net-centric philosophy. Moreover, standard definitions, interfaces, and protocols are not universally used. Data bases for the same types of information use different definitions and formats, and there is little flow-through of data from one program to another. These stove-pipe programs enforce historic processes and mentalities that retard transformation, compartmentalize information, and inhibit enterprise-wide access. Since this flawed infrastructure underlies all of the business practices in the DoD, there is a desperate need for a modern, integrated set of business management information systems to provide horizontal visibility across all business sectors (e.g. personnel, programs, finance, logistics, etc.).

A 2002 report of the DSB on e-Business commented on the current state of DoD business management software as follows: “The Department finds itself having implemented several major DoD-unique e-Business software applications that support the DoD’s *past* business practices and procedures. Although these applications started with commercial off-the-shelf systems (COTS) as their foundation, they have since deviated substantially. Thus, the DoD faces large costs of ownership for these systems and it cannot make effective use of the concept, product, and technology enhancements that are continually being developed in the private sector.”

The 2002 report concluded that not only can mission performance be dramatically improved but that billions of dollars of savings can be achieved by the adoption of commercial software and best practices. This savings might be only the tip of the iceberg, compared to the indirect savings in the potential for management efficiencies.

Certainly, the DoD is aware of the shortcomings of its current systems, and there is a current program to develop a set of common interoperable systems based upon COTS software and standard definitions (see below). Also, there is a great deal of industry experience in similar developments, and the DoD would be well advised to pay attention to the lessons learned in these developments.

### *LESSONS LEARNED ON IMPLEMENTATION OF NEW ENTERPRISE IT SYSTEMS*

In spite of the many seemingly-unique complexities and constraints in the DoD, there are many comparable examples, within large industries, of the successful application of management information systems across heterogeneous organizational structures. Specifically, there are a number of important lessons that have been learned from these industry examples:

- First, it is necessary to do a complete inventory of existing systems, their cost, their functionality, and their data structures. Often there are many niche and customized systems that have evolved over time to satisfy specialized needs. The business rules that underlie these systems also need to

be understood and formalized. Legacy systems often have embedded business rules that are not documented and are poorly understood. New rules cannot be adopted without understanding their impact.

- In order to displace and integrate the existing infrastructure it is especially important that there be a single individual or entity responsible for architecture of the management information systems and that this individual or entity be given both budgetary and decision authority in the implementation and adoption of the system. Inevitably, there will be organizations that resist change, and often for seemingly-good reasons. There must be a way to impose decisions that accomplish a greater good at the expense of occasional transitional difficulties at the local levels.
- There is no real substitute for expertise and experience in the architecture and implementation of IT systems. The DoD system architect must be able to hire key people from industry, and then to outsource whatever skills and services that are required. This is not an area that can be staffed by amateurs.
- The system architect should monitor adoption of systems and “score” organizations periodically on their progress. The Task Force heard from the Chief Strategic Information Officer of General Motors that peer pressure from such public scoring was one of the most effective ways to assure rapid and widespread adoption of interoperable software.
- Perhaps the most difficult task in the development of management information systems is that of converting existing data bases. The DoD is currently undergoing the frustrations of this conversion in the DIMHRS (Defense Integrated Military Human Resources System) for personnel and pay. DIMHRS was first recommended in a 1996 Defense Science Board report, which called for Initial Operational Capability no later than 2001. Now in 2005 the COTS software is operational, but much data conversion from services and agencies remains to be accomplished. The lesson is certainly that conversion and cleansing of legacy data bases is an enormous task that must be planned from the start and accomplished in parallel with the system software development.
- The systems software must be COTS, and customization of this software should be resisted forcefully. Wherever possible, business processes should be modified to take advantage of commercial software, rather than customizing the software to meet existing business practices. The motto is “adopt, not adapt”. Not only will this COTS adoption be less costly in the long run, but the business processes that it enforces – which are based on best practices in industry – will often themselves give improvements in efficiency once the transition is accomplished. Moreover, the modification of COTS software can lead to performance and maintenance problems.
- As with any large and complex program, “requirements creep” in the acquisition of COTS software must also be resisted. The Task Force recommends a spiral development process as a way of controlled evolution in the acquisition of software systems.
- User training is also an area requiring attention. There are obviously a number of levels of required expertise, from the manager who occasionally accesses the system to the financial person who inputs data to the systems administrator. For people in the latter two categories the Task Force feels that a significant amount of training needs to be planned and administered. As a guideline, perhaps 120 hours of IT “bootcamp” would not be unreasonable.

Finally, continuous and strong support from top management is absolutely essential. Without such support, most disruptive IT systems will be rejected by the embedded culture.

## *RECOMMENDATIONS – MANAGEMENT INFORMATION SYSTEMS*

The Task Force recommends that the Secretary of Defense address the need for an integrated DoD business management information system by designating the USD (AT&L) as the lead organization to manage acquisition of all new business process support systems.

The Task Force supports the recent organization under AT&L of the Business Transformation Office with dotted line relationship with the Financial Business Transformation Office under the USD Comptroller. This can be an effective organizational structure providing that the AT&L office has budgetary and ultimate decision authority on the acquisition of new and major modifications of software systems.

The Task Force also approves of the ongoing plans of the AT&L office to integrate management software into seven areas of common use and definition, providing enterprise financial visibility, material visibility (including in-transit), common supplier engagement, acquisition visibility, personnel visibility, real property accountability, and common asset valuation. This program appears to be well conceived, but the Task Force has concerns that 1) it must continue to assure the interoperability of the data in these seven systems, and 2) since this project is extremely ambitious it will need to be staffed with experts, have the necessary leadership support, and have sufficient funding and authority. Even with all these empowerments, this will be an extraordinarily challenging undertaking.

An earlier section of this report listed key lessons from industry in the acquisition of management information systems. Among those cited were the needs for the hiring of experienced experts and the critical role of centralized authority over resources, architecture, and decisions. For the software itself, the most important lesson is the adoption of COTS programs with the absolute minimum of customization to provide interfaces between systems; changing business processes where necessary to conform to the software interfaces and expectations. Moreover, it is obviously essential at this period of technological development that all systems be net-centric to provide shared information and the capability for collaborative planning.

## *SOME INITIAL THOUGHT ON IMPLEMENTATION*

Implementing this “horizontally-integrated,” enterprise-wide system will be difficult, but there are clear paths to follow, and a number of themes were recurrent during the briefings and discussions of the Task Force on business practices. Specifically:

- There was unanimous agreement on the use of commercial IT, rather than service-specific or customized software. Furthermore, the Task Force felt strongly that DoD business practices should be modified to fit commercial suites (which embed best practices), rather than customizing the software to fit DoD practices.
- There should be common data standards, common interfaces and protocols, and common multi-layer security standards.
- The criticality of control over the IT resources was believed essential for program success.

- During discussions the Task Force often returned to the fundamental power of competition to empower the performance and to reduce the cost of services and products. The Task Force fully endorses the recommendation of the 1996 DSB report that shifting all non-inherently governmental support to utilize competitive forces would result in better performance at lower costs.
- Another general business precept that the Task Force agreed upon from the start of discussions was that decision-makers at an action level need to be empowered, albeit with appropriate oversight and visibility. Too often decisions are cumbersome, authority is diffuse, and large inefficiencies and time delays ensue. In logistics cycle times, for example, the contributory factors are processes, information, and decision, and in many instances – both commercial and governmental – the dominant factor in delay is the decision time.
- A topic that generated much discussion during Task Force meetings was the use of activity-based costing. However, unlike in the previous cases, there was no general agreement among the Task Force members on how this tool should be used in the DoD. The benefits are obvious, in that activity-based costing (ABC) would give visibility into the relative costs and values of the various activities comprising a given organization. ABC assigns costs to activities based on the use of resources, and assigns costs to products based on their use of activities. Having such data would be an invaluable tool for management of an organization.

One of the difficulties in applying ABC within the DoD is the lack of a quantitative worth of output “products” which would in any way be the equivalent of the simple metric of profit that is applicable in industry. The process of collecting and analyzing data for ABC can also tend to generate arguments and defensiveness within an organization, and to turn into a potentially wasteful and bureaucratic exercise. Nevertheless, given the commitment of top level management and intelligent allocation of costs, application of ABC can effectively identify places where there are significant disparities between cost and value. The Task Force recommends more use of this tool in the DoD.

## VI. AGENCY SUPPORT

The dozen<sup>41</sup> Defense Agencies currently operating within the Department of Defense vary widely in their missions and focus from “inherently governmental” (e.g. MDA and DIA) to heavily “commercial-like” (e.g. DeCA and DISA). They range in budgetary size from \$34.5 billion to \$33.8 million and each of these Agencies has its own set of strategic, operational governance and financial issues. In the aggregate, these organizations account for approximately \$67 billion of the 2005 DoD budget and involve approximately 90,000 civilian and military Full-Time Equivalent (FTE) personnel.

| Agency |                                           | Mission                                                                                                                                                                                                                                                                                                              |
|--------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DLA    | Defense Logistics Agency                  | Provides worldwide logistics support for the missions of the Military Departments and the Unified Combatant Commands under conditions of peace and war; provides logistics support to other DoD Components and certain Federal agencies, foreign governments, international organizations, and others as authorized. |
| DFAS   | Defense Finance and Accounting Service    | Provides responsive, professional finance and accounting services for the people who defend America.                                                                                                                                                                                                                 |
| DeCA   | Defense Commissary Agency                 | Provides groceries to military personnel, retirees and their families in a safe and secure shopping environment.                                                                                                                                                                                                     |
| DISA   | Defense Information Systems Agency        | Combat support agency responsible for planning, engineering, acquiring, fielding, and supporting global net-centric solutions to serve the needs of the President, Vice President, the Secretary of Defense, and other DoD Components, under all conditions of peace and war.                                        |
| DIA    | Defense Intelligence Agency               | Provides timely, objective, and cogent military intelligence to warfighters, defense planners, and defense and national security policymakers.                                                                                                                                                                       |
| DCAA   | Defense Contract Audit Agency             | Responsible for performing all contract audits for the Department of Defense, and providing accounting and financial advisory services regarding contracts and subcontracts to all DoD Components responsible for procurement and contract administration.                                                           |
| MDA    | Missile Defense Agency                    | Develop and field an integrated BMDS capable of providing a layered defense for the homeland, deployed forces, friends, and allies against ballistic missiles of all ranges in all phases of flight.                                                                                                                 |
| DARPA  | Defense Advanced Research Projects Agency | Maintains the technological superiority of the U.S. military and prevents technological surprise from harming national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their military use.                                                       |
| DLSA   | Defense Legal Services Agency             | Provides legal advice and services for the Defense Agencies, DoD Field Activities, and other assigned organizations.                                                                                                                                                                                                 |
| DCMA   | Defense Contract Management Agency        | Helps ensure that DoD, Federal, and allied government supplies and services are delivered on time, at projected cost, and meet all performance requirements.                                                                                                                                                         |
| DTRA   | Defense Threat Reduction Agency           | Safeguards America and its interests from weapons of mass destruction (chemical, biological, radiological, nuclear, and high explosives) by reducing the threat and providing quality tools and services.                                                                                                            |
| DSCA   | Defense Security Cooperation Agency       | Builds relationships that promote specified U.S. interests; Builds allied and friendly nation capabilities for self-defense and coalition operations; Provides U.S. forces with peacetime and contingency access.                                                                                                    |

**Figure 17. Defense Agency Missions**

<sup>41</sup> For purposes of this study, two Agencies (NSA and NGA) have been excluded for security reasons.



### Defense Agencies (Personnel and Funding)

| Agency | # Civ  |        | # Mil |       | # Guard/Reserve |      | Budget (\$K) |            |
|--------|--------|--------|-------|-------|-----------------|------|--------------|------------|
|        | 1996   | 2005   | 1996  | 2005  | 1996            | 2005 | 1996         | 2005       |
| DLA*   | 49,991 | 23,397 | 1,338 | 631   | -               | 312  | 14,953,917   | 27,445,689 |
| DFAS*  | 22,241 | 13,848 | 1,634 | 474   | -               | -    | 2,066,624    | 1,379,799  |
| DeCA*  | 17,416 | 15,015 | 42    | 13    | -               | -    | 7,351,332    | 6,020,654  |
| DISA*  | 7,657  | 5,066  | 2,343 | 1,906 | -               | 17   | 3,710,308    | 4,597,070  |
| DIA    | 4,439  | 5,806  | 2,422 | 2,459 | -               | 18   | 890,292      | 1,727,531  |
| DCAA   | 4,885  | 3,804  | -     | -     | -               | -    | 332,244      | 300,221    |
| MDA    | 248    | 741    | 128   | 147   | -               | -    | 3,404,521    | 7,743,602  |
| DARPA  | 187    | 182    | 19    | 18    | -               | -    | 2,299,221    | 2,615,368  |
| DLSA   | 74     | 159    | 7     | 39    | -               | -    | 7,335        | 26,684     |
| DCMA   | -      | 11,028 | -     | 599   | -               | -    | -            | 862,350    |
| DTRA   | -      | 1,082  | -     | 787   | -               | 1    | -            | 1,046,993  |
| DSCA   | -      | 341    | -     | 52    | -               | -    | -            | 814,727    |

\* Personnel and Funding figures for these agencies include DWCF

Source: OSD PA&E

All Budgets are listed in constant 1997 dollars

All Guard/Reserve personnel are in full time equivalents (FTEs)

Some Intelligence Agencies removed for security reasons



**Figure 18. Defense Agencies (Personnel and Funding)**

From a DoD perspective, management oversight of the Agencies is fragmented. While seven different DoD senior executives have responsibility for at least one agency, USD (AT&L) oversees five of the Agencies (DLA; MDA, DARPA; DCMA, and DTRA) aggregating \$48.7 billion in 2005 budgetary authority. To put this responsibility within a commercial context, this is equivalent to having USD (AT&L) have responsibility for overseeing a highly diverse set of operations only slightly smaller than Boeing (2004 revenue: \$52.5 billion; Fortune 500 rank: #25), as part of his/her total AT&L responsibilities.

While the Agencies have each taken actions to improve their operations; utilize their staff more efficiently, and, in some cases, react to reduced budgets, these efforts have varied greatly in both extent and results. In addition, because of the diverse nature of the Agencies; the differing nature of the managerial expertise necessary to provide effective senior civilian DoD oversight to them; and the extremely limited managerial bandwidth (both individually and collectively) available to oversee the Agencies, the quality and extent of the progress the Agencies are each making to transform themselves and their business practices is often obscure.

## REASONS TO APPOINT AND UTILIZE BOARD OF ADVISORS

The DSB Task Force Report on Warfighting Transformation (September 1999), the November 2002 and July 2003 GAO reports, and other private sector studies have identified key practices necessary to accomplish transformation of both public and private sector organizations. Key among these practices is to:

- Ensure that top management's commitment is clear, consistent and pervasive;
- Sustain the commitment over a multi-year period;
- Establish metrics for best-in-class performance and communicate the results in a highly visible and understandable way;
- Utilize leading expertise from outside the organization; and;
- Empower a team to guide the transformation efforts that embodies the preceding characteristics.

The Department of Defense is no stranger to the use of Advisory Boards. Indeed, the Defense Science Board, the Defense Business Board, and the Defense Policy Board, along with numerous ad hoc Advisory groups formed by the current, and former, Secretaries of Defense, speak eloquently to the continuing benefits the Department believes it receives from those Advisors.

Extending and formalizing DoD experience with Advisory Boards to the Agencies would give the Secretary of Defense, the Deputy Secretary of Defense (and all other relevant senior DoD civilian managers) another tool to help leverage the time they spend overseeing the Agencies. Specifically, their Advisory Boards should be able to provide senior DoD managers with:

- Independent insight into key management related issues at each agency (insight that would be deeper than that obtained without an independent viewpoint and broader than the reports provided solely by the agency head and his/her direct reports);
- Greater visibility to an agency's performance and costs;
- A fuller debate on an agency's priorities;
- Assistance in establishing and communicating metrics to be used in assessing how well an agency is accomplishing its mission;
- Access to best-in-class knowledge from outside the agency; and;
- A respected group of Advisors who could help ensure that senior DoD management's objectives are being pursued over a multi-year period.

In addition, these Advisory Boards and the individual members should prove to be an equally valuable assurance to the specific agency head — providing him or her with constructive relevant insights from other parts of the public, or private sector. There should be no question that agency heads must have the flexibility and responsibility to manage their resources to accomplish their missions in the most effective and efficient manner. Experience shows that the effectiveness and efficiency of any organization can be improved by making its performance and costs more visible and transparent. Advisory Boards, because of their independence and, usually, longer term perspective, tend to develop significant “institutional knowledge” that contributes to providing incentives for driving continuing improvements.

## RECOMMENDATIONS

- The Deputy Secretary of Defense (acting as the Chief Operating Officer of the Department of Defense) shall appoint, or approve the appointment, of members to a Board of Senior Advisors for each defense agency.
- The Deputy Secretary of Defense shall act in consultation with, and receive advice and input from, the specific senior DoD civilians (e.g. USD (AT&L), USD (C), etc.) to whom the agency reports, as to the specific members and the number of specific members that will comprise each Board.
- The Deputy Secretary of Defense shall determine for each Advisory Board whether it will report to him, or to the responsible senior DoD official, or jointly to both.
- The membership of each Advisory Board should be constituted of outstanding individuals with relevant expertise in the mission, operations, and business issues relevant to each Agency's. Members could include public and private sector experts, former government employees and customer representatives.
- The Deputy Secretary of Defense shall utilize the Advisory Boards as vehicles for continuous transformation and request that the Boards help provide guidance and oversight to help infuse best-of-class practices into each agency and to assist in ensuring the improvement of each agency's performance and costs.
- The Deputy Secretary of Defense should determine for certain of the "inherently governmental" Agencies whether he wishes to have the Advisory Board focus on the full range of the agency's mission, or just on its business practices.
- The terms of membership on each Advisory Board shall be at least two years, with the intention of renewals to ensure consistency and pervasiveness of the Board's advice.

## VII. RECOMMENDATIONS

In summary the Task Force makes five key recommendations:

### 1. Create an Output-Driven, Multi-year, Resource-Constrained, Business Plan

The Secretary of Defense (SecDef) should create a multi-year plan that broadly specifies what is to be done, in what time period, with what resources, and with what capability output. Such a plan will:

- Provide discipline for allocating major resources to mission purposes;
- Provide discipline for constraining Service and agencies plans to intended resources;
- Provide discipline for COCOMs, Force and Service Providers, CJCS and Joint Staff, and OSD to maintain coherent execution; and
- Provide a disciplined basis for measuring progress against plan objectives.

### 2. Create a Joint Logistics Command

The SecDef shall create a Joint Logistics Command responsible for global, end-to-end supply chain (performances and costs). This command shall:

- Include TransCom's mission, DLA, Service Logistics and transportation commands to the JLC Component Commands;
- Assure Joint Theater Commanders retain operational control of the flow of in-theater logistics;
- Assure Program Managers retain responsibility for lifecycle logistics support planning and configuration control;
- Maximize the use of performance-based logistics (wherever possible, through competitive sourcing); and
- Appoint an external advisory board of industry logistics experts.

USD (AT&L) shall:

- Direct work to create a set of output metrics for a world-class logistics operation; and
- Provide a process and mechanism to measure logistics performance against the agreed metrics.

### 3. Align Personnel with the Department's Missions (and their Training)

The SecDef should direct (consistent with the President's Management Plan #5):

- Use of military people for military functions only;
- Use of civilian government personnel for inherently-governmental functions only (unless competitive sourcing indicates greater effectiveness and efficiency by government workforce); and
- Use of civilian contractors for all other functions.

USD (P&R) will:

- Conduct an audit of all personnel positions and their costs (including the full cost of military personnel);
- Give priority to warfighting needs;
- Develop incentives (e.g. savings and military personnel to be retained for other needs);
- Develop a time-phased plan with milestones to realign human resources; and
- Monitor performance against plan.

Implementation of this recommendation will significantly improve performance and dramatically lower costs (30-40% avg.) while freeing up military personnel to perform military-specific functions.

#### **4. Use Modern Practices to Manage Business Systems**

SecDef should address the need for an integrated DoD business management information system by:

- Designating USD (AT&L) as the lead organization to manage acquisition of all new business process support systems to:
  - Assure that these systems are net-centric to provide the shared information and collaborative planning essential to a complex, adaptable enterprise;
  - Maintain the integrity of the COTS systems; change the business processes accordingly, and adapt appropriate interfaces;
  - Assure adequate authority over architecture, applications, resources, and personnel to achieve implementation; and
  - Hire experienced key people to lead the Department effort and outsource the balance.

#### **5. Enhance the Management of DoD Agencies**

DepSecDef (as the COO) shall appoint a Board of Senior Advisors for each defense agency director (comprised of customers and area experts, including knowledgeable outsiders) to provide guidance and oversight to:

- Help guide the performance and direction of the agency
- Help provide commercial best practices and institutional knowledge

The Task Force recommends that advisor's terms be at least 2 years.

### ***COMPELLING REASONS FOR MOVING FORWARD***

As mentioned before, these recommendations are not entirely new, yet the Task Force believes that the time is right to move forward with them now because it believes:

1. The recommendations support the values of the current SecDef, DepSecDef and the USD (AT&L);

2. The future is likely to be a much tougher political environment for defense spending as O&M and medical costs are continuing to take a much larger share of the budget, and the nation's economy will not likely support the continued increase in the DoD top line; and
3. The significant shift in resources and personnel enabled by these recommendations will result in potential for more resources to be allocated to improving warfighting capability and national security.

## GENERAL OBSERVATIONS

In closing, the Task Force makes some important general observations. The current DoD leadership team, the SecDef, DepSecDef, and USD (AT&L), have shown a strong interest in achieving the objectives highlighted in this report. The management of the proposed transformation in this report will take strong and persistent leadership from this leadership team. While they can expect continuing resistance, (from the internal organization and many external DoD stakeholders) for these changes, they should look for early “successes”; clearly communicate the vision for the organization going forward; and continue to push a single, clear message of the objectives.

It can, and must, be done!



## **APPENDIX A. PANEL MEMBERSHIP**

### **CHAIRPERSON(S)**

Dr. Jacques Gansler, *University of Maryland*

Dr. Ronald Kerber, *Private Consultant*

### **MEMBERS**

Mr. Denis Bovin, *Vice Chair Investment Banking*

Mr. Robert Luby, *IBM*

Dr. Robert Lucky, *Telcordia Technologies*

Mr. William Lynn, *Raytheon*

Mr. Dave Oliver, *EADS North America*

### **GOVERNMENT ADVISORS**

CAPT Marion Eggenberger, *United States Navy*

### **DSB SECRETARIAT**

LtCol David Robertson, USAF, *Defense Science Board*

### **STAFF**

Ms. Diana Conty, *SAIC*



**APPENDIX B. GUEST BRIEFERS**

| <b>Name</b>            | <b>Affiliation</b>                                                                      | <b>Topic</b>                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Mr. Paul Brinkley      | Deputy Undersecretary for Business Transformation                                       | DoD Business Management Modernization Program: Program Realignment and Changes               |
| Mr. David Fisher       | Special Assistant to Deputy Under Secretary of Defense (Financial Management), OSD FMTT | Financial Management Transformation Team (FMTT): Priorities, Capabilities, and Initiatives   |
| Ms. Ellen Embrey       | Deputy Assistant Secretary of Defense, Force Health Protection)                         | Medical Readiness Review                                                                     |
| Ms. Marilee Fitzgerald | Civilian Personnel Management Service                                                   | Civilian Human Resources                                                                     |
| Mr. Tim Freihofer      | SES, Joint Deployment Employment Sustainment Organization                               | Integrated Logistics Initiative                                                              |
| Dr. Jacques Gansler    | University of Maryland                                                                  | Competitive Sourcing                                                                         |
| Mr. Tom Hall           | Deputy PM for Sigma Ops & Support, NAVAIR                                               | NAVAIR Activity Based Costing                                                                |
| Mr. Louis Kratz        | ADUSD (LPP), OUSD (AT&L)/DUSD (L&MR)                                                    | Transforming DoD Business Practices: Logistics                                               |
| Mr. Mark Krzysko       | Deputy Director, Defense Procurement & Acquisition Policy, E-Business                   | Business Transformation within the Department of Defense                                     |
| GEN David Maddox       | US Army (retired), Army Science Board                                                   | Army Science Board 2004 Ad Hoc Study: Intratheater Logistics Distribution in the CENTCOM AOR |
| Dr. Dan McNicholl      | General Motors                                                                          | Business Systems: Legacy Systems and Outsourcing                                             |
| Mr. Tom Modly          | Deputy Under Secretary of Defense (Financial Management), OSD (AT&L)                    | DoD Business Management Modernization Program: Program Realignment and Changes               |

| <b>Name</b>          | <b>Affiliation</b>                     | <b>Topic</b>                                                                                       |
|----------------------|----------------------------------------|----------------------------------------------------------------------------------------------------|
| Dr. Clark Murdock    | Senior Advisor, CSIS                   | Beyond Goldwater-Nichols: DOD and<br>USG Reform for a New Strategic Era                            |
| Ms. Norma St. Claire |                                        | Defense Integrated Military Human<br>Resources System (DIMHRS) for<br>Personnel and Pay (Pers/Pay) |
| LtGen George Taylor  | Air Force Surgeon General              | Medical Readiness Review                                                                           |
| Dr. Linton Wells     | Acting ASD(NII), DoD CIO,<br>OSD(AT&L) | Enterprise Services and Operations                                                                 |

**APPENDIX C. ACRONYM INDEX**

|           |                                                                                                |
|-----------|------------------------------------------------------------------------------------------------|
| ABC       | Activity Base Costing                                                                          |
| ADP       | Air Defense Plan                                                                               |
| BMMP      | Business Management Modernization Program                                                      |
| BMDS      | Ballistic Missile Defense System                                                               |
| CAMIS     | Consolidated Administrative Management Information System                                      |
| CINC      | Commander in Chief                                                                             |
| CIO       | Chief Information Officer                                                                      |
| CJCS      | Chairman of the Joint Chiefs of Staff                                                          |
| CLF       | Combat Logistics Force                                                                         |
| CLS       | Contractor Logistics Support                                                                   |
| COCOM     | Combatant Command                                                                              |
| CONUS     | Continental United States                                                                      |
| COO       | Chief Operating Officer                                                                        |
| COTS      | commercial off the shelf                                                                       |
| CRAF      | Civil Reserve Air Fleet                                                                        |
| DARPA     | Defense Advanced Research Projects Agency                                                      |
| DBB       | Defense Business Board                                                                         |
| DCAA      | Defense Contract Audit Agency                                                                  |
| DCMA      | Defense Contract Management Agency                                                             |
| DDOC      | Deployment and Distribution Operations Center                                                  |
| DeCA      | Defense Commissary Agency                                                                      |
| DepSecDef | Deputy Secretary of Defense                                                                    |
| DFAS      | Defense Finance & Accounting Service                                                           |
| DHP       | Defense Health Program                                                                         |
| DIA       | Defense Intelligence Agency                                                                    |
| DIMHRS    | Defense Integrated Military Human Resources System                                             |
| DISA      | Defense Information Systems Agency                                                             |
| DoD       | Department of Defense                                                                          |
| DOTMLPF   | doctrine, organization, training, materiel, leadership and education, personnel and facilities |
| DPO       | Distribution Process Owner                                                                     |
| DLA       | Defense Logistics Agency                                                                       |
| DLSA      | Defense Legal Services Agency                                                                  |
| DSB       | Defense Science Board                                                                          |

|            |                                                                        |
|------------|------------------------------------------------------------------------|
| DSCA       | Defense Security Cooperation Agency                                    |
| DTRA       | Defense Threat Reduction Agency                                        |
| DVD        | Direct Vendor Delivery                                                 |
| DWCF       | Defense Working Capital Fund                                           |
| EIDE       | Enterprise Integrated Data Environment                                 |
| FEDEX      | Federal Express                                                        |
| FLJFC      | Focused Logistics Joint Functional Concept                             |
| FYDP       | Future Years Defense Program                                           |
| FTE        | full time equivalent                                                   |
| GAO        | General Accounting Office                                              |
| GCSI       | Global Supply Chain Integration                                        |
| GCSS       | Global Combat Support System                                           |
| IBM        | International Business Machines                                        |
| IT         | Information Technology                                                 |
| JCS        | Joint Chiefs of Staff                                                  |
| JLC        | Joint Logistics Commander                                              |
| JROC       | Joint Requirements Oversight Council                                   |
| MDA        | Military Defense Agency                                                |
| MILPERS    | Military Personnel                                                     |
| NGA        | National Geospatial-Intelligence Agency                                |
| NSA        | National Security Agency                                               |
| O&M        | Operation and Maintenance                                              |
| O&S        | Operations and Support                                                 |
| OMB        | Office of Management and Budget                                        |
| OSD        | Office of the Secretary of Defense                                     |
| OSD (PA&E) | Office of the Secretary of Defense for Program Analysis and Evaluation |
| PBL        | Performance Based Logistics                                            |
| PPBE       | Planning Programming Budgeting and Execution                           |
| PSCM       | Procurement Supply Chain Management                                    |
| RDT&E      | Research, Development, Test and Evaluation                             |
| RFID       | Radio Frequency Identification                                         |
| SecDef     | Secretary of Defense                                                   |
| TOR        | Terms of Reference                                                     |
| TransCom   | Transportation Command                                                 |
| UPS        | United Parcel Service                                                  |
| USAF       | United States Air Force                                                |

|            |                                                                       |
|------------|-----------------------------------------------------------------------|
| USD (AT&L) | Under Secretary of Defense for Acquisition, Technology, and Logistics |
| USD (P&L)  | Under Secretary of Defense for Production and Logistics               |
| USD (P&R)  | Under Secretary of Defense for Personnel and Readiness                |
| VISA       | Voluntary Intermodal Sealift Agreement                                |

## APPENDIX D. 1998 DoD BUDGET BREAKDOWN

|                                                 |                           |             | MAJOR COMMANDS |           |           |           |          |         |          |          |        |      |
|-------------------------------------------------|---------------------------|-------------|----------------|-----------|-----------|-----------|----------|---------|----------|----------|--------|------|
| Defense Mission Category                        | Service/Agency            | FY98 Budget | ACOM           | EUCOM     | PACOM     | CENTCOM   | SOUTHCOM | SOCOM   | TRANSCOM | SPACECOM | STRTCM | MISC |
| Army Divisions, Active                          | Army                      | 9,868,491   | 986,849        | 3,453,972 | 2,960,547 | 1,973,698 | 493,425  | 0       | 0        | 0        | 0      | 0    |
| Hospitals & Other Medical Activities, Active    | Defense Health Activities | 8,887,388   | 888,739        | 3,110,586 | 2,666,216 | 1,777,478 | 444,369  | 0       | 0        | 0        | 0      | 0    |
| National Reconnaissance Program (NRP)           | Air Force                 | 6,917,349   | 345,867        | 691,735   | 691,735   | 691,735   | 345,867  | 345,867 | 0        | 0        | 0      | 0    |
| Submarines, Active                              | Navy                      | 5,894,309   | 3,536,585      | 0         | 2,357,724 | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Army Tactical Support Units, Active             | Army                      | 5,791,756   | 2,895,878      | 1,737,527 | 1,158,351 | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Cruisers & Destroyers, Active                   | Navy                      | 5,408,508   | 1,081,702      | 2,163,403 | 2,163,403 | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Air-To-Ground Combat, Active                    | Air Force                 | 4,445,659   | 2,667,395      | 889,132   | 889,132   | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Army Base Operations & Mgmt HQs, Active         | Army                      | 4,222,892   | 2,364,820      | 844,578   | 844,578   | 84,458    | 84,458   | 0       | 0        | 0        | 0      | 0    |
| Carriers, Active                                | Navy                      | 4,170,326   | 834,065        | 1,668,130 | 1,668,130 | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Air-to-Ground Combat, Active                    | Navy                      | 4,167,896   | 833,579        | 1,667,158 | 1,667,158 | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Military Personnel Training, Active             | Army                      | 3,944,827   | 394,483        | 1,380,689 | 1,183,448 | 788,965   | 197,241  | 0       | 0        | 0        | 0      | 0    |
| Ops. Support Base Ops. & Mgmt HQ, Active        | Air Force                 | 3,905,363   | 2,343,218      | 781,073   | 781,073   | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| Military Intertheater Airlift, Active           | Air Force                 | 3,571,919   | 357,192        | 1,250,172 | 1,071,576 | 714,384   | 178,596  | 0       | 0        | 0        | 0      | 0    |
| Air-To-Air Combat, Active                       | Air Force                 | 3,486,950   | 2,092,170      | 697,390   | 697,390   | 0         | 0        | 0       | 0        | 0        | 0      | 0    |
| National, Selected, and Fed Activities          | Air Force                 | 3,260,357   | 326,036        | 1,141,125 | 978,107   | 652,071   | 163,018  | 0       | 0        | 0        | 0      | 0    |
| Foreign Intelligence Program Activities, Active | National Security Agency  | 2,772,851   | 138,643        | 277,285   | 277,285   | 277,285   | 138,643  | 138,643 | 0        | 0        | 0      | 0    |

|                                                |                                        |           | MAJOR COMMANDS |           |           |         |         |   |           |           |   |           |
|------------------------------------------------|----------------------------------------|-----------|----------------|-----------|-----------|---------|---------|---|-----------|-----------|---|-----------|
| Bombers, Active                                | Air Force                              | 2,592,507 | 0              | 1,037,003 | 1,037,003 | 518,501 | 0       | 0 | 0         | 0         | 0 | 0         |
| SLBM Forces, Active                            | Navy                                   | 2,377,312 | 1,426,387      | 0         | 950,925   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Army Non-Divisional Combat Units, Active       | Army                                   | 2,200,675 | 1,100,338      | 660,203   | 440,135   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Departmental Headquarters, Active              | Office of Secretary/Defense            | 2,200,303 | 220,030        | 770,106   | 660,091   | 440,061 | 110,015 | 0 | 0         | 0         | 0 | 0         |
| Operations Support TacAir Activities, Active   | Air Force                              | 2,170,356 | 1,302,214      | 434,071   | 434,071   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Other Logistics Support, Active                | Air Force                              | 2,078,256 | 1,246,954      | 415,651   | 415,651   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Space Launch Support, Active                   | Air Force                              | 2,078,001 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 2,078,001 | 0 | 0         |
| Military Personnel Training, Navy Only, Active | Navy                                   | 2,030,749 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 2,030,749 |
| Amphibious Forces, Active                      | Navy                                   | 1,972,396 | 1,183,438      | 394,479   | 394,479   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Hospitals & Other Medical Activities, Active   | Air Force                              | 1,861,789 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 1,861,789 |
| Army Operational Support, Active               | Army                                   | 1,857,961 | 928,981        | 557,388   | 371,592   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Theater Missile Defense, Active                | Ballistic Missile Defense Organization | 1,834,894 | 1,834,894      | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Fleet Support Surface, Active                  | Navy                                   | 1,754,179 | 350,836        | 701,672   | 701,672   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Training BOS & Mgmt HQs, Active                | Army                                   | 1,585,145 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 1,585,145 |
| Individuals, Active                            | Army                                   | 1,570,504 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 1,570,504 |
| Airlift Operational Support, Active            | Air Force                              | 1,482,948 | 0              | 0         | 0         | 0       | 0       | 0 | 1,482,948 | 0         | 0 | 0         |
| Marine Divisions, Active                       | Marine Corps                           | 1,471,444 | 1,030,011      | 0         | 441,433   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Other Tactical Air Warfare, Active             | Navy                                   | 1,405,180 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 1,405,180 |
| Marine Base Operations & Mgmt HQs, Active      | Marine Corps                           | 1,364,061 | 954,843        | 0         | 409,218   | 0       | 0       | 0 | 0         | 0         | 0 | 0         |
| Other Tactical Air Warfare, Active             | Air Force                              | 1,355,018 | 0              | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 1,355,018 |
| Marine Non-Divisional Combat Increment, Active | Marine Corps                           | 1,353,082 | 1,353,082      | 0         | 0         | 0       | 0       | 0 | 0         | 0         | 0 | 0         |

|                                                        |                                       |           | MAJOR COMMANDS |         |         |   |   |   |           |   |   |           |
|--------------------------------------------------------|---------------------------------------|-----------|----------------|---------|---------|---|---|---|-----------|---|---|-----------|
| Navy Base Ops & Mgmt<br>HQs Air, Active                | Navy                                  | 1,352,542 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,352,542 |
| Departmental<br>Headquarters, Active                   | Air Force                             | 1,344,940 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,344,940 |
| Other Logistics Support,<br>Active                     | Army                                  | 1,334,340 | 667,170        | 400,302 | 266,868 | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Tactical C3, Active                                    | Air Force                             | 1,328,425 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,328,425 |
| Military Personnel<br>Training, Active                 | Air Force                             | 1,323,323 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,323,323 |
| Logistics BOS & Mgmt<br>HQs, Active                    | Air Force                             | 1,305,396 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,305,396 |
| Family Housing, Active                                 | Army                                  | 1,292,000 | 775,200        | 387,600 | 129,200 | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Army Tactical Support<br>Units, National Guard         | Army                                  | 1,283,352 | 1,283,352      | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Individuals, Navy Only,<br>Active                      | Navy                                  | 1,271,986 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,271,986 |
| Army Divisions, National<br>Guard                      | Army                                  | 1,271,053 | 1,271,053      | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Army Non-Divisional<br>Combat Units, National<br>Guard | Army                                  | 1,260,773 | 1,260,773      | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Advanced Technology<br>Development (6.3A),<br>Active   | Advanced<br>Research Projects<br>Agcy | 1,256,645 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,256,645 |
| Army Systems Support,<br>Active                        | Army                                  | 1,236,468 | 618,234        | 370,940 | 247,294 | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Military Intertheater Sealift,<br>Active               | Navy                                  | 1,235,331 | 0              | 0       | 0       | 0 | 0 | 0 | 1,235,331 | 0 | 0 | 0         |
| Navy Base Ops & Mgmt<br>HQs General, Active            | Navy                                  | 1,224,714 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,224,714 |
| Other Logistics Support,<br>Navy Only, Active          | Navy                                  | 1,220,904 | 732,542        | 244,181 | 244,181 | 0 | 0 | 0 | 0         | 0 | 0 | 0         |
| Military Personnel<br>Training, USMC Only,<br>Active   | Marine Corps                          | 1,205,506 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,205,506 |
| Hospitals & Other Medical<br>Activities, Active        | Navy                                  | 1,201,549 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,201,549 |
| Def Airborne<br>Reconnaissance Program                 | Air Force                             | 1,192,835 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0 | 0 | 1,192,835 |



|                                              |                             |           | MAJOR COMMANDS |         |         |   |   |   |           |           |   |           |
|----------------------------------------------|-----------------------------|-----------|----------------|---------|---------|---|---|---|-----------|-----------|---|-----------|
| Military Intratheater Airlift, Active        | Air Force                   | 1,169,656 | 0              | 0       | 0       | 0 | 0 | 0 | 1,169,656 | 0         | 0 | 0         |
| Dependent Education, Active                  | Office of Secretary/Defense | 1,157,847 | 0              | 810,493 | 347,354 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Hospitals & Other Medical Activities, Active | Army                        | 1,153,143 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,153,143 |
| Departmental Headquarters, Active            | Army                        | 1,149,665 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,149,665 |
| Supply Operations, Active                    | Defense Logistics Agency    | 1,129,990 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,129,990 |
| Other Operational Support General, Active    | Navy                        | 1,119,994 | 671,996        | 223,999 | 223,999 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Army Tactical Support Units, Reserve         | Army                        | 1,115,098 | 1,115,098      | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Sea Based ASW Air Forces, Active             | Navy                        | 1,111,387 | 222,277        | 444,555 | 444,555 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Airlift Base Operations & Mgmt HQs, Active   | Air Force                   | 1,087,694 | 0              | 0       | 0       | 0 | 0 | 0 | 1,087,694 | 0         | 0 | 0         |
| Family Housing, Active                       | Air Force                   | 1,083,362 | 650,017        | 325,009 | 108,336 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Service Forces, Active                       | Navy                        | 1,068,276 | 213,655        | 427,310 | 427,310 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Personnel Acquisition, Active                | Army                        | 1,068,243 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,068,243 |
| Medical BOS & Mgmt HQs, Active               | Defense Health Activities   | 1,060,515 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,060,515 |
| Surveillance/Warning, Active                 | Air Force                   | 1,040,287 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 1,040,287 | 0 | 0         |
| Maintenance Operations, Active               | Navy                        | 1,034,782 | 827,826        | 103,478 | 103,478 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Family Housing, Navy Only, Active            | Navy                        | 1,030,520 | 824,416        | 103,052 | 103,052 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Centrally Managed Comm. Activities, Active   | Air Force                   | 1,027,478 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,027,478 |
| Maintenance Operations, Navy Only, Active    | Navy                        | 1,022,457 | 817,966        | 102,246 | 102,246 | 0 | 0 | 0 | 0         | 0         | 0 | 0         |
| Flight Training, Active                      | Navy                        | 1,002,787 | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 1,002,787 |
| ICBMs, Active                                | Air Force                   | 991,604   | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 991,604   | 0 | 0         |
| Departmental Headquarters, Active            | Navy                        | 990,542   | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 990,542   |
| Individuals, Active                          | Air Force                   | 986,560   | 0              | 0       | 0       | 0 | 0 | 0 | 0         | 0         | 0 | 986,560   |

|                                                    |                                     |         | MAJOR COMMANDS |         |         |   |   |   |         |   |         |         |
|----------------------------------------------------|-------------------------------------|---------|----------------|---------|---------|---|---|---|---------|---|---------|---------|
| Command & Control Activities, Active               | Air Force                           | 981,123 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 981,123 |
| Other Logistics Support, Active                    | Office of Secretary/Defense         | 973,786 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 973,786 |
| Supply Operations, Active                          | Defense Commissary Agency, RvFd     | 938,552 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 938,552 |
| Military Intertheater Airlift, Reserve             | Air Force                           | 924,559 | 0              | 0       | 0       | 0 | 0 | 0 | 924,559 | 0 | 0       | 0       |
| Marine Operational Support, Active                 | Marine Corps                        | 920,059 | 644,041        | 0       | 276,018 | 0 | 0 | 0 | 0       | 0 | 0       | 0       |
| Marine Tactical Support Increment, Active          | Marine Corps                        | 900,886 | 630,620        | 0       | 270,266 | 0 | 0 | 0 | 0       | 0 | 0       | 0       |
| Air-to-Ground Combat, Active                       | Marine Corps                        | 881,790 | 176,358        | 352,716 | 352,716 | 0 | 0 | 0 | 0       | 0 | 0       | 0       |
| Military Intertheater Airlift, National Guard      | Air Force                           | 864,536 | 0              | 0       | 0       | 0 | 0 | 0 | 864,536 | 0 | 0       | 0       |
| Defense Imagery Program (DIP)                      | National Imagery and Mapping Agency | 846,171 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 846,171 |
| Flight Training, Active                            | Air Force                           | 845,889 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 845,889 |
| Geophysical Activities, Active                     | Air Force                           | 837,330 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 837,330 |
| Exploratory Development (6.2), Active              | Advanced Research Projects Agcy     | 829,873 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 829,873 |
| Departmental HQs BOS & Mgmt HQs, Navy Only, Active | Navy                                | 822,349 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 822,349 |
| USAF Strat. Base Operations & Mgmt HQs, Active     | Air Force                           | 815,762 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 815,762 | 0       |
| Navy Base Ops & Mgmt HQs Surface, Active           | Navy                                | 809,221 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 809,221 |
| Air-To-Ground Combat, National Guard               | Air Force                           | 794,998 | 794,998        | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 0       |
| Logistics BOS & Mgmt HQs, Active                   | Army                                | 786,163 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 786,163 |
| Training BOS & Mgmt HQs, Active                    | Air Force                           | 772,765 | 0              | 0       | 0       | 0 | 0 | 0 | 0       | 0 | 0       | 772,765 |

|                                               |                             |         | MAJOR COMMANDS |         |         |   |   |         |         |         |   |         |
|-----------------------------------------------|-----------------------------|---------|----------------|---------|---------|---|---|---------|---------|---------|---|---------|
| Supply Operations, Active                     | Army                        | 755,359 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 755,359 |
| Def Airborne Reconnaissance Program           | Office of Secretary/Defense | 736,109 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 736,109 |
| Air-To-Air Combat, Active                     | Navy                        | 730,606 | 146,121        | 292,242 | 292,242 | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| R&D Support Activities, Active                | Air Force                   | 730,290 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 730,290 |
| Navy General R&D Support, Active              | Navy                        | 712,608 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 712,608 |
| SOF Management HQs, Active                    | Army                        | 711,717 | 0              | 0       | 0       | 0 | 0 | 711,717 | 0       | 0       | 0 | 0       |
| Departmental Headquarters, Navy Only, Active  | Navy                        | 711,119 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 711,119 |
| Maintenance Operations, Active                | Army                        | 702,228 | 351,114        | 210,668 | 140,446 | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| Intelligence BOS & Mgmt HQs, Active           | Air Force                   | 689,306 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 689,306 |
| Exploratory Development (6.2), Active         | Air Force                   | 684,175 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 684,175 |
| Fleet Support Air, Active                     | Navy                        | 667,982 | 133,596        | 267,193 | 267,193 | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| Supply Operations, Active                     | Navy                        | 660,972 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 660,972 |
| Advanced Special Operations RD&A, Active      | Special Operations Command  | 655,834 | 0              | 0       | 0       | 0 | 0 | 655,834 | 0       | 0       | 0 | 0       |
| Army Base Operations & Mgmt HQs, Guard        | Army                        | 652,930 | 652,930        | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| Counter Drug Support, Active                  | Office of Secretary/Defense | 652,582 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 652,582 |
| Intelligence BOS & Mgmt HQs, Active           | Defense Intelligence Agency | 645,083 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 645,083 |
| R&D Support Activities, Active                | Navy                        | 637,337 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 637,337 |
| Military Intratheater Airlift, National Guard | Air Force                   | 610,089 | 0              | 0       | 0       | 0 | 0 | 0       | 610,089 | 0       | 0 | 0       |
| Multi/Intermodal Intertheater, Active         | Air Force                   | 603,583 | 0              | 0       | 0       | 0 | 0 | 0       | 603,583 | 0       | 0 | 0       |
| Tactical Reconnaissance, Active               | Air Force                   | 596,858 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 596,858 | 0 | 0       |
| Advanced Technology Development (6.3A),       | Office of Secretary/Defense | 587,057 | 0              | 0       | 0       | 0 | 0 | 0       | 0       | 0       | 0 | 587,057 |

|                                                |                                        |         | MAJOR COMMANDS |        |        |        |        |         |   |   |   |         |
|------------------------------------------------|----------------------------------------|---------|----------------|--------|--------|--------|--------|---------|---|---|---|---------|
| Active                                         |                                        |         |                |        |        |        |        |         |   |   |   |         |
| R&D Support Activities, Active                 | Army                                   | 568,370 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 568,370 |
| Logistics BOS & Mgmt HQs, Navy Only, Active    | Navy                                   | 563,290 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 563,290 |
| Centrally Managed Comm. Activities, Active     | Defense Information Systems Agency     | 557,523 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 557,523 |
| SOF Operations, Active                         | Special Operations Command             | 531,816 | 0              | 0      | 0      | 0      | 0      | 531,816 | 0 | 0 | 0 | 0       |
| Marine Non-Divisional Combat Increment, Active | Navy                                   | 529,495 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 529,495 |
| Departmental HQs BOS & Mgmt HQs, Reserve       | Army                                   | 528,887 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 528,887 |
| Personnel Acquisition, Active                  | Air Force                              | 516,509 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 516,509 |
| Centrally Managed Comm. Activities, Active     | National Security Agency               | 514,882 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 514,882 |
| Geophysical BOS & Mgmt Hqs, Active             | Air Force                              | 511,415 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 511,415 |
| International Support, Active                  | Army                                   | 511,340 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 511,340 |
| Maritime Patrol, Active                        | Navy                                   | 507,453 | 304,472        | 50,745 | 50,745 | 50,745 | 50,745 | 0       | 0 | 0 | 0 | 0       |
| Tactical C3, Active                            | Navy                                   | 506,919 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 506,919 |
| Departmental HQs BOS & Mgmt HQs, Active        | Office of Secretary/Defense            | 505,824 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 505,824 |
| Military Personnel Training, Reserve           | Army                                   | 504,731 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 504,731 |
| Ballistic Missile Defense Forces, Active       | Ballistic Missile Defense Organization | 504,631 | 504,631        | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 0       |
| Training BOS & Mgmt HQs, Navy Only, Active     | Navy                                   | 492,505 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 492,505 |
| Exploratory Development (6.2), Active          | Army                                   | 491,398 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 491,398 |
| Departmental HQs BOS & Mgmt HQs, Active        | Air Force                              | 490,491 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 490,491 |
| R&D BOS & Mgmt HQs, Active                     | Army                                   | 484,400 | 0              | 0      | 0      | 0      | 0      | 0       | 0 | 0 | 0 | 484,400 |

|                                                 |                             |         | MAJOR COMMANDS |         |         |         |   |         |   |   |   |         |
|-------------------------------------------------|-----------------------------|---------|----------------|---------|---------|---------|---|---------|---|---|---|---------|
| Special Activities, Navy                        | Navy                        | 481,585 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 481,585 |
| Exploratory Development (6.2), Active           | Navy                        | 477,230 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 477,230 |
| Intelligence & Related Activities               | Air Force                   | 469,351 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 469,351 |
| Departmental HQs BOS & Mgmt HQs, National Guard | Air Force                   | 466,491 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 466,491 |
| Flight Training, Army Only, Active              | Army                        | 461,470 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 461,470 |
| Navy Surface Ship Related R&D, Active           | Navy                        | 460,815 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 460,815 |
| Frigates Patrol Combatants & Craft, Active      | Navy                        | 458,511 | 275,107        | 91,702  | 91,702  | 0       | 0 | 0       | 0 | 0 | 0 | 0       |
| Geophysical Activities, Active                  | Navy                        | 452,738 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 452,738 |
| Intelligence BOS & Mgmt HQs, Active             | Navy                        | 448,938 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 448,938 |
| General Purpose Support, Active                 | Joint Chiefs of Staff       | 446,399 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 446,399 |
| Centrally Managed Comm. Activities, Active      | Navy                        | 443,888 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 443,888 |
| Sea Based Prepositioning, Active                | Navy                        | 429,716 | 0              | 0       | 214,858 | 214,858 | 0 | 0       | 0 | 0 | 0 | 0       |
| Other Personnel Support Activities, Active      | Office of Secretary/Defense | 423,274 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 423,274 |
| Advanced Technology Development (6.3A), Active  | Army                        | 422,001 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 422,001 |
| Fleet Support General, Active                   | Navy                        | 420,897 | 84,179         | 168,359 | 168,359 | 0       | 0 | 0       | 0 | 0 | 0 | 0       |
| Departmental HQs BOS & Mgmt HQs, Active         | Army                        | 414,996 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 414,996 |
| SOF Management HQs, Active                      | Air Force                   | 414,339 | 0              | 0       | 0       | 0       | 0 | 414,339 | 0 | 0 | 0 | 0       |
| Information Management Activities               | Army                        | 410,888 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 410,888 |
| Army Weapons & Tracked Combat Veh. R&D, Active  | Army                        | 406,437 | 0              | 0       | 0       | 0       | 0 | 0       | 0 | 0 | 0 | 406,437 |

|                                                 |                                         |         | MAJOR COMMANDS |        |        |   |   |   |   |   |   |         |
|-------------------------------------------------|-----------------------------------------|---------|----------------|--------|--------|---|---|---|---|---|---|---------|
| General Purpose Support, Active                 | Chemical and Biological Defense Program | 404,420 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 404,420 |
| Advanced Technology Development (6.3A), Active  | Air Force                               | 402,314 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 402,314 |
| Advanced Technology Development (6.3A), Active  | Navy                                    | 399,166 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 399,166 |
| Other Logistics Support, Active                 | Navy                                    | 395,894 | 237,536        | 79,179 | 79,179 | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| WRM                                             | Army                                    | 389,459 | 389,459        | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| Army Other R&D Programs, Active                 | Army                                    | 386,395 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 386,395 |
| Individuals, USMC Only, Active                  | Marine Corps                            | 385,766 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 385,766 |
| Personnel Acquisition, Navy Only, Active        | Navy                                    | 384,126 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 384,126 |
| Interceptors, National Guard                    | Air Force                               | 383,342 | 383,342        | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| Research (6.1), Active                          | Navy                                    | 382,117 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 382,117 |
| Central Imagery Office Program (CIOP)           | National Imagery and Mapping Agency     | 376,303 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 376,303 |
| Foreign Intelligence Program Activities, Active | Navy                                    | 375,673 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 375,673 |
| Other Tactical Air Warfare, Active              | Marine Corps                            | 371,678 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 371,678 |
| Departmental HQs BOS & Mgmt HQs, Reserve        | Air Force                               | 366,453 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 366,453 |
| Departmental HQs BOS & Mgmt HQs, National Guard | Army                                    | 354,792 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 354,792 |
| Undistributed Engineering Development, Active   | Army                                    | 353,429 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 353,429 |
| R&D Support Activities, Active                  | Office of Secretary/Defense             | 347,397 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 347,397 |
| Other Personnel Support Activities, Active      | Army                                    | 346,762 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 346,762 |
| Intelligence BOS & Mgmt                         | Army                                    | 333,120 | 0              | 0      | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 333,120 |

|                                                       |                               |         | MAJOR COMMANDS |         |         |         |   |         |         |   |   |         |
|-------------------------------------------------------|-------------------------------|---------|----------------|---------|---------|---------|---|---------|---------|---|---|---------|
| HQs, Active                                           |                               |         |                |         |         |         |   |         |         |   |   |         |
| Defense Suppression, Active                           | Navy                          | 327,448 | 65,490         | 130,979 | 130,979 | 0       | 0 | 0       | 0       | 0 | 0 | 0       |
| Foreign Intelligence Program Activities, Active       | Air Force                     | 325,194 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 325,194 |
| Land Based Prepositioning, Active                     | Army                          | 323,811 | 0              | 97,143  | 97,143  | 129,524 | 0 | 0       | 0       | 0 | 0 | 0       |
| Departmental Headquarters, Active                     | Defense Contract Audit Agency | 323,062 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 323,062 |
| Army Special Mission Forces, National Guard           | Army                          | 322,944 | 322,944        | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 0       |
| Centrally Managed Comm. Activities, Active            | Army                          | 320,833 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 320,833 |
| SOF Training, Active                                  | Special Operations Command    | 318,596 | 0              | 0       | 0       | 0       | 0 | 318,596 | 0       | 0 | 0 | 0       |
| Personnel Acquisition, Active                         | Navy                          | 317,415 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 317,415 |
| Army Aircraft R&D Programs, Active                    | Army                          | 316,658 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 316,658 |
| Mine Warfare Forces, Active                           | Navy                          | 315,554 | 189,332        | 31,555  | 94,666  | 0       | 0 | 0       | 0       | 0 | 0 | 0       |
| Health Personnel Training, Active                     | Army                          | 309,065 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 309,065 |
| Personnel Acquisition Base Operations, Active         | Army                          | 298,486 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 298,486 |
| Undistributed Advanced Development, Navy Only, Active | Navy                          | 296,684 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 296,684 |
| International Support, Active                         | Air Force                     | 293,885 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 293,885 |
| International Support, Active                         | Office of Secretary/Defense   | 293,714 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 293,714 |
| R&D BOS & Mgmt HQs, Active                            | Air Force                     | 293,109 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 293,109 |
| Military Intratheater Airlift, Reserve                | Air Force                     | 292,959 | 0              | 0       | 0       | 0       | 0 | 0       | 292,959 | 0 | 0 | 0       |
| Other Personnel Support Activities, Navy Only, Active | Navy                          | 292,298 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 292,298 |
| Departmental                                          | Army                          | 289,314 | 0              | 0       | 0       | 0       | 0 | 0       | 0       | 0 | 0 | 289,314 |

|                                                 |                             |         | MAJOR COMMANDS |   |         |   |   |         |   |   |   |         |
|-------------------------------------------------|-----------------------------|---------|----------------|---|---------|---|---|---------|---|---|---|---------|
| Headquarters, Reserve                           |                             |         |                |   |         |   |   |         |   |   |   |         |
| Fleet Support Air, Reserve                      | Navy                        | 274,445 | 274,445        | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 0       |
| Personnel Acquisition, Reserve                  | Army                        | 274,284 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 274,284 |
| Navy Base Ops & Mgmt HQs General, Reserve       | Navy                        | 271,566 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 271,566 |
| Personnel Acquisition, National Guard           | Army                        | 267,980 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 267,980 |
| Health Personnel Training, Active               | Navy                        | 265,150 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 265,150 |
| Army Special Mission Forces, Active             | Army                        | 262,880 | 0              | 0 | 0       | 0 | 0 | 262,880 | 0 | 0 | 0 | 0       |
| Communications, Active                          | Navy                        | 258,910 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 258,910 |
| Foreign Intelligence Program Activities, Active | Army                        | 255,192 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 255,192 |
| Research (6.1), Active                          | Office of Secretary/Defense | 254,670 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 254,670 |
| Health Personnel Training, Active               | Air Force                   | 252,814 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 252,814 |
| Command & Control Activities, Active            | Navy                        | 252,014 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 252,014 |
| Health Personnel Training, Active               | Defense Health Activities   | 249,172 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 249,172 |
| Training BOS & Mgmt HQs, USMC Only, Active      | Marine Corps                | 247,298 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 247,298 |
| Command & Control Activities, Active            | Army                        | 240,951 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 240,951 |
| Departmental Headquarters, National Guard       | Army                        | 240,380 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 240,380 |
| Navy Base Ops & Mgmt HQs Air, Reserve           | Navy                        | 239,652 | 0              | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 239,652 |
| Undersea Surveillance, Active                   | Navy                        | 238,444 | 119,222        | 0 | 119,222 | 0 | 0 | 0       | 0 | 0 | 0 | 0       |
| Army Base Operations & Mgmt HQs, Reserve        | Army                        | 238,335 | 238,335        | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 0       |
| Maintenance Operations, Reserve                 | Army                        | 234,299 | 234,299        | 0 | 0       | 0 | 0 | 0       | 0 | 0 | 0 | 0       |



|                                                      |                                    |         | MAJOR COMMANDS |   |        |   |   |         |   |         |         |         |
|------------------------------------------------------|------------------------------------|---------|----------------|---|--------|---|---|---------|---|---------|---------|---------|
| Departmental Headquarters, Active                    | Defense Logistics Agency           | 233,839 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 233,839 |
| Research (6.1), Active                               | Air Force                          | 228,906 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 228,906 |
| Family Housing, USMC Only, Active                    | Marine Corps                       | 224,917 | 202,425        | 0 | 22,492 | 0 | 0 | 0       | 0 | 0       | 0       | 0       |
| Departmental Headquarters, USMC Only, Active         | Marine Corps                       | 224,584 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 224,584 |
| NORAD/SPACECOM Support Activities, Active            | Air Force                          | 223,469 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 223,469 | 0       | 0       |
| SOF Management HQs, Active                           | Navy                               | 222,661 | 0              | 0 | 0      | 0 | 0 | 222,661 | 0 | 0       | 0       | 0       |
| Centrally Managed Comm. Activities, National Guard   | Air Force                          | 218,217 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 218,217 |
| Theater Missile Defense, Active                      | Air Force                          | 216,796 | 216,796        | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 0       |
| Personnel Acquisition, USMC Only, Active             | Marine Corps                       | 214,572 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 214,572 |
| Operations Support TacAir Activities, National Guard | Air Force                          | 213,780 | 213,780        | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 0       |
| Communications, Active                               | Air Force                          | 212,934 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 212,934 |
| Exploratory Development (6.2), Active                | Defense Special Weapons Agency     | 211,971 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 211,971 |
| Bombers, National Guard                              | Air Force                          | 207,760 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 207,760 | 0       |
| Research (6.1), Active                               | Army                               | 205,623 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 205,623 |
| Undistributed Advanced Development, Active           | Navy                               | 192,439 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 192,439 |
| Air-To-Ground Combat, Reserve                        | Air Force                          | 190,851 | 190,851        | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 0       |
| Security & Investigative Activities                  | Defense Investigative Service      | 190,118 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 190,118 |
| SOF General Support, Active                          | Special Operations Command         | 180,868 | 0              | 0 | 0      | 0 | 0 | 180,868 | 0 | 0       | 0       | 0       |
| Marine Divisions, Reserve                            | Marine Corps                       | 180,424 | 180,424        | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 0       |
| Command & Control Activities                         | Defense Information Systems Agency | 177,967 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 177,967 |
| Tactical C3, Active                                  | Marine Corps                       | 176,381 | 0              | 0 | 0      | 0 | 0 | 0       | 0 | 0       | 0       | 176,381 |

|                                                      |                                              |         | MAJOR COMMANDS |        |        |   |   |         |         |         |   |         |
|------------------------------------------------------|----------------------------------------------|---------|----------------|--------|--------|---|---|---------|---------|---------|---|---------|
| Carriers, Reserve                                    | Navy                                         | 167,735 | 167,735        | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| Navy Base Ops & Mgmt<br>HQS Subsurface, Active       | Navy                                         | 167,458 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 167,458 |
| Departmental<br>Headquarters, USMC<br>Only, Reserve  | Marine Corps                                 | 166,468 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 166,468 |
| NORAD/SPACECOM<br>Base Ops & Mgmt HQs,<br>Active     | Air Force                                    | 165,360 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 165,360 | 0 | 0       |
| Training BOS & Mgmt<br>HQS, Active                   | Navy                                         | 156,477 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 156,477 |
| Command Centers, Active                              | Air Force                                    | 151,749 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 151,749 |
| Maintenance Operations,<br>Active                    | Air Force                                    | 151,695 | 91,017         | 30,339 | 30,339 | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| Other Logistics Support,<br>USMC Only, Active        | Marine Corps                                 | 150,657 | 90,394         | 30,131 | 30,131 | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| Logistics BOS & Mgmt<br>HQS, Active                  | Navy                                         | 150,264 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 150,264 |
| Other Logistics Support,<br>Active                   | Defense Logistics<br>Agency                  | 149,896 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 149,896 |
| Advanced Technology<br>Development (6.3A),<br>Active | Ballistic Missile<br>Defense<br>Organization | 147,557 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 147,557 |
| Departmental<br>Headquarters, Active                 | Defense Finance &<br>Accounting Service      | 146,682 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 146,682 |
| Surveillance, Active                                 | Air Force                                    | 146,450 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 146,450 | 0 | 0       |
| Military Personnel<br>Training, National Guard       | Air Force                                    | 146,249 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 146,249 |
| Air-To-Air Combat,<br>National Guard                 | Air Force                                    | 143,966 | 143,966        | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 0       |
| ICBMs, Active                                        | Army                                         | 140,405 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 140,405 | 0 | 0       |
| Airlift C3, Active                                   | Air Force                                    | 139,992 | 0              | 0      | 0      | 0 | 0 | 0       | 139,992 | 0       | 0 | 0       |
| Medical BOS & Mgmt<br>HQS, Active                    | Navy                                         | 139,593 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 139,593 |
| Intelligence Skill Training,<br>Active               | Army                                         | 139,297 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 139,297 |
| SOF Force<br>Enhancements, Active                    | Special Operations<br>Command                | 139,258 | 0              | 0      | 0      | 0 | 0 | 139,258 | 0       | 0       | 0 | 0       |
| Logistics Support to                                 | Army                                         | 139,249 | 0              | 0      | 0      | 0 | 0 | 0       | 0       | 0       | 0 | 139,249 |

|                                                       |                          |         | MAJOR COMMANDS |        |        |   |   |   |         |   |   |         |
|-------------------------------------------------------|--------------------------|---------|----------------|--------|--------|---|---|---|---------|---|---|---------|
| MILCON Activities, Active                             |                          |         |                |        |        |   |   |   |         |   |   |         |
| Communications BOS & Mgmt HQs, Active                 | Navy                     | 138,521 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 138,521 |
| Personnel Acquisition Base Operations, Active         | Air Force                | 137,805 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 137,805 |
| Airlift Rescue & Recovery, Active                     | Air Force                | 135,227 | 0              | 0      | 0      | 0 | 0 | 0 | 135,227 | 0 | 0 | 0       |
| Departmental Headquarters, Active                     | Office Inspector General | 132,180 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 132,180 |
| Information Management Activities                     | Air Force                | 131,359 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 131,359 |
| Undistributed Adjustments, Active                     | Army                     | 131,045 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 131,045 |
| International Support, Active                         | Navy                     | 130,506 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 130,506 |
| Def Airborne Reconnaissance Program                   | Navy                     | 129,973 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 129,973 |
| Other Personnel Support Activities, USMC Only, Active | Marine Corps             | 129,958 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 129,958 |
| Departmental HQs BOS & Mgmt HQs, USMC Only, Active    | Marine Corps             | 129,602 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 129,602 |
| Army Non-Divisional Combat Units, Reserve             | Army                     | 129,101 | 129,101        | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 0       |
| Undistributed Engineering Development, Active         | Air Force                | 128,448 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 128,448 |
| Maintenance Operations, USMC Only, Active             | Marine Corps             | 126,589 | 101,271        | 12,659 | 12,659 | 0 | 0 | 0 | 0       | 0 | 0 | 0       |
| Other Operational Support General, Reserve            | Navy                     | 126,565 | 126,565        | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 0       |
| Tanker/Cargo, Active                                  | Air Force                | 122,382 | 0              | 0      | 0      | 0 | 0 | 0 | 122,382 | 0 | 0 | 0       |
| Hospitals & Other Medical Activities, Reserve         | Army                     | 120,862 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 120,862 |
| Defense Cryptologic Program (DCP)                     | National Security Agency | 118,721 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 118,721 |
| Security & Investigative Activities                   | Navy                     | 117,850 | 0              | 0      | 0      | 0 | 0 | 0 | 0       | 0 | 0 | 117,850 |
| Operations Support TacAir Activities, Active          | Marine Corps             | 115,750 | 23,150         | 46,300 | 46,300 | 0 | 0 | 0 | 0       | 0 | 0 | 0       |

|                                               |                                        |         | MAJOR COMMANDS |   |        |   |   |   |   |   |   |         |
|-----------------------------------------------|----------------------------------------|---------|----------------|---|--------|---|---|---|---|---|---|---------|
| SLBM Base Operations & Mgmt HQs, Active       | Navy                                   | 115,141 | 57,571         | 0 | 57,571 | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| Marine R&D Support, Active                    | Marine Corps                           | 114,355 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 114,355 |
| Departmental Headquarters, Active             | Joint Chiefs of Staff                  | 113,236 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 113,236 |
| Departmental HQs BOS & Mgmt HQs, Active       | Joint Chiefs of Staff                  | 112,527 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 112,527 |
| Intelligence Skill Training, Active           | Air Force                              | 112,234 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 112,234 |
| Maritime Patrol, Reserve                      | Navy                                   | 112,221 | 112,221        | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| Departmental Headquarters, National Guard     | Air Force                              | 111,216 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 111,216 |
| Personnel BOS & Mgmt HQs, Active              | Navy                                   | 110,277 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 110,277 |
| International Support, Active                 | Onsite Inspection Agency               | 108,349 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 108,349 |
| Other Personnel Support Activities, Active    | Air Force                              | 107,945 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 107,945 |
| Frigates Patrol Combatants & Craft, Reserve   | Navy                                   | 107,902 | 107,902        | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| Undistributed Engineering Development, Active | Navy                                   | 106,334 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 106,334 |
| Logistics BOS & Mgmt HQs, USMC Only, Active   | Marine Corps                           | 104,838 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 104,838 |
| Maintenance Operations, National Guard        | Army                                   | 104,174 | 104,174        | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 0       |
| Exploratory Development (6.2), Active         | Ballistic Missile Defense Organization | 101,932 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 101,932 |
| Counter Drug Support, Active                  | Army                                   | 101,086 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 101,086 |
| Command & Control Activities                  | Air Force                              | 100,284 | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 100,284 |
| Military Personnel Training, Active           | Defense Logistics Agency               | 99,964  | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 99,964  |
| Personnel Acquisition Base Operations, Active | Navy                                   | 99,665  | 0              | 0 | 0      | 0 | 0 | 0 | 0 | 0 | 0 | 99,665  |

|                                                |                                    |        | MAJOR COMMANDS |        |        |   |   |        |   |        |        |        |
|------------------------------------------------|------------------------------------|--------|----------------|--------|--------|---|---|--------|---|--------|--------|--------|
| Other Operational Support Surface, Active      | Navy                               | 97,843 | 58,706         | 19,569 | 19,569 | 0 | 0 | 0      | 0 | 0      | 0      | 0      |
| Mine Warfare Forces, Reserve                   | Navy                               | 97,647 | 97,647         | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 0      |
| SOF Management HQs, Active                     | Special Operations Command         | 96,809 | 0              | 0      | 0      | 0 | 0 | 96,809 | 0 | 0      | 0      | 0      |
| Marine Tactical Support Increment, Reserve     | Marine Corps                       | 96,627 | 96,627         | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 0      |
| Security & Investigative Activities            | Air Force                          | 94,885 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 94,885 |
| R&D Support To Tactical Air Forces, Active     | Air Force                          | 94,546 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 94,546 |
| Security & Investigative Activities            | Army                               | 92,162 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 92,162 |
| Nuclear Weapons Support, Active                | Defense Special Weapons Agency     | 91,292 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 91,292 | 0      |
| SOF Operations, Active                         | Air Force                          | 90,925 | 0              | 0      | 0      | 0 | 0 | 90,925 | 0 | 0      | 0      | 0      |
| Supply Operations, Active                      | Air Force                          | 90,005 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 90,005 |
| Space Defense, Active                          | Air Force                          | 88,825 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 88,825 | 0      | 0      |
| Communications BOS & Mgmt HQs, Active          | Air Force                          | 87,450 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 87,450 |
| Information Management Activities              | Defense Information Systems Agency | 84,184 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 84,184 |
| Hospitals & Other Medical Activities, Reserve  | Navy                               | 84,062 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 84,062 |
| Departmental Headquarters, Reserve             | Air Force                          | 84,048 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 84,048 |
| Tactical C3, National Guard                    | Air Force                          | 83,938 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 83,938 |
| Advanced Technology Development (6.3A), Active | Defense Special Weapons Agency     | 83,370 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 83,370 |
| Surveillance, National Guard                   | Air Force                          | 81,753 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 81,753 | 0      | 0      |
| Marine R&D Support, Active                     | Navy                               | 80,735 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 80,735 |
| Supply Operations, USMC Only, Active           | Marine Corps                       | 79,626 | 0              | 0      | 0      | 0 | 0 | 0      | 0 | 0      | 0      | 79,626 |

|                                                 |                                    |        | MAJOR COMMANDS |        |        |        |   |   |        |   |   |        |
|-------------------------------------------------|------------------------------------|--------|----------------|--------|--------|--------|---|---|--------|---|---|--------|
| Military Personnel Training, USMC Only, Reserve | Marine Corps                       | 78,464 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 78,464 |
| Undistributed Advanced Development, Active      | Office of Secretary/Defense        | 78,343 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 78,343 |
| Hospitals & Other Medical Activities, Reserve   | Air Force                          | 77,238 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 77,238 |
| Navy Systems Support Surface and Air, Active    | Navy                               | 77,124 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 77,124 |
| Research (6.1), Active                          | Advanced Research Projects Agcy    | 76,009 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 76,009 |
| Airlift Rescue & Recovery, National Guard       | Air Force                          | 74,970 | 0              | 0      | 0      | 0      | 0 | 0 | 74,970 | 0 | 0 | 0      |
| Civilian Personnel Training, Active             | Army                               | 74,725 | 74,725         | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 0      |
| Army Ammunition R&D Programs, Active            | Army                               | 73,670 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 73,670 |
| Geophysical BOS & Mgmt Hqs, Active              | Army                               | 73,628 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 73,628 |
| Sea Based Prepositioning, Active                | Marine Corps                       | 73,609 | 0              | 0      | 36,805 | 36,805 | 0 | 0 | 0      | 0 | 0 | 0      |
| Other Operational Support Projection, Active    | Navy                               | 73,015 | 43,809         | 14,603 | 14,603 | 0      | 0 | 0 | 0      | 0 | 0 | 0      |
| Tanker/Cargo, Active                            | Marine Corps                       | 72,653 | 36,327         | 0      | 36,327 | 0      | 0 | 0 | 0      | 0 | 0 | 0      |
| Command & Control Activities                    | Army                               | 72,444 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 72,444 |
| Military Personnel Training, Reserve            | Air Force                          | 72,263 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 72,263 |
| Other Logistics Support, Navy Only, Reserve     | Navy                               | 71,753 | 71,753         | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 0      |
| Def Space Reconnaissance Program                | Defense Support Project Office     | 68,737 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 68,737 |
| Def Intell Tactical Program, Active             | Defense Intelligence Agency        | 67,565 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 67,565 |
| Civilian Personnel Training, Active             | Air Force                          | 67,183 | 67,183         | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 0      |
| Communications BOS & Mgmt HQs, Active           | Defense Information Systems Agency | 66,305 | 0              | 0      | 0      | 0      | 0 | 0 | 0      | 0 | 0 | 66,305 |

|                                                      |                                         |        | MAJOR COMMANDS |        |        |   |   |   |        |   |        |        |
|------------------------------------------------------|-----------------------------------------|--------|----------------|--------|--------|---|---|---|--------|---|--------|--------|
| Navy Systems Support Air, Active                     | Navy                                    | 66,194 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 66,194 |
| Other Operational Support Air, Active                | Navy                                    | 65,608 | 39,365         | 13,122 | 13,122 | 0 | 0 | 0 | 0      | 0 | 0      | 0      |
| Personnel Acquisition, Navy Only, Reserve            | Navy                                    | 65,147 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 65,147 |
| Intelligence Skill Training, Navy Only, Active       | Navy                                    | 65,100 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 65,100 |
| Hospitals & Other Medical Activities, National Guard | Air Force                               | 65,091 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 65,091 |
| Defense Suppression, Active                          | Air Force                               | 64,894 | 38,936         | 12,979 | 12,979 | 0 | 0 | 0 | 0      | 0 | 0      | 0      |
| Operations Support TacAir Activities, Reserve        | Air Force                               | 64,788 | 64,788         | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 0      |
| Undistributed Advanced Development, Active           | Air Force                               | 64,627 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 64,627 |
| Army Missile R&D Programs, Active                    | Army                                    | 62,999 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 62,999 |
| Exploratory Development (6.2), Active                | Office of Secretary/Defense             | 61,787 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 61,787 |
| Airlift Operational Support, Reserve                 | Air Force                               | 61,652 | 0              | 0      | 0      | 0 | 0 | 0 | 61,652 | 0 | 0      | 0      |
| R&D Support Activities, Active                       | Defense Logistics Agency                | 61,207 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 61,207 |
| Exploratory Development (6.2), Active                | Chemical and Biological Defense Program | 60,023 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 60,023 |
| Def Intell Spec Technology Program                   | Office of Secretary/Defense             | 59,459 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 59,459 |
| Marine Non-Divisional Combat Increment, Reserve      | Marine Corps                            | 58,823 | 58,823         | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 0      |
| Defense Suppression, Active                          | Marine Corps                            | 57,374 | 11,475         | 22,950 | 22,950 | 0 | 0 | 0 | 0      | 0 | 0      | 0      |
| Airlift Rescue & Recovery, Reserve                   | Air Force                               | 57,211 | 0              | 0      | 0      | 0 | 0 | 0 | 57,211 | 0 | 0      | 0      |
| Bombers, Reserve                                     | Air Force                               | 56,428 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 56,428 | 0      |
| Departmental HQs BOS & Mgmt HQs, Reserve             | Navy                                    | 55,837 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 55,837 |
| Undistributed Engineering                            | Office of                               | 55,429 | 0              | 0      | 0      | 0 | 0 | 0 | 0      | 0 | 0      | 55,429 |

|                                                       |                            |        | MAJOR COMMANDS |   |   |   |   |        |        |        |   |        |
|-------------------------------------------------------|----------------------------|--------|----------------|---|---|---|---|--------|--------|--------|---|--------|
| Development, Active                                   | Secretary/Defense          |        |                |   |   |   |   |        |        |        |   |        |
| Logistics Support to MILCON Activities, Active        | Air Force                  | 55,405 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 55,405 |
| R&D Support Activities, Navy Only, Active             | Navy                       | 55,048 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 55,048 |
| Air-to-Ground Combat, Reserve                         | Marine Corps               | 54,017 | 54,017         | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 0      |
| Communications BOS & Mgmt HQs, Active                 | Army                       | 53,259 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 53,259 |
| Amphibious Forces, Reserve                            | Navy                       | 51,980 | 51,980         | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 0      |
| Foreign Counterintelligence Prgm (FCIP)               | Navy                       | 49,205 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 49,205 |
| Intelligence & Related Activities                     | Navy                       | 48,132 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 48,132 |
| Space Defense, Active                                 | Navy                       | 47,907 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 47,907 | 0 | 0      |
| Personnel Acquisition, National Guard                 | Air Force                  | 47,826 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 47,826 |
| Federal Agency Support, USMC Only, Active             | Marine Corps               | 47,723 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 47,723 |
| Ballistic Missile Defense Forces, Active              | Army                       | 47,134 | 47,134         | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 0      |
| NORAD/SPACECOM Support Activities, Active             | Army                       | 46,434 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 46,434 | 0 | 0      |
| International Support, Active                         | Joint Chiefs of Staff      | 46,155 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 46,155 |
| Aeromedical Airlift, Reserve                          | Air Force                  | 46,129 | 0              | 0 | 0 | 0 | 0 | 0      | 46,129 | 0      | 0 | 0      |
| Military Personnel Training, Navy Only, Reserve       | Navy                       | 45,726 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 45,726 |
| Foreign Counterintelligence Prgm (FCIP)               | Air Force                  | 44,407 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 44,407 |
| SOF Operations, Reserve                               | Special Operations Command | 44,377 | 0              | 0 | 0 | 0 | 0 | 44,377 | 0      | 0      | 0 | 0      |
| Logistics Support to MILCON Activities, Navy Only, Ac | Navy                       | 44,325 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0 | 44,325 |



|                                                |                                         |        | MAJOR COMMANDS |       |       |   |   |   |   |   |   |        |
|------------------------------------------------|-----------------------------------------|--------|----------------|-------|-------|---|---|---|---|---|---|--------|
| Other Operational Support Subsurface, Active   | Navy                                    | 43,142 | 25,885         | 8,628 | 8,628 | 0 | 0 | 0 | 0 | 0 | 0 | 0      |
| Other Tactical Air Warfare, Reserve            | Marine Corps                            | 42,568 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 42,568 |
| Navy Base Ops & Mgmt HQs Projection, Active    | Navy                                    | 42,319 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 42,319 |
| Air-to-Ground Combat, Reserve                  | Navy                                    | 42,035 | 42,035         | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 0      |
| Advanced Technology Development (6.3A), Active | Chemical and Biological Defense Program | 41,223 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 41,223 |
| Foreign Counterintelligence Prgm (FCIP)        | Army                                    | 41,055 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 41,055 |
| Military Personnel Training, National Guard    | Army                                    | 40,282 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 40,282 |
| R&D BOS & Mgmt HQs, Active                     | Advanced Research Projects Agcy         | 39,193 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 39,193 |
| R&D Support Activities, USMC Only, Active      | Marine Corps                            | 38,695 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 38,695 |
| Geophysical BOS & Mgmt Hqs, Active             | Navy                                    | 38,188 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 38,188 |
| R&D BOS & Mgmt HQs, Active                     | Navy                                    | 36,998 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 36,998 |
| Centrally Managed Comm. Activities, Active     | Joint Chiefs of Staff                   | 36,254 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 36,254 |
| Flight Training, National Guard                | Air Force                               | 35,433 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 35,433 |
| Navy Aircraft Related R&D, Active              | Navy                                    | 34,980 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 34,980 |
| Advanced Technology Development (6.3A), Active | Marine Corps                            | 34,178 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 34,178 |
| Supply Operations, Active                      | Air Force, RvFd                         | 33,400 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 33,400 |
| Personnel Acquisition, Reserve                 | Air Force                               | 33,122 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 33,122 |
| Sea Based ASW Air Forces, Reserve              | Navy                                    | 32,462 | 32,462         | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 0      |
| Advanced Technology                            | Defense Logistics                       | 32,239 | 0              | 0     | 0     | 0 | 0 | 0 | 0 | 0 | 0 | 32,239 |

|                                                     |                                         |        | MAJOR COMMANDS |   |   |   |   |        |   |   |        |        |
|-----------------------------------------------------|-----------------------------------------|--------|----------------|---|---|---|---|--------|---|---|--------|--------|
| Development (6.3A), Active                          | Agency                                  |        |                |   |   |   |   |        |   |   |        |        |
| Departmental HQs BOS & Mgmt HQs, Reserve            | Marine Corps                            | 30,978 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 30,978 |
| Departmental HQs BOS & Mgmt HQs, Navy Only, Reserve | Navy                                    | 30,584 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 30,584 |
| Logistics Support to MILCON Activities, Active      | Office of Secretary/Defense             | 30,300 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 30,300 |
| SOF Operations, Reserve                             | Navy                                    | 30,067 | 0              | 0 | 0 | 0 | 0 | 30,067 | 0 | 0 | 0      | 0      |
| Maintenance Operations, National Guard              | Air Force                               | 30,048 | 30,048         | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 0      |
| Medical BOS & Mgmt HQs, Active                      | Army                                    | 29,938 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 29,938 |
| Civilian Personnel Training, Navy Only, Active      | Navy                                    | 29,198 | 29,198         | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 0      |
| Tactical C3, Reserve                                | Air Force                               | 28,264 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 28,264 |
| USAF Strategic Support Activities, Active           | Air Force                               | 27,689 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 27,689 | 0      |
| Other Operational Support Surface, Reserve          | Navy                                    | 27,237 | 27,237         | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 0      |
| Def Airborne Reconnaissance Program                 | National Security Agency                | 26,515 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 26,515 |
| General Purpose Support, Active                     | Defense Information Systems Agency      | 25,670 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 25,670 |
| Research (6.1), Active                              | Chemical and Biological Defense Program | 25,190 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 25,190 |
| Command & Control Activities                        | Navy                                    | 24,369 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 24,369 |
| Marine Operational Support, Reserve                 | Marine Corps                            | 23,638 | 23,638         | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 0      |
| Theater Missile Defense, Active                     | Joint Chiefs of Staff                   | 23,100 | 23,100         | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 0      |
| Geophysical Activities, Reserve                     | Air Force                               | 22,501 | 0              | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 22,501 |
| Tanker/Cargo, Reserve                               | Marine Corps                            | 21,834 | 21,834         | 0 | 0 | 0 | 0 | 0      | 0 | 0 | 0      | 0      |

|                                                |                             |        | MAJOR COMMANDS |   |   |   |   |        |        |   |   |        |
|------------------------------------------------|-----------------------------|--------|----------------|---|---|---|---|--------|--------|---|---|--------|
| Intelligence & Related Activities              | Army                        | 21,686 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 21,686 |
| Ops. Support Base Ops. & Mgmt HQ, Reserve      | Air Force                   | 21,137 | 21,137         | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 0      |
| Def Airborne Reconnaissance Program            | Army                        | 20,862 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 20,862 |
| Air-To-Air Combat, Reserve                     | Navy                        | 20,852 | 20,852         | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 0      |
| Airlift Operational Support, National Guard    | Air Force                   | 19,821 | 0              | 0 | 0 | 0 | 0 | 0      | 19,821 | 0 | 0 | 0      |
| Military Intertheater Sealift, Reserve         | Navy                        | 19,083 | 0              | 0 | 0 | 0 | 0 | 0      | 19,083 | 0 | 0 | 0      |
| Family Housing, Active                         | Defense Intelligence Agency | 18,832 | 18,832         | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 0      |
| SOF Operations, National Guard                 | Special Operations Command  | 17,833 | 0              | 0 | 0 | 0 | 0 | 17,833 | 0      | 0 | 0 | 0      |
| Military Personnel Training, Active            | Navy                        | 17,722 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 17,722 |
| Personnel BOS & Mgmt HQs, Active               | Army                        | 17,367 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 17,367 |
| Undistributed Advanced Development, Active     | Army                        | 16,288 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 16,288 |
| Def Intell Tactical Program, Active            | Navy                        | 16,053 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 16,053 |
| Military Intertheater Sealift, Reserve         | Army                        | 15,876 | 0              | 0 | 0 | 0 | 0 | 0      | 15,876 | 0 | 0 | 0      |
| Intelligence Skill Training, USMC Only, Active | Marine Corps                | 15,817 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 15,817 |
| Logistics Support to Procurement Acts, Active  | Air Force                   | 15,351 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 15,351 |
| Departmental Headquarters, Navy Only, Reserve  | Navy                        | 14,972 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 14,972 |
| Def Space Reconnaissance Program               | National Security Agency    | 14,967 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 14,967 |
| Other Operational Support Air, Reserve         | Navy                        | 14,879 | 14,879         | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 0      |
| Personnel Acquisition, USMC Only, Reserve      | Marine Corps                | 14,840 | 0              | 0 | 0 | 0 | 0 | 0      | 0      | 0 | 0 | 14,840 |
| Aeromedical Airlift,                           | Air Force                   | 14,399 | 0              | 0 | 0 | 0 | 0 | 0      | 14,399 | 0 | 0 | 0      |

|                                             |                                |        | MAJOR COMMANDS |   |   |   |   |   |        |        |        |        |
|---------------------------------------------|--------------------------------|--------|----------------|---|---|---|---|---|--------|--------|--------|--------|
| National Guard                              |                                |        |                |   |   |   |   |   |        |        |        |        |
| Maintenance Operations, Reserve             | Navy                           | 13,957 | 13,957         | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0      |
| Flight Training, Reserve                    | Air Force                      | 13,877 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 13,877 |
| Surveillance & Warning National Guard       | Air Force                      | 13,783 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 13,783 | 0      | 0      |
| Exploratory Development (6.2), Active       | Marine Corps                   | 13,043 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 13,043 |
| Family Housing, Active                      | National Security Agency       | 12,720 | 12,720         | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0      |
| Surveillance, Reserve                       | Air Force                      | 12,678 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 12,678 | 0      | 0      |
| Supply Operations, Reserve                  | Navy                           | 12,674 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 12,674 |
| Undistributed Adjustments, Active           | Air Force                      | 12,608 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 12,608 |
| Centrally Managed Comm. Activities, Reserve | Air Force                      | 12,524 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 12,524 |
| Counter Drug Support, Reserve               | Army                           | 12,464 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 12,464 |
| Command & Control Activities                | Joint Chiefs of Staff          | 12,329 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 12,329 |
| Nuclear Weapons Support, Active             | Air Force                      | 12,211 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 12,211 | 0      |
| Foreign Counterintelligence Prgm (FCIP)     | Defense Intelligence Agency    | 11,972 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 11,972 |
| Sealift C3, Reserve                         | Navy                           | 11,844 | 0              | 0 | 0 | 0 | 0 | 0 | 11,844 | 0      | 0      | 0      |
| Fleet Support Surface, Reserve              | Navy                           | 11,776 | 11,776         | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 0      |
| Other Tactical Air Warfare, National Guard  | Air Force                      | 11,447 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 11,447 |
| Geophysical BOS & Mgmt Hqs, Active          | Defense Special Weapons Agency | 11,304 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 11,304 |
| Supply Operations, Active                   | Defense Commissary Agency      | 11,270 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 11,270 |
| Logistics BOS & Mgmt HQs, Reserve           | Navy                           | 11,215 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 0      | 0      | 11,215 |
| NORAD/SPACECOM                              | Navy                           | 10,443 | 0              | 0 | 0 | 0 | 0 | 0 | 0      | 10,443 | 0      | 0      |

|                                                       |                               |        | MAJOR COMMANDS |   |   |   |   |   |   |   |       |        |
|-------------------------------------------------------|-------------------------------|--------|----------------|---|---|---|---|---|---|---|-------|--------|
| Base Ops & Mgmt HQs, Active                           |                               |        |                |   |   |   |   |   |   |   |       |        |
| Military Personnel Training, Active                   | Marine Corps                  | 10,311 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 10,311 |
| Medical BOS & Mgmt HQs, Active                        | Air Force                     | 10,296 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 10,296 |
| Other Logistics Support, Reserve                      | Air Force                     | 10,258 | 10,258         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0      |
| Departmental HQs BOS & Mgmt HQs, Active               | Defense Contract Audit Agency | 9,988  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 9,988  |
| Maintenance Operations, Reserve                       | Air Force                     | 9,873  | 9,873          | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0      |
| Command & Control Activities                          | Marine Corps                  | 9,848  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 9,848  |
| Nuclear Weapons Support, Active                       | Army                          | 9,507  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,507 | 0      |
| Defense Suppression, Reserve                          | Navy                          | 9,198  | 9,198          | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0      |
| Geophysical Activities, National Guard                | Air Force                     | 9,036  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 9,036  |
| Logistics Support to Procurement Acts, Navy Only, Act | Navy                          | 9,000  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 9,000  |
| Federal Agency Support, Active                        | Army                          | 8,469  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 8,469  |
| Fleet Support General, Reserve                        | Navy                          | 8,446  | 8,446          | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0      |
| R&D Support Activities, Active                        | Marine Corps                  | 8,207  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 8,207  |
| Logistics Support to MILCON Activities, USMC Only, Ac | Marine Corps                  | 8,124  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 8,124  |
| Navy Systems Support Surface, Active                  | Navy                          | 7,991  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 7,991  |
| Federal Agency Support, Active                        | Air Force                     | 7,947  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 7,947  |
| Supply Operations, Navy Only, Active                  | Navy                          | 7,597  | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 7,597  |
| Other Logistics Support, Reserve                      | Navy                          | 7,284  | 7,284          | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0      |

|                                                 |                                 |       | MAJOR COMMANDS |   |   |   |   |   |   |       |       |       |
|-------------------------------------------------|---------------------------------|-------|----------------|---|---|---|---|---|---|-------|-------|-------|
| Tactical C3, Reserve                            | Navy                            | 6,764 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 6,764 |
| Navy Systems Support General, Active            | Navy                            | 6,562 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 6,562 |
| Navy Base Ops & Mgmt HQs Surface, Reserve       | Navy                            | 6,455 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 6,455 |
| Departmental HQs BOS & Mgmt HQs, Active         | Office Inspector General        | 6,200 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 6,200 |
| Family Housing, Active                          | Defense Logistics Agency        | 6,072 | 6,072          | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 0     |
| Other Operational Support Projection, Reserve   | Navy                            | 5,752 | 5,752          | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 0     |
| Foreign Intelligence Program Activities, Active | Marine Corps                    | 5,645 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,645 |
| Tactical C3, Reserve                            | Marine Corps                    | 5,524 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,524 |
| Departmental Headquarters, Reserve              | Navy                            | 5,403 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,403 |
| International Support, Active                   | Marine Corps                    | 5,389 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,389 |
| Geophysical Activities, Active                  | Army                            | 5,307 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,307 |
| R&D Support Activities, Reserve                 | Air Force                       | 5,281 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,281 |
| Nuclear Weapons Support, Active                 | Navy                            | 5,260 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 5,260 | 0     |
| Intelligence BOS & Mgmt HQs, Active             | Marine Corps                    | 5,226 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,226 |
| Ballistic Missile Defense Forces, Active        | Air Force                       | 5,107 | 5,107          | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 0     |
| Federal Agency Support, Navy Only, Active       | Navy                            | 5,096 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 5,096 |
| Submarines, Reserve                             | Navy                            | 5,090 | 5,090          | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 0     |
| Centrally Managed Comm. Activities, Reserve     | Navy                            | 4,902 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 4,902 |
| R&D Support Activities, Active                  | Advanced Research Projects Agcy | 4,683 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 4,683 |
| Intelligence & Related Activities               | Office of Secretary/Defense     | 4,603 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0     | 4,603 |
| NORAD/SPACECOM                                  | Army                            | 4,573 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 4,573 | 0     | 0     |

|                                                |                                    |       | MAJOR COMMANDS |       |       |   |   |       |       |       |       |       |
|------------------------------------------------|------------------------------------|-------|----------------|-------|-------|---|---|-------|-------|-------|-------|-------|
| Base Ops & Mgmt HQs, Active                    |                                    |       |                |       |       |   |   |       |       |       |       |       |
| R&D Support Activities, Reserve                | Navy                               | 4,501 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 4,501 |
| Aeromedical Airlift, Active                    | Air Force                          | 4,354 | 0              | 0     | 0     | 0 | 0 | 0     | 4,354 | 0     | 0     | 0     |
| Other Personnel Support Activities, Reserve    | Navy                               | 4,304 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 4,304 |
| Other Personnel Support Activities, Active     | Navy                               | 4,217 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 4,217 |
| Counter Drug Support, Active                   | Special Operations Command         | 3,932 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 3,932 |
| General Purpose Support, Active                | Army                               | 3,830 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 3,830 |
| Land Based Prepositioning, Active              | Marine Corps                       | 3,603 | 0              | 1,802 | 1,802 | 0 | 0 | 0     | 0     | 0     | 0     | 0     |
| Airlift Base Operations & Mgmt HQs, Reserve    | Air Force                          | 3,579 | 0              | 0     | 0     | 0 | 0 | 0     | 3,579 | 0     | 0     | 0     |
| Def Airborne Reconnaissance Program            | Marine Corps                       | 3,500 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 3,500 |
| SLBM Forces, Reserve                           | Navy                               | 3,447 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 3,447 | 0     |
| Other Personnel Support Activities, Reserve    | Army                               | 3,296 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 3,296 |
| Command & Control Activities                   | Defense Special Weapons Agency     | 3,133 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 3,133 |
| SOF General Support, Reserve                   | Special Operations Command         | 3,032 | 0              | 0     | 0     | 0 | 0 | 3,032 | 0     | 0     | 0     | 0     |
| Central Imagery Office Program (CIOP)          | Air Force                          | 2,947 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 2,947 | 0     | 0     |
| Other Logistics Support, USMC Only, Reserve    | Marine Corps                       | 2,555 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 2,555 |
| SOF Management HQs, Active                     | Marine Corps                       | 2,487 | 0              | 0     | 0     | 0 | 0 | 2,487 | 0     | 0     | 0     | 0     |
| Logistics Support to MILCON Activities, Active | Navy                               | 2,395 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 2,395 |
| Communications, Active                         | Defense Information Systems Agency | 2,381 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 2,381 |
| Communications BOS & Mgmt HQs, Active          | Marine Corps                       | 2,208 | 0              | 0     | 0     | 0 | 0 | 0     | 0     | 0     | 0     | 2,208 |

|                                                       |                                    |       | MAJOR COMMANDS |   |   |   |   |       |       |       |   |   |       |   |
|-------------------------------------------------------|------------------------------------|-------|----------------|---|---|---|---|-------|-------|-------|---|---|-------|---|
| SOF Training, National Guard                          | Special Operations Command         | 2,144 | 0              | 0 | 0 | 0 | 0 | 2,144 | 0     | 0     | 0 | 0 | 0     | 0 |
| Command Centers, Active                               | Defense Information Systems Agency | 2,064 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 2,064 | 0 |
| NORAD/SPACECOM Base Ops & Mgmt HQs, Active            | Marine Corps                       | 1,991 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 1,991 | 0 | 0 | 0     | 0 |
| Exploratory Development (6.2), Active                 | Defense Information Systems Agency | 1,937 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,937 | 0 |
| Ballistic Missile Defense Forces, Active              | Navy                               | 1,932 | 1,932          | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 0     | 0 |
| Foreign Counterintelligence Prgm (FCIP)               | Defense Investigative Service      | 1,899 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,899 | 0 |
| Flight Training, Reserve                              | Navy                               | 1,865 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,865 | 0 |
| Maintenance Operations, Navy Only, Reserve            | Navy                               | 1,817 | 1,817          | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 0     | 0 |
| Geophysical Activities, Reserve                       | Navy                               | 1,786 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,786 | 0 |
| Cruisers & Destroyers, Reserve                        | Navy                               | 1,618 | 1,618          | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 0     | 0 |
| National Reconnaissance Program (NRP)                 | Army                               | 1,569 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 1,569 | 0 | 0 | 0     | 0 |
| Service Forces, Reserve                               | Navy                               | 1,505 | 1,505          | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 0     | 0 |
| Personnel BOS & Mgmt HQs, Active                      | Office of Secretary/Defense        | 1,456 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,456 | 0 |
| R&D BOS & Mgmt HQs, Reserve                           | Navy                               | 1,445 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,445 | 0 |
| Command Centers, Active                               | Army                               | 1,331 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,331 | 0 |
| Sealift Base Operations & Mgmt HQs, USMC Only, Active | Marine Corps                       | 1,232 | 0              | 0 | 0 | 0 | 0 | 0     | 1,232 | 0     | 0 | 0 | 0     | 0 |
| Navy Base Ops & Mgmt HQs Projection, Reserve          | Navy                               | 1,208 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,208 | 0 |
| Other Tactical Air Warfare, Reserve                   | Navy                               | 1,130 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,130 | 0 |
| Departmental Headquarters, Active                     | Defense Information                | 1,113 | 0              | 0 | 0 | 0 | 0 | 0     | 0     | 0     | 0 | 0 | 1,113 | 0 |



|                                                |                          |       | MAJOR COMMANDS |   |   |   |   |   |   |       |   |       |
|------------------------------------------------|--------------------------|-------|----------------|---|---|---|---|---|---|-------|---|-------|
|                                                | Systems Agency           |       |                |   |   |   |   |   |   |       |   |       |
| General Purpose Support, Active                | Marine Corps             | 1,088 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 1,088 |
| NORAD/SPACECOM Support Activities, Active      | Navy                     | 1,075 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 1,075 | 0 | 0     |
| NORAD/SPACECOM Base Ops & Mgmt HQs, Reserve    | Air Force                | 1,057 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 1,057 | 0 | 0     |
| Centrally Managed Comm. Activities, Active     | Marine Corps             | 1,031 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 1,031 |
| Civilian Personnel Training, USMC Only, Active | Marine Corps             | 1,010 | 1,010          | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 0     |
| Foreign Counterintelligence Prgm (FCIP)        | Onsite Inspection Agency | 989   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 989   |
| Non-Strategic Nuclear TacAir Forces, Active    | Air Force                | 869   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 869   |
| General Purpose Support, Active                | Air Force                | 808   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 808   |
| Army Special Mission Forces, Reserve           | Army                     | 803   | 803            | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 0     |
| Federal Agency Support, Reserve                | Navy                     | 791   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 791   |
| R&D BOS & Mgmt HQs, Reserve                    | Air Force                | 740   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 740   |
| General Purpose Support, Active                | Navy                     | 731   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 731   |
| Medical BOS & Mgmt HQs, Reserve                | Navy                     | 642   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 642   |
| Land Mobility BOS & Mgmt HQs, Active           | Army                     | 547   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 547   |
| Army Divisions, Reserve                        | Army                     | 506   | 506            | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 0     |
| Other Tactical Air Warfare, Reserve            | Air Force                | 505   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 505   |
| Geophysical Activities, Active                 | Marine Corps             | 498   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 498   |
| Command Centers, Active                        | Navy                     | 472   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 472   |
| Communications BOS &                           | Navy                     | 464   | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0     | 0 | 464   |

|                                                 |                                            |     | MAJOR COMMANDS |   |   |   |   |     |     |     |     |     |
|-------------------------------------------------|--------------------------------------------|-----|----------------|---|---|---|---|-----|-----|-----|-----|-----|
| Mgmt HQs, Reserve                               |                                            |     |                |   |   |   |   |     |     |     |     |     |
| Nuclear Weapons Support, Active                 | Marine Corps                               | 408 | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 408 | 0   |
| Centrally Managed Comm. Activities, Active      | Defense Intelligence Agency                | 301 | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 301 |
| Logistics Support to MILCON Activities, Reserve | Navy                                       | 273 | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 273 |
| Departmental HQs BOS & Mgmt HQs, Active         | Navy                                       | 228 | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 228 |
| Sealift Base Operations & Mgmt HQs, Reserve     | Navy                                       | 227 | 0              | 0 | 0 | 0 | 0 | 0   | 227 | 0   | 0   | 0   |
| Central Imagery Office Program (CIOP)           | Marine Corps                               | 192 | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 192 | 0   | 0   |
| SOF Training, Reserve                           | Special Operations Command                 | 173 | 0              | 0 | 0 | 0 | 0 | 173 | 0   | 0   | 0   | 0   |
| NORAD/SPACECOM Support Activities, Active       | Marine Corps                               | 144 | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 144 | 0   | 0   |
| Command Centers, Active                         | Marine Corps                               | 72  | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 72  |
| Logistics Support to MILCON Activities, Active  | Defense Logistics Agency                   | 50  | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 50  |
| Counter Drug Support, Active                    | Air Force                                  | 23  | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 23  |
| Centrally Managed Comm. Activities, Active      | Air Force, RvFd                            | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |
| Centrally Managed Comm. Activities, Active      | Army, RvFd                                 | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |
| Centrally Managed Comm. Activities, Active      | Defense Finance & Accounting Service, RvFd | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |
| Centrally Managed Comm. Activities, Active      | Defense Information Systems Agency, RvFd   | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |
| Centrally Managed Comm. Activities, Active      | Defense Logistics Agency, RvFd             | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |
| Centrally Managed Comm. Activities, Active      | Navy, RvFd                                 | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |
| Departmental Headquarters, Active               | Defense Finance & Accounting               | 0   | 0              | 0 | 0 | 0 | 0 | 0   | 0   | 0   | 0   | 0   |

|                                          |                                      |   | MAJOR COMMANDS |   |   |   |   |   |   |   |   |   |
|------------------------------------------|--------------------------------------|---|----------------|---|---|---|---|---|---|---|---|---|
|                                          | Service, RvFd                        |   |                |   |   |   |   |   |   |   |   |   |
| Departmental Headquarters, Active        | Defense Logistics Agency, RvFd       | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Family Housing, Active                   | Office of Secretary/Defense          | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Federal Agency Support, Reserve          | Army                                 | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maintenance Operations, Active           | Air Force, RvFd                      | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maintenance Operations, Active           | Army, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maintenance Operations, Active           | Marine Corps, RvFd                   | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maintenance Operations, Active           | Navy, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maintenance Operations, Active           | Defense Logistics Agency             | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Multi/Intermodal Intertheater, Active    | Air Force, RvFd                      | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Multi/Intermodal Intertheater, Active    | Navy, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Multi/Intermodal Intertheater, Active    | U.S. Transportation Command, RvFd    | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Navy Base Ops & Mgmt HQs General, Active | Navy, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Logistics Support, Active          | Joint Logistics Systems Center, RvFd | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R&D Support Activities, Active           | Navy, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Space Defense, Active                    | Office of Secretary/Defense          | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supply Operations, Active                | Army, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supply Operations, Active                | Defense Logistics Agency, RvFd       | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supply Operations, Active                | Marine Corps, RvFd                   | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supply Operations, Active                | Navy, RvFd                           | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tactical Reconnaissance,                 | Air Force                            | 0 | 0              | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|                                       |                                |                    | MAJOR COMMANDS |            |            |           |           |           |           |           |           |            |   |
|---------------------------------------|--------------------------------|--------------------|----------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|---|
| National Guard                        |                                |                    |                |            |            |           |           |           |           |           |           |            |   |
| Undistributed<br>Adjustments, Active  | Office of<br>Secretary/Defense | 0                  | 0              | 0          | 0          | 0         | 0         | 0         | 0         | 0         | 0         | 0          | 0 |
| Undistributed<br>Adjustments, Reserve | Office of<br>Secretary/Defense | 0                  | 0              | 0          | 0          | 0         | 0         | 0         | 0         | 0         | 0         | 0          | 0 |
|                                       |                                |                    |                |            |            |           |           |           |           |           |           |            |   |
|                                       | <b>TOTALS</b>                  | <b>252,231,471</b> | 57,741,873     | 32,653,256 | 34,072,005 | 8,350,568 | 2,206,377 | 4,210,326 | 8,999,333 | 5,697,805 | 1,229,764 | 91,740,553 |   |

[illegible]

| MISC BREAKOUT |           |       |           |           |     |           |                            |                      |                   |                           |       |
|---------------|-----------|-------|-----------|-----------|-----|-----------|----------------------------|----------------------|-------------------|---------------------------|-------|
| R&D (6.1-6.3) | COMM      | INTEL | RECON     | MEDICAL   | LOG | BOS       | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 1,585,145         | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 1,570,504            | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 421,554       | 0         | 0     | 0         | 0         | 0   | 0         | 983,626                    | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 406,505       | 0         | 0     | 0         | 0         | 0   | 0         | 948,513                    | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 1,352,542 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 1,344,940 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 1,328,425 | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 1,323,323         | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 1,305,396 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 1,271,986            | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 1,256,645     | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 1,224,714 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 1,205,506         | 0                         | 0     |
| 0             | 0         | 0     | 0         | 1,201,549 | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 1,192,835 | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0         | 0         | 0   | 0         | 0                          | 0                    | 0                 | 0                         | 0     |

| MISC BREAKOUT |           |       |       |           |           |           |                            |                      |                   |                           |       |
|---------------|-----------|-------|-------|-----------|-----------|-----------|----------------------------|----------------------|-------------------|---------------------------|-------|
| R&D (6.1-6.3) | COMM      | INTEL | RECON | MEDICAL   | LOG       | BOS       | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 1,153,143 | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 1,149,665 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 1,129,990 | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 1,068,243         | 0                         | 0     |
| 0             | 0         | 0     | 0     | 1,060,515 | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 1,027,478 | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 1,002,787         | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 990,542   | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 986,560              | 0                 | 0                         | 0     |
| 0             | 981,123   | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 973,786   | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 938,552   | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0         | 0     | 0     | 0         | 0         | 0         | 0                          | 0                    | 0                 | 0                         | 0     |

| MISC BREAKOUT |      |         |         |         |         |         |                            |                      |                   |                           |         |
|---------------|------|---------|---------|---------|---------|---------|----------------------------|----------------------|-------------------|---------------------------|---------|
| R&D (6.1-6.3) | COMM | INTEL   | RECON   | MEDICAL | LOG     | BOS     | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER   |
| 0             | 0    | 0       | 846,171 | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 845,889           | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 837,330 |
| 829,873       | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 822,349 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 809,221 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 786,163 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 772,765           | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 755,359 | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 736,109 | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 730,290       | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 712,608       | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 711,119 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 689,306 | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 684,175       | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 660,972 | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 652,582                   | 0       |
| 0             | 0    | 645,083 | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 637,337       | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0       | 0       | 0                          | 0                    | 0                 | 0                         | 0       |



| MISC BREAKOUT |         |         |       |         |     |         |                            |                      |                   |                           |         |   |
|---------------|---------|---------|-------|---------|-----|---------|----------------------------|----------------------|-------------------|---------------------------|---------|---|
| R&D (6.1-6.3) | COMM    | INTEL   | RECON | MEDICAL | LOG | BOS     | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER   |   |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 587,057       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 568,370       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 563,290 | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 557,523 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 529,495       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 528,887 | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 516,509           | 0                         | 0       | 0 |
| 0             | 514,882 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 511,415 | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 511,340 | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 506,919 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 505,824 | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 504,731           | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 492,505           | 0                         | 0       | 0 |
| 491,398       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 490,491 | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 484,400       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 481,585       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 477,230       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 469,351 | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 466,491 | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 461,470           | 0                         | 0       | 0 |
| 460,815       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       | 0 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 452,738 | 0 |

| MISC BREAKOUT |         |         |       |         |     |         |                            |                      |                   |                           |         |
|---------------|---------|---------|-------|---------|-----|---------|----------------------------|----------------------|-------------------|---------------------------|---------|
| R&D (6.1-6.3) | COMM    | INTEL   | RECON | MEDICAL | LOG | BOS     | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER   |
| 0             | 0       | 448,938 | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 446,399 |
| 0             | 443,888 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 423,274              | 0                 | 0                         | 0       |
| 422,001       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 414,996 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 410,888 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 406,437       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 404,420 |
| 402,314       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 399,166       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 386,395       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 385,766              | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 384,126           | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 382,117       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 376,303 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 375,673 | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 111,503       | 0       | 0       | 0     | 0       | 0   | 0       | 260,175                    | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 366,453 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 354,792 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 353,429 |
| 347,397       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 346,762              | 0                 | 0                         | 0       |

| MISC BREAKOUT |         |         |       |         |     |         |                            |                      |                   |                           |         |
|---------------|---------|---------|-------|---------|-----|---------|----------------------------|----------------------|-------------------|---------------------------|---------|
| R&D (6.1-6.3) | COMM    | INTEL   | RECON | MEDICAL | LOG | BOS     | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER   |
| 0             | 0       | 333,120 | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 325,194 | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 323,062 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 320,833 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 317,415           | 0                         | 0       |
| 316,658       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 309,065 | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 298,486           | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 296,684 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 293,885 |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 293,714 |
| 293,109       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 292,298              | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 289,314 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 274,284           | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 271,566 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 267,980           | 0                         | 0       |
| 0             | 0       | 0       | 0     | 265,150 | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 258,910 | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 255,192 | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 254,670       | 0       | 0       | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |

| MISC BREAKOUT |         |       |       |         |     |         |                            |                      |                   |                           |         |
|---------------|---------|-------|-------|---------|-----|---------|----------------------------|----------------------|-------------------|---------------------------|---------|
| R&D (6.1-6.3) | COMM    | INTEL | RECON | MEDICAL | LOG | BOS     | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER   |
| 0             | 0       | 0     | 0     | 252,814 | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 252,014 | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 249,172 | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 247,298           | 0                         | 0       |
| 0             | 240,951 | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 240,380 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 239,652 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 233,839                    | 0                    | 0                 | 0                         | 0       |
| 228,906       | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 224,584 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 218,217 | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 214,572           | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 212,934 | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 211,971       | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 205,623       | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 192,439 |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 190,118 |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0       | 0     | 0     | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |

[illegible]

| MISC BREAKOUT |      |         |         |         |     |         |                            |                      |                   |                           |         |
|---------------|------|---------|---------|---------|-----|---------|----------------------------|----------------------|-------------------|---------------------------|---------|
| R&D (6.1-6.3) | COMM | INTEL   | RECON   | MEDICAL | LOG | BOS     | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER   |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 130,506 |
| 0             | 0    | 0       | 129,973 | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 129,958              | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 129,602 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 128,448 |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 120,862 | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 118,721 | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 117,850 |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 114,355       | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 113,236 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 112,527 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 112,234 | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 111,216 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 110,277 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 108,349 |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 107,945              | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 106,334 |
| 0             | 0    | 0       | 0       | 0       | 0   | 104,838 | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 101,932       | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 0                         | 0       |
| 0             | 0    | 0       | 0       | 0       | 0   | 0       | 0                          | 0                    | 0                 | 101,086                   | 0       |

| MISC BREAKOUT |         |       |       |         |        |        |                            |                      |                   |                           |        |
|---------------|---------|-------|-------|---------|--------|--------|----------------------------|----------------------|-------------------|---------------------------|--------|
| R&D (6.1-6.3) | COMM    | INTEL | RECON | MEDICAL | LOG    | BOS    | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER  |
| 0             | 100,284 | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 99,964            | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 99,665            | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 94,885 |
| 94,546        | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 92,162 |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 90,005 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 87,450  | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 84,184  | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 84,062  | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 84,048 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 83,938  | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 83,370        | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 80,735        | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 79,626 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 78,464            | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 78,343 |
| 0             | 0       | 0     | 0     | 77,238  | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 77,124        | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 76,009        | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0       | 0     | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |

| MISC BREAKOUT |        |        |        |         |     |     |                            |                      |                   |                           |        |
|---------------|--------|--------|--------|---------|-----|-----|----------------------------|----------------------|-------------------|---------------------------|--------|
| R&D (6.1-6.3) | COMM   | INTEL  | RECON  | MEDICAL | LOG | BOS | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER  |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 73,670        | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 73,628 |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 72,444 | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 72,263            | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 68,737 | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 67,565 | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 66,305 | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 66,194        | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 65,147            | 0                         | 0      |
| 0             | 0      | 65,100 | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 65,091  | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 64,627 |
| 62,999        | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 61,787        | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 61,207        | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 60,023        | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 59,459 | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0      | 0       | 0   | 0   | 0                          | 0                    | 0                 | 0                         | 0      |



| MISC BREAKOUT |        |        |       |         |        |        |                            |                      |                   |                           |        |
|---------------|--------|--------|-------|---------|--------|--------|----------------------------|----------------------|-------------------|---------------------------|--------|
| R&D (6.1-6.3) | COMM   | INTEL  | RECON | MEDICAL | LOG    | BOS    | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER  |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 55,837 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 55,429 |
| 0             | 0      | 0      | 0     | 0       | 55,405 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 55,048        | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 53,259 | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 49,205 | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 48,132 | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 47,826            | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 47,723                    | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 46,155 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 45,726            | 0                         | 0      |
| 0             | 0      | 44,407 | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 44,325 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 42,568                     | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 42,319 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 41,223        | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 41,055 | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 40,282            | 0                         | 0      |

| MISC BREAKOUT |        |       |        |         |        |        |                            |                      |                   |                           |        |
|---------------|--------|-------|--------|---------|--------|--------|----------------------------|----------------------|-------------------|---------------------------|--------|
| R&D (6.1-6.3) | COMM   | INTEL | RECON  | MEDICAL | LOG    | BOS    | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER  |
| 39,193        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 38,695        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 38,188 |
| 36,998        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 36,254 | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 35,433            | 0                         | 0      |
| 34,980        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 34,178        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 33,400 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 33,122            | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 32,239        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 30,978 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 30,584 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 30,300 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 29,938  | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 28,264 | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 26,515 | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 25,670 |
| 25,190        | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 24,369 | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0      | 0     | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 22,501 |

| MISC BREAKOUT |      |        |        |         |        |        |                            |                      |                   |                           |        |
|---------------|------|--------|--------|---------|--------|--------|----------------------------|----------------------|-------------------|---------------------------|--------|
| R&D (6.1-6.3) | COMM | INTEL  | RECON  | MEDICAL | LOG    | BOS    | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER  |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 21,686 | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 20,862 | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 17,722            | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 17,367 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 16,288 |
| 0             | 0    | 16,053 | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 15,817 | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 15,351 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 14,972 | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 14,967 | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 14,840            | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 13,877            | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 13,043        | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 12,674 | 0      | 0                          | 0                    | 0                 | 0                         | 0      |
| 0             | 0    | 0      | 0      | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 12,608 |

| MISC BREAKOUT |        |        |       |         |        |        |                            |                      |                   |                           |        |   |
|---------------|--------|--------|-------|---------|--------|--------|----------------------------|----------------------|-------------------|---------------------------|--------|---|
| R&D (6.1-6.3) | COMM   | INTEL  | RECON | MEDICAL | LOG    | BOS    | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER  |   |
| 0             | 12,524 | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 12,464                    | 0      | 0 |
| 0             | 12,329 | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 11,972 | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 11,447                     | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 11,304 | 0 |
| 0             | 0      | 0      | 0     | 0       | 11,270 | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 11,215 | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 10,311            | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 10,296  | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 9,988  | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 9,848  | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 9,036  | 0 |
| 0             | 0      | 0      | 0     | 0       | 9,000  | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 8,469                     | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 8,207         | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 8,124  | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 7,991         | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 0      | 0      | 0                          | 0                    | 0                 | 7,947                     | 0      | 0 |
| 0             | 0      | 0      | 0     | 0       | 7,597  | 0      | 0                          | 0                    | 0                 | 0                         | 0      | 0 |

| MISC BREAKOUT |       |       |       |         |     |       |                            |                      |                   |                           |       |
|---------------|-------|-------|-------|---------|-----|-------|----------------------------|----------------------|-------------------|---------------------------|-------|
| R&D (6.1-6.3) | COMM  | INTEL | RECON | MEDICAL | LOG | BOS   | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 6,764 | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 6,562         | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 6,455 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 6,200 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 5,645 | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 5,524 | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 5,403 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 5,389 |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 5,307 |
| 5,281         | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 5,226 | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 5,096                     | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 4,902 | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 4,683         | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 4,603 | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 4,501         | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 4,304                | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 4,217                | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 3,932                     | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 3,830 |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |

| MISC BREAKOUT |       |       |       |         |       |       |                            |                      |                   |                           |       |
|---------------|-------|-------|-------|---------|-------|-------|----------------------------|----------------------|-------------------|---------------------------|-------|
| R&D (6.1-6.3) | COMM  | INTEL | RECON | MEDICAL | LOG   | BOS   | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 3,500 | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 3,296                | 0                 | 0                         | 0     |
| 0             | 3,133 | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 2,555 | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 2,395 | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 2,381 | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 2,208 | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 2,064 | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 1,937         | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 1,899 | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 1,865             | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 1,786 |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 1,456 | 0                          | 0                    | 0                 | 0                         | 0     |
| 1,445         | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 1,331 | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0     | 1,208 | 0                          | 0                    | 0                 | 0                         | 0     |

| MISC BREAKOUT |       |       |       |         |     |       |                            |                      |                   |                           |       |
|---------------|-------|-------|-------|---------|-----|-------|----------------------------|----------------------|-------------------|---------------------------|-------|
| R&D (6.1-6.3) | COMM  | INTEL | RECON | MEDICAL | LOG | BOS   | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 1,130                      | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 1,113 | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 1,088 |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 1,031 | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 989   | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 869   |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 808   |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 791                       | 0     |
| 740           | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 731   |
| 0             | 0     | 0     | 0     | 642     | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 547   | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 505                        | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 498   |
| 0             | 472   | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 464   | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 301   | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 273 | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 228   | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |
| 0             | 0     | 0     | 0     | 0       | 0   | 0     | 0                          | 0                    | 0                 | 0                         | 0     |

[illegible]



| MISC BREAKOUT |           |           |           |           |           |            |                            |                      |                   |                           |           |
|---------------|-----------|-----------|-----------|-----------|-----------|------------|----------------------------|----------------------|-------------------|---------------------------|-----------|
| R&D (6.1-6.3) | COMM      | INTEL     | RECON     | MEDICAL   | LOG       | BOS        | TACTICAL<br>AIR<br>WARFARE | PERSONNEL<br>SUPPORT | RECRUIT/<br>TRAIN | OTHER FEDERAL<br>PROGRAMS | OTHER     |
| 0             | 0         | 0         | 0         | 0         | 0         | 0          | 0                          | 0                    | 0                 | 0                         | 0         |
| 0             | 0         | 0         | 0         | 0         | 0         | 0          | 0                          | 0                    | 0                 | 0                         | 0         |
| 0             | 0         | 0         | 0         | 0         | 0         | 0          | 0                          | 0                    | 0                 | 0                         | 0         |
| 15,681,247    | 9,129,364 | 4,370,922 | 3,039,669 | 6,880,919 | 5,150,154 | 17,774,938 | 2,247,963                  | 5,526,870            | 14,930,821        | 840,113                   | 6,167,573 |

## APPENDIX E. MEMO ON COO DUTIES



DEFENSE BUSINESS  
BOARD

OFFICE OF THE SECRETARY OF DEFENSE  
1100 DEFENSE PENTAGON  
WASHINGTON, DC 20301-1100

### ACTION MEMO

June 13, 2005, 5:00 PM

FOR: SECRETARY OF DEFENSE

Acting DepSec Action

THROUGH: UNDER SECRETARY OF DEFENSE (COMPTROLLER) *[Signature]*

FROM: Gus Pagonis, Chairman, Defense Business Board (DBB) *[Signature]*

SUBJECT: DBB Recommendations on Chief Operating Officer (COO) Duties for the  
Deputy Secretary of Defense

- As briefed May 6, 2005, the DBB recommends the Secretary of Defense formally designate the Deputy Secretary of Defense as the leader accountable for Department-wide business transformation. In this role, the Deputy Secretary should be responsible for measurable transformational progress in each of the following areas:
  - DoD civilian personnel management
  - Business management systems modernization
  - Implementation of the base closure process
  - Integrated supply chain management
  - Acquisition process reform
  - Financial management and auditability
- Quantifiable objectives for each area of responsibility should be developed and cascaded down through the Department to ensure organization alignment.

RECOMMENDATION: Secretary approve the above-role for the Deputy.

\_\_\_\_\_ Approve

Disapprove

Other

COORDINATION: None

Prepared by: Kelly S. Van Niman, 695-0499



## APPENDIX F. MEMO ON DEFENSE BUSINESS SYSTEM MANAGEMENT COMMITTEE (DBSMC)



THE DEPUTY SECRETARY OF DEFENSE  
WASHINGTON, D.C. 20301

FEB 7 2005

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Department of Defense (DoD) Business Transformation

To advance the development of world-class business operations in support of the warfighter, the Defense Business Systems Management Committee (DBSMC) is established. The DBSMC will recommend policies and procedures required to integrate DoD business transformation and to review and approve the defense business enterprise architecture and cross-Department, end-to-end interoperability of business systems and processes, as outlined in the attached charter. The DBSMC replaces the current Business Management Modernization Program governance structure.

The DBSMC is composed of the following members:

- Deputy Secretary of Defense (Chair);
- Under Secretary of Defense for Acquisition, Technology, and Logistics (Vice Chair);
- Secretaries of the Military Departments and the heads of the Defense Agencies;
- Under Secretary of Defense (Comptroller);
- Under Secretary of Defense for Personnel and Readiness;
- Vice Chairman of the Joint Chiefs of Staff;
- Commander, U.S. Transportation Command;
- Commander, U.S. Joint Forces Command;
- Assistant Secretary of Defense for Networks and Information Integration/DoD Chief Information Officer; and
- Director, Program Analysis and Evaluation (Advisory).

Attachment:  
As stated

DISTRIBUTION:

OSD 01886-05

SECRETARIES OF THE MILITARY DEPARTMENTS  
VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
UNDER SECRETARIES OF DEFENSE  
ASSISTANT SECRETARIES OF DEFENSE  
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE  
DIRECTOR, OPERATIONAL TEST AND EVALUATION  
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE  
ASSISTANT TO THE SECRETARY OF DEFENSE  
DIRECTOR, ADMINISTRATION AND MANAGEMENT  
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION  
DIRECTOR, NET ASSESSMENT  
DIRECTOR, FORCE TRANSFORMATION  
DIRECTORS OF DEFENSE AGENCIES  
DIRECTORS OF THE DOD FIELD ACTIVITIES

## **CHARTER**

### **Defense Business Systems Management Committee**

#### **I. AUTHORITY:**

Public Law 108-375, Section 332 Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005.

#### **II. MISSION/PURPOSE:**

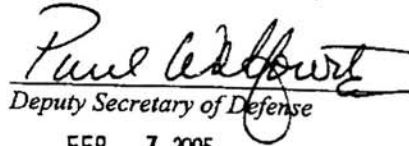
- 1 To further advance the development of business operations in support of the warfighter, and comply with section of 332 of Public Law 108-375, the Defense Business Systems Management Committee (DBSMC) is established. The committee will oversee transformation in the Business Mission Area (BMA). The overall goal of the DBSMC is to ensure that the BMA meets the needs and priorities of the Warfighting Mission Area.
2. Additionally, the DBSMC will ensure that the business transformation goals are coordinated with the Department's strategic planning. The Business Management Modernization Program (BMMP) Executive and Steering Committees are hereby disestablished.

#### **III. DBSMC ROLES & RESPONSIBILITIES:**

- 1 Establish strategic direction and plans for the Business Mission Area (BMA), in coordination with the Warfighting and Enterprise Information Environment Mission Areas.
2. Oversee the implementation of systemic performance in the Department's business operations.
3. Approve BMA transformation plans and initiatives and coordinate transition planning in a documented program baseline with critical success factors, milestones, metrics, deliverables and periodic program reviews.
4. Establish key metrics and targets by which to track business transformation progress.
5. Establish policies and approve:
  - a. BMA Strategic Plan;
  - b. Transition Plan for implementation for Business Systems Modernization;
  - c. Transformation Program Baseline; and
  - d. Business Enterprise Architecture.

- i. Appoint additional members to the DBSMC, as appropriate;
  - j. Establish a support activity to coordinate DBSMC activities;
  - k. Implement Approval Authorities and Investment Review Boards;
  - l. Periodically report to the Secretary on the progress of Defense Business System Modernization; and
  - m. Establish rules and procedures for the conduct of the DBSMC.
3. The Vice-Chair will:
- a. Act on behalf of the Chair when the Chair is not available;
  - b. Establish a program baseline for Defense Business Systems Modernization; and
  - c. Establish business transformation oversight.
4. DBSMC members will:
- a. Champion business transformation within their organizations;
  - b. Identify and nominate agenda items and issues for the DBSMC;
  - c. Represent their organizations' positions with regard to business transformation issues;
  - d. Communicate and implement DBSMC decisions within their organizations; and
  - e. Execute actions and tasks as directed by the Chair.

Approved:

  
Deputy Secretary of Defense

FEB 7 2005

## **APPENDIX G. DEPARTMENT OF DEFENSE APPOINTS TRANSCom AS DISTRIBUTION PROCESS OWNER**

United States Department of Defense  
News Release  
September 25, 2003  
No. 701-03

<http://www.defenselink.mil/releases/2003/nr20030925-0477.html>

### **U.S. Transportation Command Appointed as Defense Distribution Process Owner**

The Department of Defense announced today the appointment of Commander, U.S. Transportation Command, as the Distribution Process Owner. In this capacity, U.S. TransCom is tasked with developing efficient and effective distribution solutions to enhance strategic support to worldwide customers.

With this appointment, the DoD will now have one entity to revolutionize this system, working with the services and combatant commanders in synchronizing the distribution of personnel and equipment from factory to foxhole. Designating a U.S. TransCom process owner to lead strategic distribution is another step in transformation and will ensure the best support for our combatant commanders and troops.

The consolidation of authority under one process owner is aimed at realizing logistics efficiencies:

- Eliminate existing seams between current distribution processes and standardize the policies, vision and performance goals in DoD's supply chain.
- Drive interoperable information technology solutions and enhance total asset visibility to distribution customers.
- Institutionalize sustainment planning into our contingency processes.
- Streamlining distribution accountability under a single combatant commander (provide one single accountable person for the combatant commander to contact for their distribution needs).

The distribution Process Owner will work with the services and combatant commanders, using the best transformational concepts and ideas available, and subsequently drive revolutionary changes.

## **APPENDIX H. MARKET-BASED SOURCING RESULTS**

1. Clark, Frances, et al. "Long-Run Costs and Performance Effects of Competitive Sourcing." Center for Naval Analysis, February 2001.
2. Commercial Activities Panel. "Improving the Sourcing Decisions of the Government." April 2002.
3. Gansler, J.S. "Moving Toward Market-Based Government: The Changing Role of Government as the Provider." IBM Endowment for the Business of Government, June 2003, available at [http://www.businessofgovernment.org/pdfs/Gansler\\_Report.pdf](http://www.businessofgovernment.org/pdfs/Gansler_Report.pdf)
4. Gansler, J.S. and W. Lucyshyn. "Competitive Sourcing: What Happens to Civilian Employees?" IBM Center for the Business of Government Report, October 2004, available at <http://www.businessofgovernment.org/pdfs/GanslerLucyReport.pdf>
5. Gansler, J.S. and W. Lucyshyn. "Implementing Alternative Sourcing Strategies: Four Case Studies." IBM Center for the Business of Government, October 2004, available at <http://www.businessofgovernment.org/pdfs/GanslerReport4.pdf>.
6. Rosenblum, Cheryl B. "A-76: The View from DoD." Center for Naval Analysis, October 2001.
7. Savas, E.S. *Privatization and Public-Private Partnerships*. New York: Chatham House Publishers, 2000.
8. Tighe, Carla E. et al. "Case Studies in DoD Outsourcing." Center for Naval Analysis, January 1997.
9. Tighe, Carla, et al. "A Privatization Primer: Issues and Evidence." Center for Naval Analysis, January 1997.
10. Trunkey, R. Derek, Robert P. Trost, and Christopher M. Snyder. "Analysis of DoD's Commercial Activities Program." Center for Naval Analysis, December 1996





## PART 2: JOINT CONCEPTS PANEL REPORT

|                                                                |     |
|----------------------------------------------------------------|-----|
| Chapter I. Introduction.....                                   | 117 |
| Chapter II. Findings and Recommendations.....                  | 119 |
| Chapter III. Background .....                                  | 127 |
| Chapter IV. Joint Concept Development and Experimentation..... | 135 |
| Chapter V. Capabilities-Based Planning and JCIDS .....         | 143 |
| Chapter VI. Disruptive Challenges .....                        | 151 |

### PART 2 APPENDICES

|                                                 |     |
|-------------------------------------------------|-----|
| Appendix A. Panel Membership.....               | 159 |
| Appendix B. Guest Briefers .....                | 160 |
| Appendix C. Acronym Index .....                 | 162 |
| Appendix D. Concepts as Drivers of Change ..... | 164 |
| Appendix E. References.....                     | 166 |



## I. INTRODUCTION

The Joint Concepts Panel of the 2005 Defense Science Board (DSB) Summer Study Task Force on Assessing Progress in Transformation [of the Department of Defense] had two major charges from the Task Force chairmen:

1. Review the Joint Concept Development and Experimentation (JCD&E) process, assess its contribution to transformation, and recommend ways to enhance such contribution. In the course of its work, the Joint Concepts Panel had the opportunity to study the complementary Joint Capability Integration and Development System (JCIDS). In this report, the panel offers its observations about this ‘front-end’ process along with the Capability-Based Planning (CBP) approach to which JCD&E and JCIDS belong.
2. Assess disruptive challenges, defined by the panel as capabilities having the potential to negate critical U.S. capabilities, deny major U.S. objectives, or alter long established concepts of warfare. The panel was also tasked to review DoD activities directed toward identifying disruptive challenges and recommend ways that DoD can better anticipate, and thus prevent or counter such challenges in the future.

In pursuing these two charges, the panel became aware of what could be the most potent driver of DoD transformation: the growing cadre of military officers and non-commissioned officers with recent operational experience in Iraq and Afghanistan. These men and women have returned rich with experience and with an “attitude” that makes them effective agents for change if properly empowered. The panel offers suggestions toward that end as well as observations on two phenomena of current operations, each of which provides substantial transformation opportunities. These are (1) the growth of networking (especially horizontal), and (2) the experience at all levels of command in non-kinetic operations aimed at influencing the local populace.

What is transformation? The Department’s notions of transformation have evolved. In 2001, transformation goals were focused on a set of capabilities to enable what some called Rapid Decisive Operations. For example, the April 27, 2001 report of the Defense Transformation Study—prepared for the Secretary of Defense (SecDef)—concentrated on “...building a force able to set the conditions within 24 hours and establish control within 96 hours.”<sup>42</sup> The changing notions of transformation since the 2001 report have, of course, been influenced by the events of 9/11 and perhaps even more so by the complexities of operations in Iraq since the end of major combat operations. The focus is no longer limited to traditional military combat operations. Rather, focus has been broadened to address counterinsurgency, stability and reconstruction operations, combating weapons of mass destruction (WMD), and other security challenges.

However, there is also a second element to the evolution of DoD’s assessment of transformation. This is reflected in increasing attention, not only on achieving specific capabilities, but to changing the way the entire DoD enterprise thinks and acts in order to better address uncertainty. This transformation objective is articulated in the SecDef’s 2005 National Defense Strategy:

---

<sup>42</sup> The Defense Transformation Study was not a Defense Science Board study. Rather, it was done under the Institute for Defense Analyses (IDA). The study report executive summary is accessible on line at <http://www.defenselink.mil/news/Jun2001/d20010621transexec.pdf>.

- “Uncertainty is the defining characteristic of today’s strategic environment.”
- ...“Need for a changed defense establishment—one postured both for extended conflict and continuous transformation.”
- “We will continually adapt to how we approach and confront challenges, conduct business and work with others.”
- “Transformation is not only about technology [but] also about changing the way we think about challenges and opportunities; adapting the defense establishment to that new perspective.”

Transformation is not a new phenomenon to the United States military. In just the last 25 years, U.S. military capabilities have undergone two remarkable transformations.

1. The transformation of the post-Vietnam armed forces of the mid-1970s into the force that performed so effectively in Operation Desert Storm in 1991.
2. The transformation from the way U.S. Forces fought in Operation Desert Storm to the way they fought in Operation Enduring Freedom (OEF) in Afghanistan and the major combat operations phase of Operation Iraqi Freedom (OIF). The differences include: massing effects vice massing forces, distributed and parallel vice contiguous and sequential operations, integrated joint operations vice deconflicted Service operations, and rich reachback vice massive forward support. This secondary transformation is in some ways more surprising than the first because it followed success, not defeat.

Warfighting concepts played important roles in both transformation events. The air-land battle conceptualization was the intellectual underpinning for transforming the post-Vietnam army into the army of Operation Desert Storm.

The transformation that occurred between Desert Storm and OEF (Afghanistan) was influenced by concept work in the Services, each influenced in turn by its own Desert Storm experiences. The Air Force pursued effects-based operations; the Navy came in “from the sea” (motivated, in part, by the relatively minor role it played in Desert Storm); and the Army and Marine Corps explored distributed operations in the Army After Next, Sea Dragon, and Hunter Warrior activities. While these concepts were developed more or less independently and for different reasons, they did pay homage to a common warfighting vision embodied in the Chairman of the Joint Chiefs of Staff’s (CJCS’s) Joint Vision 2010 and 2020 (JV2010/JV2020). The result was fielded capabilities that proved complementary, although not necessarily in the intended mode (e.g. air-delivered precision fire that enabled rapid, distributed ground operations).

## II. FINDINGS AND RECOMMENDATIONS

### *JOINT CONCEPTS DEVELOPMENT & EXPERIMENTATION (JCD&E)*

The panel defines “joint concepts” as concepts for military operations that are joint (the only way U.S. forces fight), not concepts developed by joint organizations. A concept is a description of a method for employing military capabilities to achieve an objective or, alternatively, a visualization of how an operational problem will be solved in the future.

Concepts for future joint operations play two primary roles; they:

- provide the intellectual underpinning for operational transformation through experiments, exercises, and operational experience; leading to “how we fight”
- guide force development

Both kinds must be responsive and dynamic to provide the basis for adaptive forces that can meet the demands of an unpredictable operational environment. Concepts can evolve into doctrine as they are “validated” through experience and experiments, approved by the leadership, and accepted in the field as “how we fight.”

DoD acknowledges the importance of joint concepts and has high expectations for their contributions to transformation. The TPG declared future joint operating concepts to be the key to the Department’s transformation strategy and articulates sound principles for joint concept development. The guidance recognizes that concept development and experimentation are inseparable, that multiple joint and Service concept development efforts are necessary to ensure competition of ideas, and that the combatant commands and the Services must establish and continuously conduct robust concept development and experimentation programs. In addition, the guidance calls for the use of red teams, supported with fenced funding and operating at the tactical, operational, and strategic levels.

Many talented people are dedicating considerable time to joint concept development. There is an expanding DoD enterprise in JCD&E with several positive developments, including emerging multi-agency involvement; beginnings of combatant commander concept development efforts; expanding collaboration among the Services and multi-national partners; and a networking infrastructure being put in place for competition of ideas and discovery.

However, the panel’s judgment is that the overall JCD&E effort falls short of the need and of the ambitious role DoD itself has set for joint concepts. The panel found serious shortcomings:

- The role of concepts is not well understood throughout DoD;
- The complex hierarchy of concepts consumes too many human resources for limited return and diverts resources that should be focused on the really important problems/opportunities;
- Concept writing is viewed as routine staff work;
- The level of consensus required to “validate” concepts can lead to stagnation rather than driving meaningful change;

- There is inadequate coupling of concept development with experiments (there are some exceptions) and, consequently, not nearly enough opportunity to validate concepts through learning (instead of merely lowest-common denominator bureaucratic consensus);
- There is insufficient competition of ideas; and
- There is insufficient accounting for uncertainties and adaptive adversaries.

Furthermore, the process that the concepts feed (JCIDS) is cumbersome, still dominated by Service influence at the expense of joint perspectives and not well connected to the non-materiel elements of doctrine, organization, training, materiel, leadership, personnel, facilities (DOTMLPF). Additionally, the panel senses that the intellectual involvement of senior leadership in the joint concept development process (a necessary condition for concepts to have influence) is considerably less than in the Services.

## **Recommendations for the SecDef and CJCS**

Transform the current JCD&E process to:

- Connect the joint concepts process to the capability needs identification process; and connect concept development to the resource allocation process, so that the outputs of one serve as timely inputs to the next and all fit within the congressional budget cycle.
- Focus on a critical set of problems identified by the combatant commanders and senior DoD leadership.
  - Select two or three problems for initial refocus and then evolve the concept development effort based on what is learned.
- Demand much more competition of ideas (among Blue and versus Red) and promote discovery through continuous experimentation with multiple solutions considered.
  - Make available the scarce talent needed to generate quality products.
  - Increase multi-agency and international participation.
- Assign a major role to regional combatant commanders in problem definition, concept development, and operational assessment.
  - Create JCD&E support positions at the combatant commands.
- Hold JFCOM accountable for the process with its JCD&E “Lead and Coordinate” responsibilities.
- Invest intellectually in the concepts themselves; be a stakeholder.

## ***JCIDS AND THE JROC***

The intent of the JCIDS process was to ensure that joint needs, materiel and non-materiel, are addressed in response to capability gaps identified by warfighters and through rigorous analysis. However, in practice, combatant commander influence has not increased. The process remains highly Washington-centric and is still dominated by the force providers through their control of the Joint Requirements Oversight Council (JROC).

Furthermore, JCIDS is trying to serve too many customers; it needs to refocus on supporting the CJCS in advising the SecDef on force-building priorities.

The process remains focused largely on materiel solutions and is bogged down with assessment of the full range of materiel capabilities rather than focusing on joint commanders' most critical needs.

## Recommendations for the SecDef and CJCS

- Focus the JCIDS process on serving the Chairman's responsibility of advising on joint capabilities needed to integrate Service capabilities into effective joint forces.
  - Leave the detailed assessment of programs to other existing processes.
  - Task the process to focus on joint priorities across the spectrum of DOTMLPF.
- Balance the JROC's dominance by Service perspectives.
  - Give the combatant commanders and the USD(AT&L) a formal role on the JROC.
- Get the JROC out of the small stuff and have it address only "big" issues—i.e. Critical capability gaps identified by the combatant commanders, SecDef, and CJCS.
- Focus JCIDS on those critical capability gaps lacking effective champions in the resource allocation process; specifically, joint command and control and intelligence, surveillance, and reconnaissance (ISR) instead of trying to cover "everything."
- Alleviate the crippling effect of JCIDS ponderous processes by severe reengineering.
  - J-8 has begun to identify metrics, best practices and non-value added activities; make this activity a priority second to none.
  - Empower Functional Capability Boards (FCBs) to make decisions rather than merely serving as a queue.

While these steps can help, they will be insufficient to give combatant commanders an equal voice to the force providers in influencing future force capability. A means for accomplishing this objective is presented in this Summer Study's main report.

## *CAPABILITIES-BASED PLANNING (CBP)*

According to the National Defense Strategy, CBP:

- Focuses DoD on the growing range of capabilities and methods necessary to contend with an uncertain future.
- Recognizes the limits of intelligence and the impossibility of predicting complex events with precision.
- Operationalizes the strategy to address the spectrum of strategic challenges by setting priorities among competing capabilities.

The underlying premises of capability-based planning are sound in that the CBP process strives to identify desired outcomes rather than prescribe system characteristics. The process tries to account for a range of plausible scenarios rather than focusing on just one or two (assuming everything else is included less as was done during the Cold War). Moreover, the intent behind the CBP process is to foster development and acquisition of capabilities based on warfighter needs rather than Service wants.



However, the panel found considerable confusion throughout DoD regarding what CBP is and how it should work. Some believe that Capabilities-Based Planning does not involve addressing threats aimed at the U.S. In fact, CBP requires accounting for a wider-range of threats than the lesser-included approach of the Cold War. It is often used as a bumper sticker to justify current activities.

Lastly, the panel did not find the top-down guidance needed to operationalize CBP and synchronize its sub-processes including JCD&E; JCIDS; Defense Planning Scenarios; Planning, Programming, Budgeting and Execution (PPBE); and the Analytic Agenda.

### **Recommendations for the SecDef:**

- Promulgate widely and deeply the “what” of CBP
- Operationalize the “how” of CBP
  - Issue comprehensive and comprehensible directives;
  - Ensure that the resource allocation process accounts for resources based on the missions assigned to combatant commanders rather than the types of forces provided by the Services; and
  - Provide clear accountability to force providers and combatant commanders for the full set of DOTMLPF contributors to mission accomplishment.

*The panel’s critical judgments about joint concept development, JCIDS and CBP need to be viewed in the context of the security challenges the nation faces and the ambitious standards that DoD itself has established. There is good work going on here and we recognize that these relatively new processes are in flux. In other times, their maturation could be deemed quite acceptable. But not at this time, when there is a pressing need to cope with new security challenges, adaptive and resourceful adversaries, and complex missions for U.S. armed forces. Thus, we are concerned that these critical front-end processes, intended to foster transformation, are not doing so. Furthermore, as currently implemented, these processes may even be counterproductive to the Secretary’s transformation objectives.*

### **DISRUPTIVE CHALLENGES**

A disruptive challenge is a *capability* developed by potential adversaries (or others) that would negate critical U.S. capabilities and thus deny major U.S. objectives or fundamentally alter established concepts of warfare. Examples include:

- Capabilities to deny U.S. freedom of action in the global commons: air, land, sea, space, or cyberspace;
- Counters to key U.S. warfighting modes, such as precision attack, net-centric operations, joint integrated and interdependent operations, and space-based support;
- Moving the battlespace to the U.S. homeland; and
- Developing as yet only dimly perceived military applications of bio-, nano-, and other technologies (although a disruptive challenge does not necessarily depend on advanced technology, it could involve creative use of existing technology).

A broader definition of disruptive challenge would include not only new capabilities obtained by adversaries, but also situations that marginalize U.S. influence, e.g. nuclear war between other nations, pandemics.

The panel found relevant activities (e.g. by DIA's Defense Warning Office); however, we did not find a comprehensive and coherent effort to identify and deal with these challenges. The challenges identified as disruptive are often excursions to traditional challenges, or viewed from the perspective of the U.S. as disruptor, or concerned only with technologies vice capabilities.

It is important that DoD get much better at anticipating, and preparing counters to, disruptive capabilities. One reason is that globalization makes technology available to resourceful adversaries unburdened by bureaucratic acquisition processes. The technology that enables disruptive challenges need not be advanced, but can be quite mundane.

## **Recommendations for the SecDef**

- Create a process that includes:
  - Robust red teaming to identify technically feasible and adaptive (malevolent) threats.
  - Net assessment to consider the effect of these threats and organize them for decision makers.
- Set the “disruptive” threshold high.
  - Otherwise the process will lose sight of the really threatening and get bogged down chasing “excursions.”
- Imbed this process into DoD (and intelligence community) decision making so that its products can inform intelligence collection and analysis, concept development and experimentation, operation planning, and DOTMLPF investments.
  - Intelligence needs to search for all the elements that together would add up to create emerging disruptive capabilities (pay attention to doctrine, organization, training, leader development and education, people, and facilities in addition to the materiel or technology aspects).
- Hold someone accountable for making the process work. The panel recommends that USD(AT&L) be accountable, working very closely with the intelligence community and other contributors. However, there is a concern that assigning it to the USD(AT&L) could make the process unduly technology-centric.

Strong intelligence is vital, but the collection effort against U.S. adversaries is very difficult. Thus, the evidentiary-based threat provided by intelligence must be complemented by red teaming in order to identify the technologically feasible and responsive threats as well.

Establishing effective red-teaming processes is in itself a challenge—as the culture is bureaucratic and often not supportive. Top cover from senior leadership, an effective mix of talent, and independence with accountability are among the enablers of successful red teams—and will facilitate best practices such as those from successful red teams (e.g. the U.S. Navy's Fleet Ballistic Missile Submarine (SSBN) Security Program).

## CHANGE DRIVERS

The panel addressed three change drivers:

- The cadre of potential transformation agents coming back from theater.
- Explosive growth of horizontal networking, much of which was outside formal channels.
- Extensive on-the-job experience by commanders in theater at all levels with operations aimed at influencing the populace.

## Personnel

### **There is a growing cadre of military personnel with empowering experiences in theater.**

Some have succeeded as warriors, mayors, security providers, service (sewerage, water, electricity, trash) providers, trainers, infrastructure builders, non-kinetic operations practitioners, public affairs spokesman, and more. These multi-faceted warriors have succeeded largely without guiding concepts or doctrine and with little direction, but with support, from above.

This cadre can be a major force for change within DoD. They are impatient with business-as-usual and input-dominated processes and are not confounded by ambiguity and uncertainty. However, subsequent assignments must empower them to be effective change agents. If not, the Department loses a great opportunity and may lose many of these personnel as well. There is high demand in private business for people with their experiences and capabilities.

## Personnel: Recommendations

The SecDef should task the Service Chiefs to:

- Identify and track (via a specialty qualification) these differentially experienced individuals.
- Manage and assign these personnel to positions enabling them to be change agents for transformation.
- Empower them and set conditions for their success.

The SecDef and CJCS should identify existing positions and projects and as appropriate as well as create new positions and projects wherein these individuals can be effective change agents. Take these actions now before it's too late.

## Networking

There has been a dramatic growth of "networking" in the field. This is especially so horizontally among peers. This has occurred both within and outside the chain of command. An example of the first is the 1st Cavalry Division's creation of its own internet, CAVNET, and its use of DARPA's Command Post of the Future. [Companycommander.com](http://Companycommander.com) and [platoonleader.com](http://platoonleader.com) are examples of networking initiatives outside the formal chain of command.

These examples reflect the real power of network-centric operations (network as a verb, not a noun). This is the sharing, horizontally and vertically, not only of information but the value-added human

contributions that turn information into knowledge and understanding. All this activity will impact the practice, and perhaps the theory, of command and control. The panel is concerned, however, that the informal communications tools (e.g. *companycommander.com*.) will be “captured” by the system.

Also happening in the field are collaboratively derived (much of it horizontal) and validated lessons learned and concepts. The tactics, techniques, and procedures (TTPs) and concepts (small c) are virtual and disposable. There is continuous “experimentation,” rapid dissemination, and adjustment.

## **Networking: Recommendations**

The SecDef should:

- Task Service Chiefs to challenge their doctrine and TTP entities to turn out best practices in near real time.
- Ensure that the out-of-channel forums are nurtured.
  - Establish a vetting process independent of the out-of-channel forums to avoid false learning.
- Allocate funds for rapid acquisition of private sector tools to enable horizontal networking.
- Create a similar forum for general and flag officer collaboration.

## **Influence Operations**

The vital capability to influence others, widely acknowledged as a major U.S. shortfall, is included to make several points relative to transformation:

1. The Soldiers and Marines on the ground are the face of America to the indigenous population.
2. Commanders at all levels in the field are devising information operations to positively influence the populace and are integrating these into their overall operations (this is a form of strategic communication).
3. “Official” definitions of information operations are not consonant with those used by field commanders.

There are serious definitional problems and disconnects between the theory and practice of what is called information operations (IO). Official definitions of information operations emphasize that IO involves actions taken to affect adversary information and information systems while defending one's own information and information systems. The skill-set needed for this form of IO is not the same as what is needed for the influence operations which U.S. troops are grappling with in the field. Public Affairs is directed at U.S. audiences, both within and outside the Department of Defense. Public Diplomacy is directed at foreign audiences. By definition, Information Operations is focused on the adversaries. All three terms fall short of describing the diversity of audiences that U.S. troops routinely encounter in settings like Somalia, Bosnia, Afghanistan, and Iraq.

**Influence Operations: Recommendations**

The SecDef and CJCS charter a fast-track task force to address the serious problems affecting our ability to conduct information/influence operations. The task force should recommend doctrinal and operational changes to clarify definitions, purposes, missions, and assignments both for operations focused on the enemy and operations directed at influencing the rest of the indigenous populace. Appoint an OIF-experienced land force commander as the task force leader with interim results available within 60 days and a final report in 120 days.

### III. BACKGROUND

As context for understanding and assessing the state of JCD&E processes, it is useful to review the sequence of events that led to their creation in the first place. These include the Chairman of the Joint Chiefs of Staff's (CJCS's) Joint Vision; various supporting joint concepts, subordinate to and based upon the Joint Vision; and related implementation plans and directives. In addition, a series of actions since 2001 have significantly altered concept development and experimentation guidance and processes.

#### *BEFORE 2001*

**Joint Vision.** In 1995, the congressionally mandated Commission on Roles and Missions found that the capabilities developed separately by the Services had proved individually superb in Operation Desert Storm, but did not work well together. The commission recommended that the CJCS develop a central vision to serve as a framework for development of common operational and organizational concepts and a common base for assessments of current and future joint capabilities.<sup>43</sup> In 1996 the Chairman issued Joint Vision 2010, focusing on military needs 15 years into the future. Joint Vision 2010 identified four broad operational concepts—Dominant Maneuver, Precision Engagement, Full-Dimensional Protection, and Focused Logistics—to provide a common direction and serve as a conceptual template for the long term development of capabilities. However, these concepts can probably be more accurately described as objectives since they were short on the how to.

A year later, the congressionally mandated National Defense Panel recommended greater emphasis on experimenting with military systems, operational concepts, and force structures, declaring “it is possible to explore future concepts now, using well planned and resourced exercises, surrogate and real technologies, and advanced distributed simulation.” The panel recommended creation of a Joint Forces Command, which was to create challenging scenarios and conduct regular field exercises under the aegis of a Joint Battle Lab.<sup>44</sup>

In May 1998, Secretary of Defense William Cohen chartered the Commander of U.S. Atlantic Command as the Department of Defense (DoD) executive agent for joint warfighting experimentation, responsible to the Chairman for creating and refining future joint warfighting concepts and integrating Service efforts in support of *JV2010*.<sup>45</sup> The command was redesignated U.S. Joint Forces Command (JFCOM) in 1999, and by October 2002, its geographic responsibilities had been completely transferred to other commands, making JFCOM a purely functional combatant command focused on transforming U.S. military forces to meet the security challenges of the 21st century.

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<sup>43</sup> Directions for Defense, Report of the Commission on Roles and Missions of the Armed Forces, 24 May 1995, pp. 2-2 and 2-3.

<sup>44</sup> Transforming Defense: National Security in the 21st Century, Report of the National Defense Panel, December 1997, pp. Accessed 9 November 2004 at <http://www.dtic.mil/ndp/FullDoc2.pdf>.

<sup>45</sup> DoD News Release Number 252-98, “U.S. Atlantic Command Designated Executive Agent for Joint Warfighting Experimentation,” 21 May 1998, accessed 9 November 2004 at DefenseLink website, [http://www.defenselink.mil/releases/1998/b05211998\\_bt252-98.html](http://www.defenselink.mil/releases/1998/b05211998_bt252-98.html)

In 2000, *JV2010* was replaced by *JV2020*, which kept the four operational concepts and added emphasis on command and control, decision superiority, and interagency operations.

**Supporting the Concepts.** One stated purpose of Joint Vision 2010 was to provide a framework for development of common operational and organizational concepts. At least three subordinate concepts for joint operations were developed in response to the Joint Vision documents: the Concept for Future Joint Operations (CFJO), the Future Joint Force Concept, and Rapid Decisive Operations.

**Concept for Future Joint Operations: Expanding Joint Vision 2010.** Produced in May 1997, this document was a product of the Joint Warfighting Center which was a Chairman-controlled activity at the time, later transferred to JFCOM. The CFJO sought to amplify the four operational concepts of *JV2010* as the first phase of a comprehensive implementation process that would eventually transform key *JV2010* ideas into actual joint force capabilities. It was intended to provide the initial basis for a variety of assessment activities and be refined based on the results.<sup>46</sup>

**Future Joint Force Concept.** In December 1999, the CJCS (General Shelton) formed a group of active duty generals and flag officers representing all Services to develop a “concept for the future joint force.” The group was instructed to develop a broad, strategic-level document that would frame the joint force in 2010, providing strategic focus and Chairman’s guidance for overall military transformation. The group focused on the operational level of war from a joint force commander’s perspective, paying special attention to joint command and control and decision-making. The “Newport Paper” (so called because the group met at the Naval War College in Newport, Rhode Island) was delivered to General Shelton in August 2000.

**Rapid Decisive Operations.** In a November 2000 speech, General Shelton summarized the changing security environment, stating it was essential to experiment with new concepts and transform accordingly because operational challenges could far exceed current U.S. military capabilities. JFCOM’s marching orders were to develop a concept that would advance the tenets of joint warfighting and establish the joint context for Service concept development and experimentation. JFCOM’s primary vehicle for leading transformation was a concept called Rapid Decisive Operations (RDO), which General Shelton described as “the tool to operationalize *JV2020*.” He noted that JFCOM had developed a joint experimentation campaign plan which included such major milestones as Operation Millennium Challenge 2002 to more fully exploit the concept.<sup>47</sup>

In the words of one of the principal designers of Millennium Challenge 2002, RDO became the one-size-fits-all concept which was doomed by design. The experiment focused on a few elements of RDO: the Joint Interagency Coordination Group (JIACG), Effects-Based Operations (EBO), the Collaborative Information Environment (CIE), and the Standing Joint Force Headquarters (SJFHQ). Concept developers at JFCOM came to see RDO as a “concept for experimentation” and not as a solution to the

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<sup>46</sup> Concept for Future Joint Operations: Expanding Joint Vision 2010, May 1997, pp. i-ii. Accessed 10 November 2004 at the Joint Electronic Library website, <http://www.dtic.mil/jointvision/history.htm>.

<sup>47</sup> General Henry H. Shelton, U.S. Army, Chairman of the Joint Chiefs of Staff at the Fletcher Conference 2000, Arlington, VA, November 16, 2000. Accessed 19 November 2004 at the JCSLink website, <http://www.dtic.mil/jcs/>

*JV2020* challenge. Today, RDO appears to have been overcome by those events, but some of its basic ideas live on in other forms. The SJFHQ, JIACG, and CIE are not just experimental “filler ideas” anymore, but are becoming a reality in the joint community.<sup>48</sup>

**Implementation Plans and Directives.** While JFCOM was made responsible to the CJCS for creating and refining future joint warfighting concepts and for joint warfighting experimentation, the CJCS retained responsibility for implementation of the Joint Vision.<sup>49</sup> The CJCS’s Joint Vision 2010 Implementation Policy was published in October 1996 to address *JV2010*. It was replaced in 1998 by the Joint Vision Implementation Master Plan (JIMP). Both documents were superseded in April 2001 by an updated JIMP that defined “a process that will translate emerging joint operational concepts into joint warfighting capabilities as a result of joint experimentation and assessment recommendations.”<sup>50</sup>

Implementation as prescribed by the JIMP consisted of three component processes for which responsibilities were split between JFCOM, the joint staff, and among elements of the joint staff. The three components were:

1. Joint Concept Development. The JIMP assigned Joint Warfighting Capabilities Assessment (JWCA) teams the responsibility to develop joint operational concepts and operational architectures for designated joint mission areas, “keeping JFCOM informed of their efforts.” At the same time, it directed JFCOM to “create and explore new joint warfighting concepts for joint experimentation.” JWCAs were to lead collaborative teams that included JFCOM representation. The JIMP required JFCOM to ensure the overall integration of joint concepts and refine them based on assessment results and Service and combatant command input.
2. Joint Experimentation and Assessment. The JIMP made JFCOM responsible for refining, assessing, and recommending to the CJCS the most promising joint concepts for experimentation and assessment. Concepts selected by the CJCS were to be integrated into an annual joint experimentation campaign plan, which JFCOM would prepare based on the CJCS’s guidance. JFCOM or the designated sponsor of a joint experiment or assessment would review conclusions, assess insights collected from multiple sources, and develop joint DOTMLPF “change packages” for delivery to the CJCS through the Director for Force Structure, Resources, and Assessments (J-8) and the JROC.
3. Joint Integration and Implementation. Under the JIMP, the JROC was to review the joint DOTMLPF Change Recommendations (DCRs) submitted by JFCOM and provide a recommendation to the CJCS for approval and implementation or for further work by the sponsor. Recommendations approved by the Chairman for implementation would be turned over to the DOTMLPF Integration Team, chaired by the Director of the Joint Staff and comprising general and flag officer representatives from the Joint Staff directorates, the Services, and JFCOM. This executive body was to accept the approved recommendations and assign and monitor implementation actions.

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<sup>48</sup> Reflections of LTC Kevin Woods, U.S. Army (Retired), who planned and served as XXX during JFCOM’s major warfighting experiment, MILLENNIUM CHALLENGE 2002.

<sup>49</sup> DoD News Release Number 252-98, “U.S. Atlantic Command Designated Executive Agent for Joint Warfighting Experimentation,” 21 May 1998, accessed 9 November 2004 at DefenseLink website, [http://www.defenselink.mil/releases/1998/b05211998\\_bt252-98.html](http://www.defenselink.mil/releases/1998/b05211998_bt252-98.html)

<sup>50</sup> CJCSI 3180.01A, Joint Vision Implementation Master Plan (JIMP), 15 April 2001, p. A-1.



## **AFTER 2001**

Events moved swiftly after the JIMP was last updated in 2001, rendering both it and the Joint Vision document it was designed to implement out of step with other DoD processes. The following summarizes the key changes and their impact on joint concept development and experimentation.

**Quadrennial Defense Review (QDR) 2001.** The QDR report, issued days after the 9/11 terrorist attacks on the United States, announced the shift to a "capabilities-based" model and said one pillar of transformation would be experimenting with new operational concepts and capabilities. The Secretary directed JFCOM to conduct at least one major joint transformation exercise every other year, building on Service experimentation exercises in the intervening years. To monitor this program and provide the Secretary with policy recommendations based on its findings, the QDR directed the establishment a new Office of Force Transformation, reporting directly to the Secretary and the Deputy Secretary of Defense.<sup>51</sup>

**JROC programmatic processes for joint experimentation and joint resource change recommendations.** A new Chairman's Instruction issued in October 2002 superseded the joint integration and implementation component of the JIMP. The new instruction prescribed separate paths and venues for materiel solutions to warfighting requirements, which were to be identified through the Requirements Generation System, and for DOTMLPF changes outside the scope or oversight of a new defense acquisition program, such as those resulting from innovation, joint experimentation, combatant commanders' Integrated Priority Lists, and warfighting lessons learned.<sup>52</sup>

**Joint Lessons Learned.** Early in 2003, the Chairman asked Commander JFCOM to collect and analyze lessons learned from Operation Iraqi Freedom. JFCOM's joint lessons learned collection team was placed in operational-level headquarters in Qatar, Kuwait and Saudi Arabia, and supported by an analysis cell at the Joint Warfighting Center. Key issues were briefed to the SecDef, the Vice President and the President, fostering top-down support for efforts to institutionalize aspects of the campaign that went well and remedy those that did not.

The CJCS then asked JFCOM to expand the effort to develop recommended solutions from the joint operations perspective and present recommendations to the JROC for appropriate action. JFCOM responded by establishing the Joint Center for Operational Analysis (JCOA) and proposing a permanent process that, when fully realized, would capture lessons not only from "real world" military operations, but also from joint training events and joint experimentation. As part of the overall process, JFCOM proposed a streamlined process (43 days vice the normal 102) for gaining JROC approval of what are termed Lessons Learned DCRs.<sup>53</sup>

**Transformation Planning Guidance.** The Transformation Planning Guidance (TPG) issued by the SecDef in April 2003 described a three-part strategy for implementing transformation. The first element was a transformed culture through innovative leadership, and the third was transformed capabilities

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<sup>51</sup> Quadrennial Defense Review Report, 30 September 2001.

<sup>52</sup> CJCSI 3180.01, Joint Requirements Oversight Council (JROC) Programmatic Processes for Joint Experimentation and Joint Resource Change Recommendations, 31 October 2002.

<sup>53</sup> Draft USJFCOMINST 3150.25, U.S. Joint Forces Command Joint Lessons Learned Program, 27 July 2004.

through the four pillars of transformation first identified in QDR 2001: (1) strengthening joint operations; (2) exploiting U.S. intelligence advantages; (3) experimenting in support of new warfighting concepts; and (4) developing transformational capabilities.

The central element of the transformation strategy was termed “Risk Adjudication Using Future Operating Concepts.” The TPG indicated the objective was to balance the requirements of current operations against the need to invest in capabilities to support future concepts, and said this portion of the strategy would have two parts:

1. Reformed Capabilities/Identification Process: The TPG called for reform of the requirements system to permit investments in transformational capabilities based on joint operating concepts.
2. Transformed Strategic Analysis: The objective here was a transformed analytic process able to compare risks across time and between multiple theater-level operations.

To implement this three-part strategy, the TPG assigned senior leader roles and responsibilities as follows:

- The Secretary of Defense is the final approval authority on all major elements of the transformation strategy.
- The CJCS oversees development of joint concepts and validates joint warfighting requirements.
- The Director, Office of Force Transformation (OFT) monitors and evaluates implementation of the transformation strategy, advises the Secretary, and helps ensure that joint concepts are open to challenge by a wide range of innovative alternative concepts and ideas.
- The Commander, JFCOM, and other combatant commanders develop joint warfighting requirements, conduct joint concept development and experimentation, and develop specific joint concepts assigned by the Chairman. Commander, JFCOM, is responsible for coordinating concept development and experimentation efforts of the combatant commands and for concept development and experimentation on Chairman-directed joint concepts and other joint concepts, integrating the results from these and other combatant commanders’ experiments, and recommending to the Chairman modifications to existing joint concepts. The Commander, JFCOM is also responsible for a Joint transformation roadmap to achieve joint capabilities required by joint concepts.
- The Secretaries of the Military Departments and the Service Chiefs are responsible for developing specific concepts for supporting operations and core competencies. They oversee Service experimentation, modify supporting concepts accordingly, and build transformation roadmaps to achieve transformational capabilities to enable these concepts.

To summarize, the transformation process was designed to operate as follows: Validated joint concepts define how transformed forces operate. Roadmaps specify the capabilities required by these concepts. Service programs are developed to incorporate as much of the roadmaps as possible, and are evaluated for transformational value in light of the roadmaps. Rapid and imaginative research, development, test and evaluation (RDT&E) programs are developed to accelerate transformation efforts and stimulate alternative means for achieving the capabilities envisioned in the roadmaps. Finally, OFT conducts annual strategic appraisals to assess progress and issue planning documents.

**Joint Capabilities Integration and Development System (JCIDS).** The April 2003 TPG called for reform of the requirements system. The CJCS responded with the Joint Capabilities Integration and Development System (JCIDS). Two documents that promulgated the JCIDS—a Chairman’s Instruction (CJCSI) and a Chairman’s Manual (CJCSM)—were initially published in June 2003, and served to cancel CJCSI 3170.01B, the Requirements Generation System. The JCIDS directives were revised in March 2004 and again in May 2005.<sup>54</sup>

**Planning, Programming, Budgeting, and Execution (PPBE) Process.** In May 2003, Management Initiative Decision 913 directed implementation of a two-year Planning, Programming, Budgeting, and Execution (PPBE) process to replace the Planning, Programming, and Budgeting System (PPBS) that had served as DoD’s central strategic planning, program development, and resource determination process since the 1960s.<sup>55</sup>

**Joint Capabilities Development Process.** In March 2003, the Secretary chartered the Joint Defense Capabilities Study to examine how DoD develops, resources, and provides joint capabilities. The study was chaired by former USD(AT&L) Pete Aldridge, and thus is often referred to as the “Aldridge Study.” The study team was tasked to examine and improve DoD processes for determining needs, creating solutions, making decisions, and providing capabilities.

The Aldridge Study found capabilities planning to be stovepiped, with the Services dominating planning even for capabilities that are inherently joint and that specifically support the combatant commands. The study found that historically, the Services have defined the needs, developed the alternatives, and selected and resourced the solutions.

Under the old Requirements Generation System, Services presented their mission need statements to the JROC for approval. Because the JROC approached candidate requirements and resources on a case-by-case basis rather than with a DoD-wide view, it was predisposed to accept Service-defined needs. The lack of strong combatant command influence resulted in capabilities being “pushed” to the warfighters rather than identifying and “pulling” needed capabilities.

The Aldridge Study proposed a new approach, giving combatant commanders a larger role in shaping defense strategy and using operating concepts and the unique demands of various theaters of operation to drive joint needs. The role of the Services would be to offer proposed solutions to meet those joint needs. Selection of the best alternatives would be preceded by analysis, conducted by teams from the Office of the Secretary of Defense (OSD), the Joint Staff, and the Services, with combatant command representation to ensure the analysis reflects a realistic assessment of current and future warfighting concepts.<sup>56</sup>

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<sup>54</sup> The current Chairman’s Instruction, CJCSI 3170.01E, Joint Capabilities Integration and Development System, published 11 May 2005. The accompanying manual is CJCSM 3170.01B, Operation of the Joint Capabilities Integration and Development System, 11 May 2005.

<sup>55</sup> Management Initiative Decision (MID) 913, Implementation of a 2-year Planning, Programming, Budgeting, and Execution Process, May 22, 2003.

<sup>56</sup> Honorable E.C. Aldridge, et al., Joint Defense Capabilities Study: Improving DoD Strategic Planning, Resourcing and Execution to Satisfy Joint Capabilities, Final Report, January 2004, pp. 2-4 to 2-7.

Following a briefing on the Aldridge Study to the Senior Level Review Group (SLRG) on 31 October 2003, Secretary Rumsfeld announced the initiation of a new joint capabilities development process, presumably implementing the Study's recommendations. The declared goal was "a streamlined and collaborative, yet competitive, process that produces fully integrated joint warfighting capabilities. The SecDef's memorandum announced that he would issue the Strategic Planning Guidance (SPG)—a single, fiscally informed document that would replace the policy and strategy sections of the Defense Planning Guidance (DPG)—and then issue fiscally constrained Joint Programming Guidance (JPG) in the Spring, which would replace the programmatic elements of the DPG and would record the decisions reached in the enhanced planning process. This enhanced planning process, called the EPP in the Aldridge Study, was described in the implementing memorandum as a collaborative joint planning process that would formulate and assess major issues and present them for the Secretary's decision."<sup>57</sup>

The analytic teams proposed by the Aldridge Study, and implicitly approved by the SecDef as part of the new joint capabilities development process, overlapped considerably with the FCBs and FCB Working Groups established to support JCIDS. The two processes compete for limited analytical resources, and the tension between them has never been resolved. The SecDef's memorandum initiating the joint capabilities development process acknowledged that some organizational changes recommended by the Aldridge Study might ultimately be needed to optimize the new process, but said its initial implementation would be carried forward by existing organizations. The potential for conflict between the JCIDS analysis prescribed in JCIDS directives and the capabilities-based analyses called for as part of the EPP are highlighted in a Chairman's Instruction published in November 2004. It notes that the Director of Program Analysis and Evaluation; the Joint Staff Director for Force Structure, Resources and Assessment (J-8); and the Principal Deputy Under Secretary of Defense for Policy together constitute an Executive Committee that provides EPP oversight and guides the process. The directive states that "FCBs may provide members to support EPP issue teams that perform analytical work in accordance with approved terms of reference."<sup>58</sup>

**Retirement of the Joint Vision.** The Aldridge Study found the defense strategy to be unclear because it was conveyed in too many outdated or contradictory documents. Secretary Rumsfeld expressed a preference for combining Joint Staff and OSD products—such as the Joint Vision—into single DoD documents rather than separate Joint Staff and OSD documents.<sup>59</sup> A draft replacement for JV2020, simply titled Joint Vision, was withdrawn and subsequently integrated into draft National Military Strategy 2004, which was signed by the CJCS in May 2004 and released by the SecDef (together with a new National Defense Strategy) in March 2005.

**Joint Concept Development and Revision Plan (JCDRP).** The Strategic Planning Guidance (SPG), issued by the Secretary in March 2004, directed the CJCS to present to the SecDef a plan for revisions to future joint concepts. The JCDRP was endorsed by the Chairman and forwarded to the

<sup>57</sup> Secretary of Defense memorandum, subject: Initiation of a Joint Capabilities Development Process, 31 October 2003.

<sup>58</sup> CJCSI 3137.01C, *The Functional Capabilities Board Process*, 12 November 2004, p.C-3.

<sup>59</sup> Secretary of Defense "snowflake" memorandum to Larry Di Rita, subject: Documents, 3 January 2003, quoted in Rowan Scarborough, *Rumsfeld's War: The Untold Story of America's Anti-Terrorist Commander*, Washington, DC, Regnery Publishing, Inc., 2004, p. 187.

Secretary for approval on 30 August 2004.<sup>60</sup> The document apparently got sidetracked somewhere and never made it to the Secretary. The Joint Staff elected to act as if the JCDRP had been approved, and began drafting a new CJCSI to implement the plan.

**Joint Concept Development Program.** The draft Chairman's Instruction, CJCSI 3010.02B, was intended to cancel both the JCDRP and the earlier JIMP. Three drafts have been circulated for comment, each under a different title. The most recent draft was issued in August 2005 for general officer/flag officer coordination. Its stated purpose is "to provide guidance for joint operations concepts development and to synchronize the efforts of the joint concept community in DoD's capabilities-based planning process." It says that joint concepts link strategic guidance to the employment and development of future joint force capabilities and serve as "engines for transformation."<sup>61</sup>

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<sup>60</sup> Strategic Planning Guidance, Fiscal Years 2006-2011, March 2004, p. 24.

<sup>61</sup> CJCSI 3010.02B, *Joint Operations Concepts (JOpsC)*, GO/FO coordinating draft dated 1 September 2005.

## IV. JOINT CONCEPT DEVELOPMENT AND EXPERIMENTATION

### TERMINOLOGY

Understanding the current state of JCD&E begins with a common understanding of the following terms:

**Concept.** The current draft Chairman’s Instruction on joint concept development defines a concept as “a notion or statement of an idea—an expression of how something might be done.”<sup>62</sup> The critical point is that while a concept may lead to an accepted procedure, it isn’t one yet. Accepted procedures are found in doctrine; concepts are not doctrine.

General Donn A. Starry described how concepts relate to doctrine when he commanded the U.S. Army Training and Doctrine Command (see appendix A for more discussion of concepts as change drivers). General Starry was writing about the Army in particular, and about the “Central Battle” concept (which matured into Air-Land Battle), but the relationship he describes remains relevant to the joint force and concepts for joint operations:

Doctrine is what is written, approved by an appropriate authority, and published concerning the conduct of military affairs. Doctrine generally describes how the Army fights tactically; how tactics and weapon systems are integrated, how command control and combat service support are provided; and how forces are mobilized; trained, deployed, and employed.

Concepts are not doctrine until tested, approved, and accepted. Not all concepts will eventuate in doctrine. This is why concepts are dynamic, not fixed; this is why they are not tied to a specific piece of materiel or a system. Rather they address themselves to the needs/requirements that flow from the Central Battle.<sup>63</sup>

In the joint world, doctrine is only one of the DOTMLPF elements making up a capability. All these elements, however, can be viewed as part of, or prescribed by, doctrine writ large—call it “Doctrine with a capital D.” The documents that prescribe how a unit or force is organized, trained, and equipped are all part of big-D Doctrine, as are the tactics, techniques, and procedures (small-d doctrine) that prescribe how a particular organization or system is employed and sustained.

Leaders are trained and educated according to Doctrine; people are recruited and trained to carry out Doctrine; and facilities are developed to support Doctrine. Doctrine describes approved ways to apply approved capabilities to achieve an effect or accomplish an objective. In contrast, a concept describes proposed ways to apply capabilities.

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<sup>62</sup> CJCSI 3010.02B, Joint Operations Concepts (JOpsC), GO/FO coordination draft dated 1 September 2005, pg. GL-4.

<sup>63</sup> TRADOC Commander’s Note No. 3, Operational Concepts and Doctrine, 20 February 1979. The “Central Battle” referred to in the quoted passage was the name assigned at the time to the concept that eventually became Air-Land Battle.

**Experimentation.** The draft Chairman's Instruction on joint concept development describes experimentation as "the essence of gathering and examining of data in order to draw conclusions" and joint experimentation as "an iterative process for assessing the effectiveness of varying proposed joint warfighting concepts, capabilities, or conditions." The draft directive further discusses discovery experimentation, which involves "introducing novel systems, concepts, organizational structures, technologies or other elements into a setting where their use can be observed and catalogued." Good discovery experiments help weed out ideas that do not work and lay the foundation for more focused types of experiments where the hypotheses they generate are subject to more assessment and refinement.<sup>64</sup> In the broadest sense, experimentation is nothing more than exploring an idea to learn what works and, perhaps even more important, what doesn't.

An example of experimentation in this sense was the series of Fleet Landing Exercises (FLEX) conducted by the Navy and Marine Corps in the years between World War I and World War II as they tried to learn how to implement their concept of putting an amphibious force ashore:

In the course of the FLEXs the Navy and Marine Corps experimented with about every imaginable amphibious technique and tactical approach allowed by their equipment. They tried day and night landings, smoke screens, varieties of air and naval gunfire support, concentrated assaults and dispersed infiltrations, the firing of all sorts of weapons from landing craft, and an array of demonstrations, feints, subsidiary landings, and broad-front attacks.

[What they learned was that] the amphibious force would have to isolate the objective area, then pound the defenders into a stupor with naval gunfire and close air support. The landing itself would require a violent assault by a combined arms team, probably over a broad front, perhaps a beach of a thousand yards' width or more. To secure the beachhead, the landing force would need rapid reinforcement, complete with artillery and tanks. The greatest threat to a landing was a disruptive air and naval attack, which might pull critical fleet units from the objective area, but a combined air and ground counterattack was the most immediate concern. . . . An amphibious expeditionary force could not rely on guile for success, but would require local superiority in every element of air, naval, and ground combat power.

The materiel requirements of the amphibious assault . . . did not demand exciting or high-risk investments in new military technology but, rather, special adaptations of shipping, aircraft, vehicles, and weapons to maritime service and the conditions of amphibious combat. . . . As practical experience mounted . . . the materiel requirements . . . became increasingly clear to . . . planners, who . . . saw the need to develop a special landing craft suitable for disembarking infantry, light artillery, vehicles, and even tanks over a sand beach.<sup>65</sup>

In this example, the Navy and Marine Corps, started with a big idea (a concept) about amphibious operations. They tried all sorts of ways to execute the concept using the capabilities they had at hand, tinkering and adjusting, in the process finding out what worked and what didn't, and inventing new capabilities to fill the gaps they discovered. They used experimentation to systematically validate the concept.

The example of amphibious warfare is by no means isolated. Other military capabilities have come about through much the same sort of experimentation:

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<sup>64</sup> CJCSI 3010.02B, draft dated 1 September 2005, pp. D-1 and D-2.

<sup>65</sup> Allan R. Millett, "Assault From the Sea" in *Military Innovation in the Interwar Period*, edited by Williamson Murray and Allan R. Millett, pp. 77-78.

[In] the interwar period, and even in World War II, development of naval aviation was a process of innovation that was, and should have been, essentially incremental. It was a question of constantly tinkering with the way things were done rather than of wholesale replacement of one set of weapons systems by another.<sup>66</sup>

“Tinkering with the way things are done” is the essence of experimentation (if one defines tinkering broadly). But tinkering is a two-sided game. Experimentation where the adversary is free to “tinker” may prove even more valuable by exposing previously unsuspected vulnerabilities. In other words, experimentation can be just as important in identifying capability gaps as it is in identifying and testing proposed solutions.

The goal of concept development and experimentation is to separate the good ideas from the bad, to gain acceptance for the good, and to mature the expression of how something *might* be done into an expression of how it *is* done. In short, the goal is to turn concepts into capabilities.

**The Roles of Joint Concepts.** Joint concepts are visualizations of how the U.S. forces will operate in the future to achieve assigned missions. They provide the intellectual framework for transformation through experiments, exercises, and operational experience, leading to “how we fight.” A better term than joint concept is concept for joint operations.

Concepts also serve to guide Force Development decisions. These decisions involve DOTMLPF. To invest sensibly in tomorrow’s capabilities, DoD’s top leadership must have ideas (concepts) about how future forces will achieve tomorrow’s missions. These concepts are joint because that is the way U.S. forces fight and because of the growing interdependencies of Service capabilities at the operational level and increasingly at the tactical.

**Concepts matter.** When they’re right, concepts provide a basis for rapid adaptation to circumstances that couldn’t be or weren’t foreseen when the concept was developed. The evolution of the Army’s concept in the 1970s from Active Defense to Air-Land Battle is a prime example of how the concept development process can work: first get the big ideas about right, then subject them to experimentation and intellectual debate, then refine them based on what is learned. Concept development during the 1990s in each of the four Services (Army after next, forward from the sea, effects-based operations, and operational maneuver from the sea) shaped the capabilities exhibited in Afghanistan and Iraq. When they’re badly wrong, concepts can lead a country to ruin: the Maginot Line is a case in point.

## *FINDINGS*

The panel’s assessment of the Department’s JCD&E process begins with some good news. DoD acknowledges the importance of joint concepts and has high expectations for their contributions to transformation. There is also an expanding DoD enterprise in JCD&E with several positive developments, including emerging multi-agency involvement; beginnings of combatant commander concept development efforts; expanding collaboration among the Services and multinational partners; and a networking infrastructure being put in place for competition of ideas and discovery.

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<sup>66</sup> Geoffrey Till, “Adopting the Aircraft Carrier,” in Military Innovation in the Interwar Period, edited by Williamson Murray and Allan R. Millett, pg. 224.



The TPG declared future joint operating concepts to be the key to the Department's transformation strategy. The guidance recognizes that concept development and experimentation are inseparable, that multiple joint and Service concept development efforts are necessary to ensure competition of ideas, and that the combatant commands and the Services must establish and continuously conduct robust concept development and experimentation programs. In addition, the guidance calls for the use of red teams, supported with fenced funding and operating at the tactical, operational, and strategic levels. However, the current process for producing joint concepts is not meeting these high expectations.

The panel found that concept development as currently implemented tries to cover too much. The complex hierarchy of capstone, operating, functional, and integrating concepts being produced consumes valuable human resources without a focus on the truly important. The effort and level of consensus required can lead to stagnation rather than driving change.

The process does not foster the shared conceptualization needed to transform the way an organization thinks. Despite the fact that their successors will be the ultimate recipients of capabilities produced through this process, combatant commands appear to have only a limited role. Finally, the concepts produced to date do not appear to be having much impact on future force decisions.

"The more concepts the better" is not a helpful approach; the challenge is to focus on the really important new missions, shortfalls or opportunities. There are too many concepts under development. Also, the selection of Major Combat Operations as one of the first joint operating concepts and undersea warfare as one of the first joint integrating concepts to be developed seem at odds with the Department's transformation priorities.

The process does not foster competition of ideas. The likelihood of producing robust new ways of dealing with new problems, missions, and opportunities without such competition is small. This is all about developing alternatives, intellectually and in practice, not committing too early and not committing to one idea or set of ideas in the interest of gaining flexibility and creating adaptive capabilities. Having alternatives or developing alternatives is central to dealing with uncertainty.

The current process seems to view concept writing as routine staff work. Concept development is intellectually demanding. It requires inventing creative ways to use as yet undefined means to deal with adaptive adversaries in uncertain futures and describe these in a manner both understandable and actionable. Production and revision are driven by arbitrary suspense dates rather than by the intellectual content of the concepts and the magnitude of the problems the concepts are addressing. Concept developers should be hand-picked and dedicated to the task. Contractor support can be helpful in a supporting role; instead they appear to be the concept developers in most cases.

With few exceptions, experiments are not tied closely to concept development. "Validation" of a concept does not come from some annually bestowed formal stamp of approval. Instead it evolves based on the knowledge gained in experiments and actual operations. Today's concepts that prove to be robust evolve into tomorrow's doctrine.

The concepts do not appear to deal adequately with uncertainty and the challenges posed by adaptive resourceful adversaries. Use of red teaming appears inadequate. Capabilities identified by the concepts

are too general to drive decisions. The truly critical capabilities are submerged in overly long lists of generalities. The process that the concepts feed—JCIDS—is cumbersome and not well connected to the combatant commanders or to the non-materiel elements of DOTMLPF.

There are also timeline expectations that cause problems. Patience is an issue when it comes to concepts and the JCD&E process. As a general rule it takes time to develop concepts to the point that they become specific (mature) enough to drive requirements definition and then acquisition. The panel heard concerns that concepts are being ‘ordered up’ on timelines and schedules that just don’t reflect the reality of the work that needs to be done.

The panel notes that the most senior leaders in the Services have a deep intellectual involvement in their Services’ concept development. It does not appear that this level of involvement from senior leaders is matched in the development of joint concepts.

This problem may be attributed to a lack of a credible vision of what JCD&E is supposed to achieve rather than a lack of leader involvement in individual concepts. What’s missing is an identifiable set of military problems, mutually agreed to among the Services, Defense agencies, and functional combatant commands that provide capabilities; the regional and functional combatant commands that employ them; and the senior Department leadership that decides which capabilities are needed most.

## *RECOMMENDATIONS*

What should be done to have joint concepts play the intended critical role in transformation? The current process should be modified substantially to:

**Focus on a few critical problems** (gaps in capabilities) and opportunities (promising technologies or non-materiel innovations) rather than building the current comprehensive hierarchy of concepts. There appears to be a fascination with process over products. The focus areas should be determined by the CJCS in consultation with the combatant commanders and approved by the SecDef. The panel suggests they select two or three capability gaps to focus concept development effort. The selection criteria should be significant, with major uncertainties (e.g. counterinsurgency, influence operations). Use experience with these efforts to shape the process for the longer term.

**Increase competition.** The competition must span two complementary dimensions: 1) competition between concept developers and 2) competition pitting Blue warriors trying to implement the concepts against Red warriors try to thwart them in wargames, experiments and related activities. The major purpose of the wargaming and experimentation is to discover what capabilities are needed to make the concept robust against adaptive adversaries. The Blue-Red competition must be persistent in order to provide continuous learning opportunities.

Competition between concepts can be achieved by having two or more teams develop concepts for the same challenge. It is not sufficient merely to have the opportunity to critique a concept. The teams can come from several sources including: 1) a “centralized” group, 2) the combatant commands, and 3) the Services and other force providers.

Therefore, the panel recommends that for each critical gap identified above, two concept development teams be established (foster competition and highlight differences, not consensus). Choose 6-12 members per team and include Service concept developers, technologists, and individuals with recent joint experience in Afghanistan and Iraq.

**Enable the combatant commanders (including the regional commands) to have a major role in concept development.** Create JCD&E support positions at combatant command headquarters. Some say that it is too much to ask current operational commanders to lift themselves out of their pressing problems and imagine the future. The panel disagrees. Directing them to conceive how best to conduct operations in the future is a natural and needed extension of their responsibilities to plan for today's contingencies. At the very minimum, regional and functional combatant commanders should be given responsibility for the "Blue CONOPS" that are part of Defense Planning Scenarios, rather than the Joint Staff/J-7.

In addition, Service concept/doctrine developers should be tasked to work together to develop joint concepts. Such a group, which included hand-picked members from the Joint Staff and combatant commands, developed the future joint force concept for the CJCS in 2000.

**Increase collaboration between concept developers and technologists.** Military innovation is more likely when there is the opportunity for concurrent technology push and needs pull. Therefore technologists should be part of the concept development from the start. Like concept developers, the technologists should be hand-picked for their domain expertise and ability to synthesize disparate ingredients. The CJCS and the USD(AT&L) should be responsible for making this happen.

**Validate through learning not consensus.** Tie joint concept development much closer to wargaming, experimentation, and red teaming than currently practiced. There are some cases of this being done at JFCOM (e.g. for joint urban operations) but it seems to be the exception, not the rule, for joint concept development. Every concept should have a campaign plan for wargaming and experimentation.

**Implement a validation process for concepts as living documents.** Validation comes from what is learned from experiments and related activities and not from the current bureaucratic, consensus-driven approval process. Rather than being organized around scheduled events, the campaign plan recommended above for each concept should consist of the set of questions that need to be answered through assessment, analysis, wargaming, and experimentation. The campaign plans should foster interaction between the concept developers and others who examine concepts, such as the Service combat development commands, professional military education institutions, the combatant commands, allies and coalition partners, and U.S. and friendly foreign think tanks. As questions are answered, new questions will take their place. The campaign plans therefore need to be collaborative and dynamic, perhaps web-based, so that they can be continually updated as new knowledge is gained and new gaps in knowledge are discovered.

**Capture the rich pool of current experience for new ways to do major combat, counterinsurgency, stability and other operations.** A similar process of capturing and reporting lessons learned that was used by JFCOM and the Services for Operation Iraqi Freedom should be applied to wargames, exercises, and experiments. The joint and Service lessons learned organizations should be

explicitly charged with seeking and sharing answers to the questions contained in concept campaign plans.

**Bring other government agencies (and selected allies) into the process.** The critical challenges most in need of new concepts go beyond DoD's competencies (JFCOM has taken initiative here).

The panel notes that many of these steps are called for in the April 2003 TPG but are not evident in practice. It will take personal involvement by the SecDef and the CJCS to ensure that concepts for joint operations fulfill their intended role of enabling transformation of U.S. military capabilities. They must take ownership: approving the focus areas, demonstrating an intellectual stake in the concepts themselves and facilitating their influence. They must also assign responsibility and accountability for the concept development process.

**Hold the Commander JFCOM accountable for making the joint concept development process work.** Unified Common Plan 2004 assigns the Commander JFCOM responsibility for "leading the development, exploration and integration of new joint concepts." This responsibility should not include "owning" the concepts but rather ensuring competition, vigorous experimentation, aggressive red teaming, learning-based validation, and that the joint concepts actually describe the "how" of operations. All too often, purported concepts merely describe the "what," albeit with different adjectives. JFCOM's responsibilities should also encompass the continual development and enhancement of simulation and other necessary tools. JFCOM has already made significant enhancements to its simulation tool kit.

Along with accountability, JFCOM should have sufficient authority to make collaborative experiments with the Services and Defense agencies the norm and not dependent on Service whims as appears to be the case today.



## V. CAPABILITIES-BASED PLANNING AND JCIDS

### *CAPABILITIES-BASED PLANNING*

Concept development is only part of a larger Capabilities-Based Planning process. The Department's approach to CBP comprises four distinct processes at the front end (shown below), in which concepts become fielded capabilities.

1. JCD&E forms the basis for how future forces will operate.
2. JCIDS identifies and develops the capabilities needed to underwrite the concepts.
3. The Joint Capabilities Development Process (product of the Aldridge Study) was initiated to formulate and assess major issues and present them for decision by the Secretary of Defense.
4. The PPBE system allocates resources to provide the capabilities needed to meet joint warfighting needs.

Additional processes at the back end—Adaptive Planning and Global Force Management—are also part of capabilities-based planning, but are not addressed in this report.

Many think “capabilities-based” replaced “threat-based” and that forces are no longer designed to deal with threats. Threats, however, have obviously not gone away; they've only become more uncertain and less predictable than “The Threat” that U.S. intelligence agencies studied and the armed forces prepared to face throughout the Cold War. As Secretary Rumsfeld has put it, “Uncertainty is the defining characteristic of today's strategic environment.” Capabilities-based planning therefore “focuses DoD on the growing range of capabilities and methods necessary to contend with an uncertain future” and “recognizes the limits of intelligence and the impossibility of predicting complex events with precision.”

CBP must account for a range of plausible scenarios and explicitly consider the demands of each, including possible disruptive challenges. DoD recognizes it can no longer plan on the basis of a few “lesser included scenarios” as it did during the Cold War. Capabilities-based is actually intended to be at a higher standard—against a larger array of threats.

### **Recommendations**

The panel recommends that the SecDef take prompt steps to promulgate widely and deeply the “what” of CBP, making sure his “commander's intent” is understood up and down the chain of command. The panel also recommends that the Secretary issue the guidance necessary to operationalize the “how” of CBP by ensuring the resource allocation process is mission-focused, and that it provides clear accountability to force providers for organizing, training, and equipping joint forces and to combatant commanders for employing those forces in the accomplishment of assigned missions.

## *JOINT CAPABILITIES INTEGRATION AND DEVELOPMENT SYSTEM (JCIDS)*

JCIDS is described as “a collaborative process that utilizes joint concepts and integrated architectures to identify prioritized capability gaps and integrated joint DOTMLPF and policy approaches to resolve these gaps.”<sup>67</sup> The intent of JCIDS is to ensure that joint needs are addressed in response to capability gaps identified by joint warfighters and revealed during analysis of future joint warfighting concepts.

### **JCIDS Analysis Process**

Current directives describe the JCIDS analysis process as a capabilities-based assessment (CBA) composed of a structured, four step methodology that defines capability gaps, capability needs, and approaches to provide those capabilities.

Joint future concepts are to be developed from top-level strategic guidance, providing a top-down baseline for identifying future capabilities. Beyond the Future Years Defense Plan (FYDP), new capability requirements, both materiel and non-materiel, must relate directly to capabilities identified through the Joint Operations Concepts (JOpsC) Family, whose hierarchical nature and deliberate process require close examination of needed capabilities through an iterative process of assessment.

Therefore, joint future concepts are not intended to provide immediate solutions but rather proposed solutions that can be carefully examined over a more extended period. For capabilities required in the near term (present year plus seven years), concepts of operations (CONOPS) and joint tasks are used to allow the joint community to adjust or divest current capabilities by providing the operational context needed to substantiate current programs.<sup>68</sup> Since the Joint Concepts Panel focused on future joint concepts and the process by which they are used to drive future capabilities, only the longer term, beyond the FYDP, is considered here.

The first step in a JCIDS analysis is the Functional Area Analysis (FAA), based on a joint future concept. Inputs to the FAA are national strategy documents, the JOpsC Family, joint tasks, the universal joint task list (UJTL), and the anticipated range of broad capabilities that adversaries might employ. The JOpsC Family and other sources provide a list of capabilities and associated operational conditions. The FAA identifies the scenarios against which the capabilities and attributes are assessed. The intended output of the FAA is a list of capabilities and their associated tasks, conditions, and standards—developed to the level required for the next step.<sup>69</sup>

Step two is the Functional Needs Analysis (FNA). Using the tasks identified in the FAA as primary input, the FNA assesses the ability of current and programmed joint capabilities to accomplish the tasks, under the full range of operating conditions, to the standards designated in the FAA. The FNA describes capability gaps, overlaps or problems in broad effects-based terms by extrapolating capabilities and functions desired and comparing them to current capabilities and functions based on current DOTMLPF solutions, analyzing gaps and overlaps and potential causes. The FNA should include consideration of

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<sup>67</sup> CJCSI 3170.01E, 11 May 2005, pg. A-1.

<sup>68</sup> CJCSI 3170.01E, 11 May 2005, pg. A-3.

<sup>69</sup> CJCSM 3170.01B, 11 May 2005, pp. A-1 and A-2.

gaps or problems identified in combatant commander issues and IPLs which is intended to provide a recommended priority of the gaps. The FNA should also describe the key attributes of a capability or capabilities that would resolve the issue in terms of purpose, tasks and conditions.<sup>70</sup>

Step three is the Functional Solutions Analysis (FSA), an operationally based joint assessment of possible policy and DOTMLPF approaches to solving or mitigating one or more of the capability gaps detailed in the FNA. The outputs of the FSA describe the most promising approaches to resolving FNA capability gaps, in the following order:

1. Changes to the existing DOTMLPF or policy approach;
2. Product improvements to existing materiel or facilities alone;
3. Adoption of interagency or foreign materiel approaches that have limited non-materiel DOTMLPF or policy consequences; and
4. New materiel starts.<sup>71</sup>

The fourth and final step in a JCIDS analysis is the Post Independent Analysis (PIA), an independent review to ensure that the non-materiel and materiel approaches developed in the FSA have a reasonable probability in delivering the capability need as suggested in the FAA and FNA.<sup>72</sup>

## **The Role of Concepts in JCIDS**

JCIDS was explicitly designed as a “joint concepts-centric process,” but the concept development process has not matured as rapidly as JCIDS. JCIDS directives are in their third iteration. In contrast, the draft Chairman’s Instruction on concept development has gone through three rounds of coordination and still has not been approved for publication.

The draft considered by the panel was CJCSI 3010.02B, Joint Operations Concepts (JOpsC), distributed for general officer/flag officer coordination in July 2005. Though dated 1 September 2005, it had not been approved as of that date.

The draft declares the ultimate objective of JOpsC is to guide the transformation of the joint force so that it is prepared to operate successfully 8-20 years in the future. These concepts help provide the conceptual basis for joint experimentation and capabilities-based assessments (i.e. JCIDS analyses, discussed above) to identify capability gaps and unnecessary redundancies as well as potential materiel and non-materiel solutions. The outcomes of experimentation and JCIDS analyses are intended to be used to underpin investment decisions leading to the development of new capabilities beyond the FYDP.<sup>73</sup>

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<sup>70</sup> CJCSI 3170.01E, 11 May 2005, pg. A-5; CJCSM 3170.01B, 11 May 2005, pp. A-3 and A-4.

<sup>71</sup> CJCSM 3170.01B, 11 May 2005, pg. A-4

<sup>72</sup> CJCSM.3170.01B, 11 May 2005, pg. A-7.

<sup>73</sup> CJCSI 3010.02B, coordination draft dated 1 September 2005, pp. 1-2



The JOpsC Family consists of a hierarchy of joint concepts, with characteristics as shown in Figure 1. At the top is the capstone concept for joint operations (CCJO), itself formerly called the joint operations concepts (JOpsC), the CCJO is the overarching concept of the family of joint concepts that guides the development of future joint capabilities. At the next level down are joint operating concepts (JOC) and joint functional concepts (JFC). At the bottom of the hierarchical family are joint integrating concepts (JICs). JICs are narrowly scoped to identify, describe and apply specific capabilities, decomposing them into the fundamental tasks, conditions and standards required to conduct a JCIDS analysis. Additionally, a JIC contains an illustrative vignette to facilitate understanding of the concept.

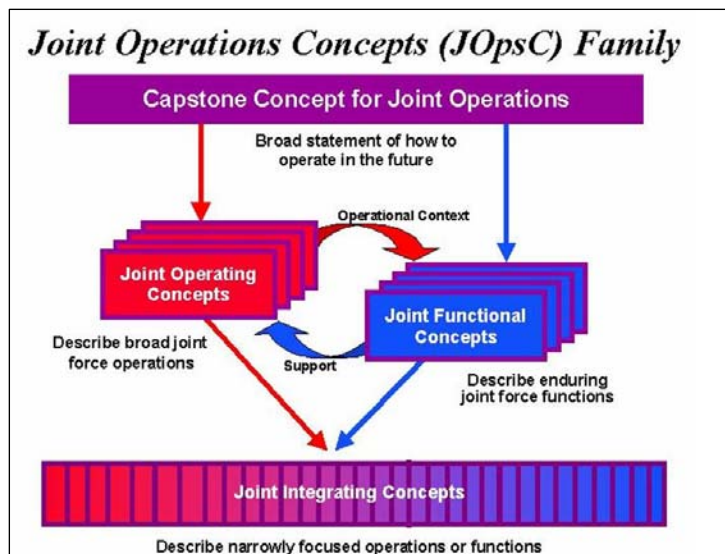


Figure 1. The Concept of Joint

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## Assessment

**Use of experimentation to explore and validate concepts.** The draft CJCSI on concept development says that joint experimentation is primarily to be conducted on the proposed solutions and capabilities identified in the CCJO, JOCs and JFC, and not on the lower level JICs. Indeed, the draft CJCSI says that JICs are “one-time efforts . . . not normally expected to be revised.” The panel believes this is misplaced emphasis.

The higher-level concepts are revised based on the calendar, not based on what is learned. The whole process is formulistic and not attuned to the value of experimentation. The concepts best suited to experimentation are the less ethereal ones, the JICs. The JICs should be continuously revised based on what is learned from experimentation, assessment, and analysis. They should be “living documents” in which the author identifies the “questions to be answered,” shares the answers as soon as they are reported, and revises the questions based on what has been learned.

**Approval authorities for concepts and revisions.** The draft instruction lists the Joint Chiefs of Staff (JCS) as the final approval authority for JFCs and JICs, and for revisions of all four type concepts. The panel believes the need for process approval of the corporate JCS vanished with passage of Goldwater-Nichols. The Chairman is the principal military advisor, the spokesman for the combatant commanders, responsible for joint doctrine (which joint concepts precede). Thus, the panel believes the Chairman should be the approval authority, not the JCS.

The steps leading to final approval are similarly Service-centric. JOCs and JICs are reviewed by the Operations Deputies (OpsDepts) on their way to the JCS. JFCs are reviewed by the Joint Capabilities Board and the JROC, as well as the OpsDepts, before going to the JCS. The force providers thus dominate the process, even for concepts initiated and developed by the combatant commands.

A JCS or JROC decision is by definition a consensus among force providers, and almost by definition a lowest-common-denominator solution. A far better approach is to seek consensus among the combatant commanders as well as the Services—force employers as well as force providers—with the Chairman and Secretary of Defense making the hard decisions when consensus is not forthcoming.

**Inconsistencies between the concepts process and the JCIDS assessment process.** J-7's concept development process and J-8's assessment process are intended to be complementary. Yet the two processes do not appear to be fully integrated. One discrepancy is the issue of "Concept Author" versus "Sponsor."

Anyone in the joint community can bring an idea forward for consideration as new joint concept. Potential new concepts . . . will be formally vetted through the joint concept community General and Flag Officers. Recommendations from the formal review, for new concept development, will be briefed to the JCS. For those that are approved, the Director of the Joint Staff (DJS) will publish a DJS Memorandum (DJSJ) directing the development effort . . . identifying the Concept Authors and providing additional guidance as necessary.

The Concept Author is the Staff, Agency, Service or combatant commander assigned the concept for development. They will be responsible for producing a concept document and resourcing all aspects of the writing efforts, with the exception of J7 sponsored Red Team Reviews. The Concept Author will be responsible for the concept from the date of assignment up until the time the concept is considered and designated no longer useful.

The Concept Author will coordinate with the appropriate Functional Capability Board for guidance and support in conducting a CBA on their concept [i.e. when the concept in question is a JIC].

JCIDS directives make no mention of the Concept Author, but instead stress the importance of the Sponsor. CJCSI 3170.01E defines the Sponsor as "The DoD component, principal staff assistant or domain owner responsible for all common documentation, periodic reporting and funding actions required to support the capabilities development and acquisition process for a specific capability proposal."

By this definition, a combatant command isn't able to function as a Sponsor, because combatant commands don't possess the authorities or resources to be responsible for funding actions required to support acquisition. However, the JCIDS instruction (CJCSI 3170.01E) goes on to suggest otherwise by stating:

Combatant commands may conduct JCIDS functional area and functional needs analyses and submit a joint capabilities document that identifies capabilities needed and gaps or redundancies that exist. The JROC will then task the appropriate sponsor(s) to perform the FSA and submit complete Initial Capabilities Document(s) for approval. The combatant command may perform the FSA with its resources and submit the completed ICD for approval. The combatant command leverages the expertise of its components and may coordinate and receive assistance from a sponsor in this effort.

The JCIDS manual (CJCSM 3170.01B) says that:

While a JCIDS analysis may be initiated by any number of organizations, to include combatant commanders and FCBs, **a sponsor needs to be brought into the analysis**

**as early as possible.** The term “sponsor,” as used in this document, is the DoD component, domain owner or other organization responsible for all common documentation, periodic reporting and funding actions required to support the JCIDS process and acquisition activities (**e.g. Services, agencies, principal staff assistants**). The sponsors must collaborate with the combatant commands and FCBs to ensure capabilities are defined from a joint perspective (Emphasis added).

By J-7’s definition, any Staff, Agency, Service or combatant commander can be assigned as a Concept Author, responsible for producing a concept document and resourcing all aspects of the writing efforts (except Red Team Reviews) and responsible for the concept from the date of assignment up until the time the concept is considered and designated no longer useful.

By J-8’s definition, however, only a Service, Defense agency, or principal staff assistant or other entity with the authority and resources necessary to support acquisition can be a Sponsor, and thus responsible for all common documentation, periodic reporting, and funding all actions required to support the JCIDS process.

## Findings

The intent of the JCIDS process was to ensure that joint needs—materiel and non-materiel—are addressed in response to capability gaps identified by warfighters and through capabilities-based assessments. However, in practice any increase of combatant command influence has been marginal. The process remains highly Washington-centric and is still dominated by the force providers through their control of the JROC. There is not yet a powerful voice for joint capability needs.

The panel is concerned that a combatant command, no matter how compelling its need or great its idea, needs to persuade one of the force providers to be the sponsor. Even then it is subject to veto by a Service at any step of the FCB-JROC, OpsDepts-JCS approval process.

The FCBs also largely reflect Service interests. The FCBs appear to be saturated with too many issues and spread too thin to provide substantive recommendations to the JROC concerning critical warfighter capability needs.

It appears that JCIDS is trying to serve too many customers. It needs to refocus on supporting the Chairman in advising the Secretary on force-building priorities. In addition, the process remains dominated by materiel solutions and is bogged down with assessing the full range of materiel capabilities rather than focusing on the most critical needs of joint commanders.

## Recommendations

The SecDef and CJCS should:

- Focus the JCIDS process on serving the Chairman’s responsibility to advise on joint capabilities needed to integrate Service capabilities into effective joint forces.
  - Leave the detailed assessment of programs to other existing processes.
  - Task the process to focus on joint priorities across the spectrum of DOTMLPF.

- Balance the Services' dominance by adding other perspectives to the JROC.
  - Give the combatant commanders and the USD(AT&L) a formal role on the JROC.
- Get JROC out of the small stuff and have it address only "big" issues.
  - Consider critical capability gaps identified by the combatant commanders, SecDef and CJCS.
- Focus JCIDS on those critical capability gaps lacking effective champions in the resource allocation process (instead of trying to cover "everything").
  - These include joint command and control and ISR.
- Alleviate the crippling effect of JCIDS' ponderous processes by severe reengineering.
  - J-8 has begun to identify metrics, best practices, and non-value added activities. Make this a priority second to none.
  - Empower FCBs to make decisions rather than serving as a queue for the JROC.



## VI. DISRUPTIVE CHALLENGES

Disruptive challenges occupy one quadrant of DoD's security challenge matrix. It is different than the other three quadrants—traditional, irregular and catastrophic—since a disruptive challenge can affect all three. Indeed the term “irregular” may be misleading, since these challenges will likely be the “regular” way adversaries (state and substate) choose to confront the United States.

The panel defines a disruptive challenge as a capability that, if developed or acquired by an adversary, could negate critical U.S. capabilities and thus deny major U.S. objectives or that could fundamentally alter long-established concepts of warfare.

Examples include

1. Capabilities to deny U.S. freedom of action in the global commons: air, land, sea, space, or cyberspace;
2. Counters to key U.S. warfighting modes, such as precision attack, net-centric operations, joint integrated and interdependent operations, and space-based support;
3. Moving the battlespace to the U.S. homeland; and
4. Developing as yet only dimly perceived military applications of bio-, nano-, and other technologies (although a disruptive challenge does not necessarily depend on advanced technology, it could involve creative use of existing technology).

A broader definition of disruptive challenge would include not only new capabilities obtained by adversaries, but also situations that marginalize U.S. influence, e.g. nuclear war between other nations, pandemics.

This section begins with a description of a previous DSB study that provides a framework for thinking about disruptive challenges. It then identifies a few examples of such challenges. The panel's main focus in this area was on how DoD goes about identifying disruptive challenges. The panel judged the current processes inadequate and recommends a more comprehensive and systematic approach. Red teaming plays a critical role in this approach and this section ends with a description of how one Service (the Army) is going about enhancing the contribution of red teams.

### *A CONTEXT FOR THINKING ABOUT THE PROBLEM*

To provide a framework for its assessment of the disruptive challenges problem, the Joint Concepts Panel reviewed the 1995 DSB Summer Study on “Investments for 21<sup>st</sup> Century Military Superiority.” While the threat considered in 1995 differs from today, the approach used in the study is instructive to today's challenge. The 1995 study described the means that might be employed by a 21<sup>st</sup> century adversary to make complex and costly the use of U.S. expeditionary forces in regions where the nation's adversary possesses important home field advantages. The study posited that future regional adversaries, recognizing they could not take on the U.S. military force-on-force, would use “medium technology” to develop capabilities to deter, delay and otherwise counter U.S. intervention and to stall victory for U.S./Coalition forces.

Examples of the methods available to a 21<sup>st</sup> century adversary that were identified in the 1995 DSB study are shown in figure 2 and include:

1. Use of sea mines to slow complex littoral operations and make them dangerous.
2. Use of chemicals to shut down ports, drive away civilian contractors, and force military teams to conduct reception, staging, onward-movement, and integration operations in chemical protective clothing with added decontamination burdens.
3. Use of cheap unmanned aerial vehicles as platforms to perform ISR; jamming; harassment; and attack missions, avoiding the burdens and costs of a manned air force to conduct such missions.
4. Use of theater ballistic missiles armed with chemical or biological agents against ports, air bases, staging areas, supply depots, and field headquarters and communications complexes.
5. Employment of ground forces in cities along with paramilitary forces to conduct insurgency.

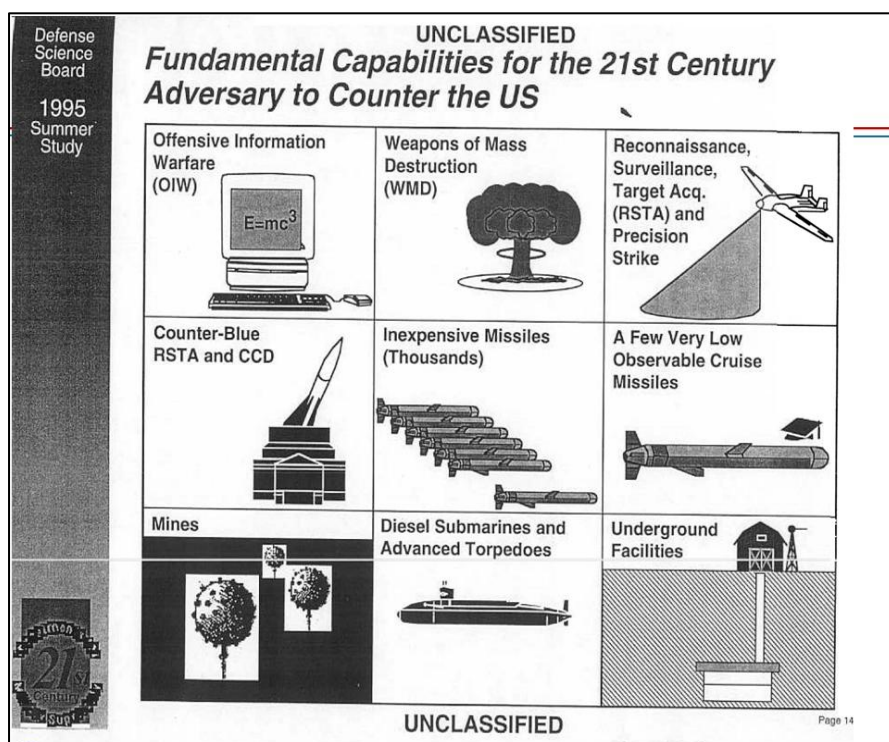


**Figure 2. Fundamental Capabilities for the 21<sup>st</sup> Century**

The 1995 study then mapped these options onto figure 3 based on judgments about the relative effectiveness against the United States and the difficulty an adversary would face in achieving the capability. The upper left-hand corner of the chart (relatively high effectiveness and low cost) represents the area of greatest concern.

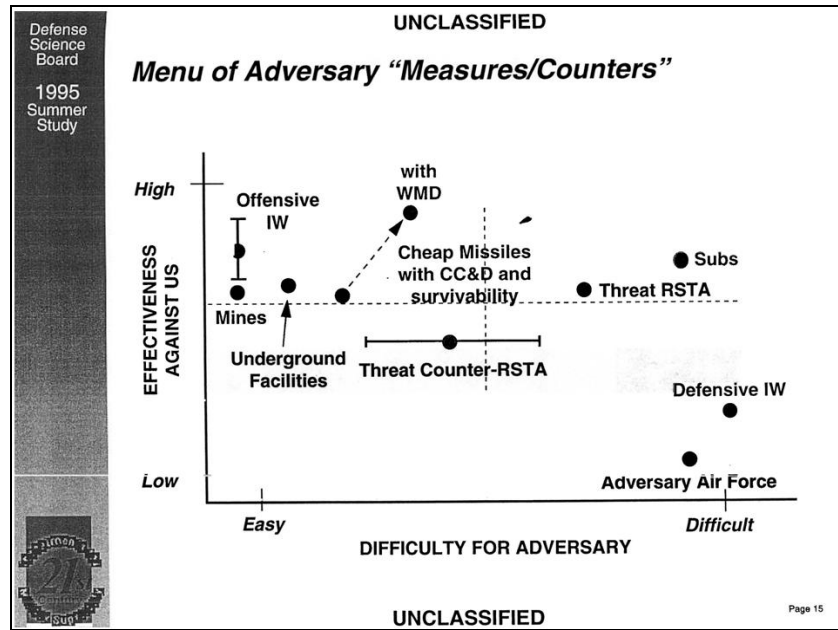


Figure 3. Mapping of Adversary Capabilities

The 1995 DSB study constrained the adversary's choices to those that did not impose substantial command-and-control or training burdens. The study posited that the regional adversary could spend 20 percent of its total military budget over five to ten years to field capabilities specifically directed against U.S. intervention. Figure 4 (also from the 1995 study) shows a possible allocation of resources assuming a \$10B annual military budget.

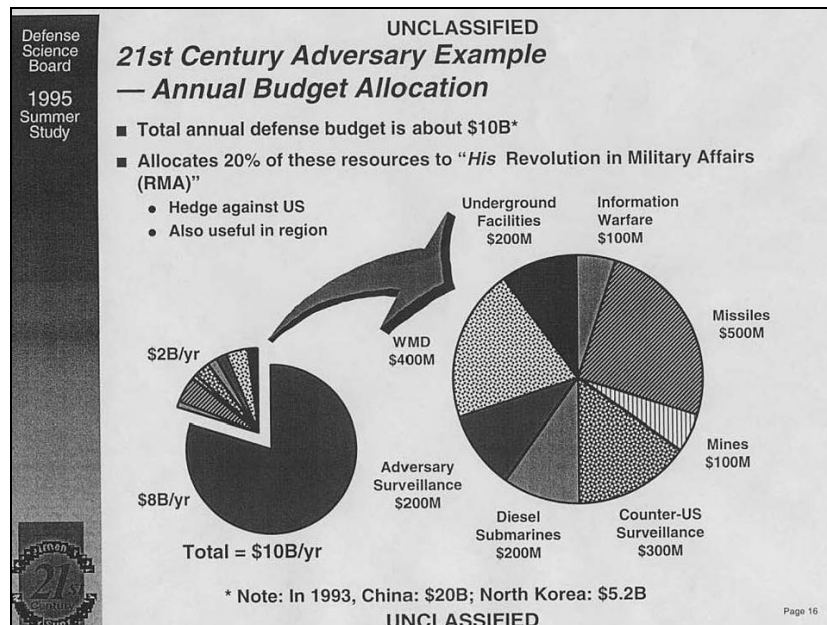


Figure 4. Exemplar 21<sup>st</sup> Century Adversary Resource Allocation

None of these potential methods by itself would likely be a show stopper to U.S. military operations. However, against an enemy force organized, trained, and equipped along these lines, operations would be at much lower tempo, with greater losses and opportunities for the opposition to conduct advantageous



information operations in the ubiquitous media environment attracted to combat, stabilization, peacekeeping, and humanitarian operations. Against an enemy for whom “winning” means simply not losing, weapons and strategies such as these would pose a formidable challenge to U.S. forces.

## *EXAMPLES OF PRESENT DAY DISRUPTIVE CHALLENGES*

The panel consulted with representatives of the Defense Advanced Research Projects Agency (DARPA) and various intelligence agencies, gaining their perspectives on potential disruptive capabilities and the technologies that would enable them. Following are three examples.

1. **Isomers:** Isomers are isotopes of some of the heavier elements which have the property of storing substantial amounts of energy in excited nuclear states for extended time periods (years). This stored energy can be released by conventional triggering mechanisms. Each isomer atom then becomes the source of high energy gamma rays (10 to 20 times more energetic than medical X-rays). They are consequently more penetrating, and, in electronics, capable of widespread upset.

Isomers are roughly 1,000 times more energetic, per unit mass, than conventional explosives, which employ energy stored in chemical bonds (manifested in the outer electrons of elements and molecules). Isomers constitute neither primary fission nor fusion. As such, their energy releasable per unit mass is lower by a factor of 100 or more than that of nuclear weapons.

DARPA is examining the feasibility of isomer manufacture, energy storage, and rapid triggering. One of DARPA’s objectives is to help avoid technological surprise.

2. **Cyber and Insider Attacks:** Transformed military capabilities involve, in many cases, network-enabled collaboration. Successful collaboration requires network connectivity; transport of information; and often complex processing for presentation, timely and accurate decision-making, and execution. The entire process depends upon protection against insiders and outsiders alike.

Software forms the ubiquitous underpinning for all enabling functions. Today’s software is both military and commercial in origin, the latter often from offshore sources. At the same time, software is part of the fabric of protection, along with procedures, training, and personnel policies.

Frequent software changes make assuring network integrity, quality of service, and information assurance a continuing and complex task, particularly as heterogeneous networks grow in number and combined use.

3. **High Altitude Electro-Magnetic Pulse (EMP):** EMP is one of a small number of threats that can hold the United States at risk of disruptive, even catastrophic consequences. Several potential adversaries have or can acquire the capability to attack with a high-altitude, nuclear weapon-generated EMP. The effects would cover the entire geographic region within line-of-sight of the nuclear weapon, producing significant damage to critical infrastructures as well as to the ability of the United States and Western nations to project influence and military power. The reason EMP can produce such an impact is because electronics are so pervasive throughout the U.S.

military, and indeed throughout American society. Reducing this vulnerability is technologically feasible and within the nation's means to accomplish.

Throughout the Cold War, EMP was taken seriously as a potentially crippling byproduct of any nuclear detonation, but the ending of the Cold War relaxed the emphasis on EMP protection. EMP simulation and test facilities have been mothballed or dismantled, and research into EMP phenomena, hardening design, testing, and maintenance has been substantially decreased. However, the number of U.S. competitors possessing nuclear weapons and ballistic missiles is greater today than it was during the Cold War, and more are expected to acquire access to such weapons over the next 15 years. The proliferating threat heightens the risk, and the United State's increasing vulnerability might even invite such an attack.

Current U.S. policy is to continue providing EMP protection for strategic forces and their command and control systems; and DoD has the wherewithal to do so. For general-purpose and special operations forces, the issue is more complex. A single EMP weapon can disable electronics over a large portion area of a joint operating area, raising the risk that the small, technologically superior, distributed forces being created through transformation could be reduced to small, distributed, vulnerable forces, unable to share situational awareness and unable to bring remote precision fires to bear. If unaddressed, this vulnerability makes EMP employment an attractive asymmetric option against U.S. forces.<sup>74</sup>

## IDENTIFYING DISRUPTIVE CHALLENGES

In its review of the processes and mechanisms employed by the DoD and intelligence communities to identify and respond to potential disruptive challenges, the panel found some relevant activities, such as the Red Team process used by the Defense Warning Office at the Defense Intelligence Agency (DIA) to generate what it calls "actionable technology warnings."

Overall, however, the panel did not find a comprehensive and coherent effort to identify and deal with disruptive challenges. In some cases challenges identified as "disruptive" appear to be little more than stressful excursions to traditional challenges. There is a tendency for technologists to focus on potentially disruptive technologies that the U.S. could exploit, rather than thinking critically about what U.S. adversaries might develop. In addition, the panel found a pervasive

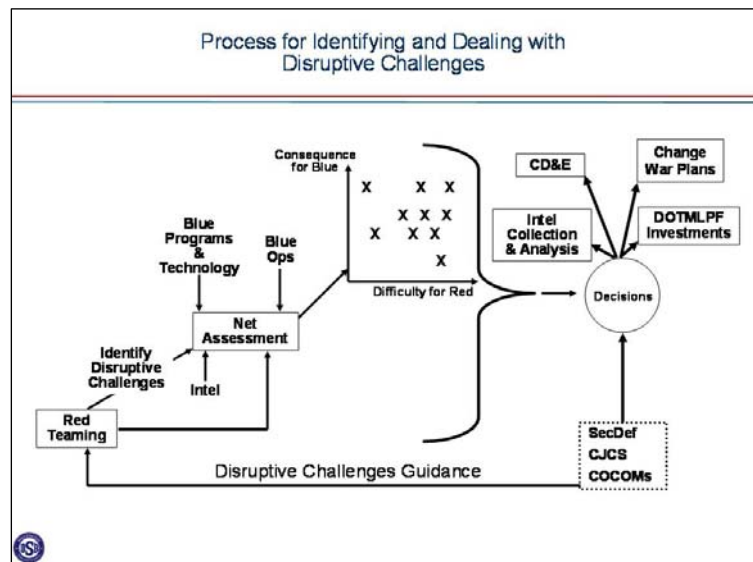


Figure 5. Recommended Process

<sup>74</sup> Overview briefing of the Commission to Assess the Threat from High Altitude Electromagnetic Pulse - EMP Threat Information. <http://empreport.ida.org/3militaryVGversionJuly.pdf>, accessed 11 August 2005.

tendency to focus on technology, rather than the full array of DOTMLPF that would signal the emergence of a disruptive capability. This tendency skews efforts to collect and analyze information.

The United States must improve its anticipation of and preparation of countermeasures to disruptive capabilities, particularly because the globalization of technology is facilitating resourceful adversaries unburdened by bureaucratic acquisition processes. The technology that enables disruptive challenges need not be advanced, but can be quite mundane when coupled to innovative concepts and tactics.

## *RECOMMENDATIONS*

The SecDef should:

- Create a process that includes:
  - Robust red teaming to identify technically feasible and adaptive (malevolent) threats.
  - Net assessment to consider the effect of these threats and organize them for decision makers.
- Set the “disruptive” threshold high; otherwise the process will lose sight of the truly threatening and get bogged down chasing “excursions.”
- Imbed this process into DoD (and intelligence community) decision making so that its products can inform intelligence collection and analysis, concept development and experimentation, operational plans and DOTMLPF investments (see figure 5).
- Intelligence needs to search for all the elements that together would add up to create emerging disruptive capabilities (pay attention to the non-materiel elements of DOTMLPF in addition to technology).
- Hold someone accountable for making the process work. The panel recommends that USD(AT&L) be accountable, working very closely with the intelligence community and other contributors. However, there is a concern that assigning it to the USD(AT&L) could make the process unduly technology-centric.

A strong intelligence effort is important but collecting against some adversaries is very difficult. Thus, the evidentiary-based threat provided by intelligence must be complemented by red teaming in order to identify the technologically feasible and responsive threats as well. The Army’s new initiative to improve red teaming is discussed below.

### **Improving Red Teaming: The Army’s Approach**

The Army regards red teaming as an important tool to help understand how U.S. adversaries and possible partners might think and act. However, there exists no common red teaming doctrine, methodology, or framework for lessons learned or formal education/training programs to institutionalize the capability. As a result, modern day red teaming efforts are largely ad hoc.

The Army view takes red teaming beyond emulation of the adversary and also involves continuous analysis of the operational environment, the threat, and the cultural implications of military operations. The Army’s intent is for red teaming to be a structured and iterative process executed by trained, educated, and practiced team members with access to relevant subject matter expertise. The objective is

to provide decision makers a routine, independent, and unbiased capability (also from the perspective of U.S. partners and adversaries) to challenge concepts, capabilities, plans, and operations in the context of the operational environment. As a result, the commander and staff would habitually consider the second and third order effects of military operations as well as implications for the diplomatic, informational, and economic elements of national power.

While clearly information and intelligence-centric, red teaming is a *command function that is focused on improving decision making under conditions of strategic and operational uncertainty*. It is based on the premise that competitive advantage occurs not only as a result of timely and accurate intelligence, but derives also from operational experience, intuition, reasoning, analytical skills, intelligence, and access to relevant subject matter expertise. Consequently, the red team must comprise a synergistic combination of skills, processes, and timely access to critical information. In addition to a thorough grasp of operational art, red team members must be skilled in the operational environment, critical analysis, non-western military theory, cultural anthropology, and cross-cultural communications. Moreover, the complexity of today's contingencies demands ready access to a reach-out mechanism to obtain relevant subject matter expertise.

Supported by funding from the Army and Joint Staff, the U.S. Army Training and Doctrine Command (TRADOC) recently established the University of Foreign Military and Cultural Studies (UFMCS) at Fort Leavenworth, KS, to provide the education, training, and practical experience foundation to enable a force-wide red teaming capability. An FY06 pilot program is being run to educate red team leaders and train a broad cadre of red team practitioners to facilitate reach-out operations. The pilot concept involves two 18-week courses designed to educate red team leaders and a series of two-week seminars to train red team practitioners from academia, industry, and other government agencies. The intent of the pilot program is to test the curriculum with students who will serve as "red teamers" in candidate organizations where the concept of red teaming can be examined.

The Army red team capability is designed to support the modular force, with an organic core red team planned for the division, corps, and army levels. These red teams form the core that will access relevant expertise via reach-out to trained red team practitioners. Red teams are also planned in the U.S. Army Intelligence and Security Command (INSCOM) Theater Intelligence Brigades and Groups under the operational control of Theater Army Commanders. In addition to UFMCS, a globally focused Red Team Center of Excellence will be located at the 902nd Military Intelligence Group. These capabilities will be available to support operational red teams with access to regional and cultural expertise.

In May 2005, TRADOC briefed the Service OpsDepts or their representatives on the concept. That same month TRADOC briefed the concept to a Senior Warfighting Forum hosted by the Under Secretary of Defense for Intelligence [USD(I)]. The intent was to solicit joint and Service insights on the concepts and to offer the opportunity to support testing the curriculum and the concept of red teaming in targeted organizations.

In summary, an institutional red teaming capability will serve to improve plans and decisions while mitigating operational risk. With a broad set of skills and processes, coupled with access to expansive subject matter expertise, red team efforts will enhance operations and intelligence planning efforts, with virtually every action being red teamed as an integral part of the planning and decision making process.



## **APPENDIX A: PANEL MEMBERSHIP**

### **CHAIRPERSON(S)**

Dr. Theodore Gold, *Private Consultant*

Mr. John Stenbit, *Private Consultant*

### **MEMBERS**

Dr. Joseph Braddock, *The Potomac Foundation*

Dr. William Graham, *National Security Research*

GEN William Hartzog, (USA (Ret)), *Burdeshaw Associates Ltd.*

Mr. Jim Kurtz, *Institute for Defense Analyses*

### **GOVERNMENT ADVISORS**

Mr. Bruce Brown, *Office of the Assistant Secretary of Defense for Network Interoperability and Integration/Chief Information Office*

Col Chels Chae, USA, *TRADOC*

BG David Fastabend, USA, *TRADOC*

LTC Robert Jones, USA, *Office of Force Transformation*

Mr. Patrick McCarthy, *JFCOM/J-5*

Col J.P. Sosa, USAF, *Joint Advanced Warfighting Program, Analytical Program Office*

Mr. Michael Starry, *TRADOC*

Mr. Steven Weir, *JFCOM/J-9*

Col Ed Yarnell, USMC, *Joint Staff/J-7*

### **DSB SECRETARIAT**

LtCol David Robertson, USAF, *Defense Science Board*

### **STAFF**

Ms. Kimberlee Moore, *SAIC*

\* The panel members are very appreciative of the visits to our summer session by MG John R. Wood (Director for Joint Experimentation, J-9, USJFCOM) and MG Michael A. Vane (Vice Director for Force Structure, Resources and Assessments, J-8, The Joint Staff). They engaged with us in spirited discussions on the summer study issues and helped educate us about the evolving activities in their organizations.

**APPENDIX B: GUEST BRIEFERS****14 FEBRUARY 2005**

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|                                    |                      |            |
|------------------------------------|----------------------|------------|
| Strategic Transformation Appraisal | Col Ric Witt         | OFT        |
| Net Assessment                     | Mr. Andy Marshall    | Director   |
| Program Analysis and Evaluation    | Mr. Ken Krieg        | USD(AT&L)  |
| The New Triad                      | Gen James Cartwright | USSTRATCOM |
| Disruptive Technologies Study      | Mr. Alan Shaffer     | DDR&E      |
| Joint Net-Centric Operations       | LtCol Steve Waller   | AF/XI      |

**15 FEBRUARY 2005**

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|-----------------------------------------------------------|----------------|-----|
| JROC Warfighting Capability Based Analysis and Assessment | LTC Bob Larsen | J-8 |
|-----------------------------------------------------------|----------------|-----|

**11 APRIL 2005**

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|------------------------------------|-----------------|-------|
| Joint National Training Capability | Mr. Steve Moore | JFCOM |
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**10 MAY 2005**

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|-------------------------------------------------------------------------|-----------------------|-----------|
| Central Command (CENTCOM)                                               | COL Peter Zielinski   | CENTCOM   |
| Office of Force Transformation (OFT)<br>Review of COCOM Experimentation | COL Richard Marchant  | OFT       |
| Concepts to Doctrine, Integrating the Good Ideas                        | COL Fred Guendel      | J-7/JFCOM |
| USJFCOM's Support of Intelligence Transformation                        | CAPT Al Nadolski      | J-2/JFCOM |
| Analytic Agenda                                                         | LtCol Bruce Hollywood | J-8/SAMD  |

**27 JUNE 2005**

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|                               |                                                                     |       |
|-------------------------------|---------------------------------------------------------------------|-------|
| DDR&E Perspectives            | Mr. Alan Shaffer                                                    | DDR&E |
| WMD Matters                   | Mr. Dick Gullickson and<br>Dr. George Ullrich                       | DTRA  |
| Intelligence Community Inputs | MG (Ret) John Landry                                                | CIA   |
| Advanced Technologies         | Dr. Martin Stickley,<br>Dr. Pat McDaniel, and<br>Dr. Charlie Rhodes | DARPA |

**29 JUNE 2005**

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|----------------------------|--------------------------|-----|
| Combatant Commands         | Lt Gen (Ret) Bruce Brown | IDA |
| Operational Assessment '05 | COL Al Sweetzer          | J-8 |

**11 JULY 2005**

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|---------------------------------------------------|-----------------------------------|---------|
| Joint Warfighting Center Briefings and Roundtable | ADM Edmund Giambastiani and Staff | USJFCOM |
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**28 JULY 2005 – AD HOC PANEL ON DISRUPTIVE CHALLENGES**

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|--------------------------------|--------------------------------------|-----|
| CIA, DIA, NGIC & NSA Briefings | Organized by<br>MG (Ret) John Landry | CIA |
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**APPENDIX C: ACRONYM INDEX**

|         |                                                                               |
|---------|-------------------------------------------------------------------------------|
| AF/XI   | Air Force/Warfighting Integration                                             |
| CBA     | Concept-Based Assessment (also called JCIDS Analysis)                         |
| CBP     | Capabilities-Based Planning                                                   |
| CCJO    | Capstone Concept for Joint Operations                                         |
| CENTCOM | Central Command                                                               |
| CERF    | Commander's Emergency Response Funds                                          |
| CERP    | Commander's Emergency Response Program                                        |
| CIA     | Central Intelligence Agency                                                   |
| CONOPS  | concept of operations                                                         |
| CSIS    | Center for Strategic and International Studies                                |
| DARPA   | Defense Advanced Research Projects Agency                                     |
| DDR&E   | Director of Defense Research & Engineering                                    |
| DJS     | Director of the Joint Staff                                                   |
| DJSM    | DJS Memorandum                                                                |
| DoD     | Department of Defense                                                         |
| DOTMLPF | doctrine, organization, training, materiel, leadership, personnel, facilities |
| DPG     | Defense Planning Guidance                                                     |
| DSB     | Defense Science Board                                                         |
| DTRA    | Defense Threat Reduction Agency                                               |
| FAA     | functional area analysis                                                      |
| FCB     | Functional Capabilities Board                                                 |
| FLEX    | Fleet Landing Exercise                                                        |
| FNA     | Functional Needs Analysis                                                     |
| FSA     | Functional Solutions Analysis                                                 |
| FYDP    | Future Years Defense Plan                                                     |
| ICD     | Initial Capabilities Document                                                 |
| IDA     | Institute for Defense Analyses                                                |
| INSCOM  | [U.S. Army] Intelligence and Security Command                                 |
| IPL     | Integrated Priority List                                                      |
| ISR     | intelligence, surveillance, reconnaissance                                    |
| J-2     | [Directorate for] Intelligence                                                |
| J-7     | [Directorate for] Operational Plans and Interoperability                      |
| J-8     | [Directorate for] Force Structure, Resources, and Assessments                 |
| JCD&E   | Joint Concept Development and Experimentation                                 |
| JCIDS   | Joint Capability Integration and Development System                           |
| JCDRP   | Joint Concept Development and Revision Plan                                   |
| JFC     | Joint Functional Concept                                                      |
| JFCOM   | Joint Forces Command                                                          |
| JIACG   | Joint Inter-Agency Coordinating Group                                         |
| JIC     | Joint Integrating Concept                                                     |
| JOC     | Joint Operating Concept                                                       |
| JPG     | Joint Programming Guidance                                                    |

|            |                                                                       |
|------------|-----------------------------------------------------------------------|
| JROC       | Joint Requirements Oversight Council                                  |
| KPP        | key performance parameters                                            |
| MAI        | multi-agency integration                                              |
| MPP        | Mission Performance Plan                                              |
| NGIC       | National Ground Intelligence Center                                   |
| NGO        | non-governmental organizations                                        |
| NSA        | National Security Agency                                              |
| NSC        | National Security Council                                             |
| NSS        | National Security Strategy                                            |
| NSSP       | National Security Strategic Plan                                      |
| OEF        | Operation Enduring Freedom                                            |
| OFT        | Office of Force Transformation                                        |
| OIF        | Operation Iraqi Freedom                                               |
| OMB        | Office of Management and Budget                                       |
| OpsDepts   | Operations Deputies                                                   |
| OPSEC      | Operational Security                                                  |
| PIA        | post independent analysis                                             |
| PPBE       | Planning, Programming, Budgeting and Execution [System]               |
| RDT&E      | research, development, test, and evaluation                           |
| SAMD       | Studies Analysis Management Division                                  |
| S/CRS      | [Department of] State/[Office of] Stabilization and Reconstruction    |
| SecDef     | Secretary of Defense                                                  |
| SPG        | Strategic Planning Guidance                                           |
| SSBN       | fleet ballistic missile submarine                                     |
| TOR        | Terms of Reference                                                    |
| TRADOC     | [U.S. Army] Training and Doctrine Command                             |
| TSCP       | Theater Security and Cooperation Plans                                |
| TTP        | tactics, techniques, and procedures                                   |
| UFMCS      | University of Foreign Military and Cultural Studies                   |
| UJTL       | Universal Joint Task List                                             |
| USA        | United States Army                                                    |
| USAID      | United States Agency for International Development                    |
| USAF       | United States Air Force                                               |
| USD(AT&L)  | Under Secretary of Defense for Acquisition, Technology, and Logistics |
| USD(I)     | Under Secretary of Defense for Intelligence                           |
| USD(P)     | Under Secretary of Defense for Policy                                 |
| USG        | United States Government                                              |
| USSTRATCOM | United States Strategic Command                                       |
| WMD        | weapons of mass destruction                                           |

## ***APPENDIX D: CONCEPTS AS DRIVERS OF CHANGE***

Historical models suggest key elements that must be present as part of the change process. A United States Army general who played a pivotal role in transforming the Army after Vietnam listed the following as a set of generalized requirements:

- There must be an institution or mechanism to identify the need for change, to draw up parameters for change, and to describe clearly what is to be done and how that differs from what has been done before.
- The educational background of the principal staff and command personalities responsible for change must be sufficiently rigorous to bring a common cultural bias to the solution of the problems.
- There must be a spokesman for change—a person, or an institution such as a staff college, etc.
- The spokesman must build a consensus.
- There must be continuity among the architects of change.
- Someone at or near the top of the institution must be willing to hear out the arguments for change, agree to the need, embrace the new operational concepts, and become a supporter.
- Changes proposed must be subjected to trials. Their relevance must be convincingly demonstrated to a wide audience by experiment and experience.<sup>75</sup>

One could perhaps argue the list was more valid when it was written in 1983 than it is today, but recent experiences in the Balkans, Afghanistan, and Iraq suggest there are gaps in understanding the need for concepts and describing clearly what is to be done compared to what was done previously. Once simple descriptions of envisioned military operations, today's concepts must explain and rationalize the links between military victory and the follow-on activities necessary to achieve strategic victory.

A June 2001 article, entitled "That Elusive Operational Concept," argues that the term "operational concept" has been high-jacked and colloquialized—that the term pervades the media as a colloquial expression but is sorely missing as a rigorous term of military art. The author lists the following as common characteristics of a good operational concept:

- An idealization of war;
- A reflection of strategic context;
- A link among theory, strategic context and doctrine;
- A clear choice; and
- A component of conflict.

The author, then-Colonel (now Brigadier General) David Fastabend, further states, "The war of operational concepts does not wait for the bullets to fly. It is ongoing every day, and therefore we can

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<sup>75</sup> General Donn A. Starry, "To Change an Army," *Military Review*, March 1983, pp 20 - 27.

never rest, doomed to continual adaptation in pursuit of the operational concept that will best that of our adversaries.”<sup>76</sup>

Perhaps the greatest lesson to draw from history is that military forces do not get to check their performance routinely as other institutions do. Unlike civilian corporations that receive immediate (quarterly) feedback and can subsequently adapt (or die if they don’t), military forces play a guessing game. Uncertainty and ambiguity is abound in the military business model, and it prepares for its core function (warfighting) by estimating or approximating its threats. This is an adaptive behavior led by courage in creative imagination, a realistic appraisal of the geo-strategic context, budget realities, and well thought-out operational concepts—along with the other elements of change described by BG Fastabend above.

In today’s environment of uncertainty, the advantage will go to those who can most quickly adjust to new and unfamiliar conditions and learn from their mistakes. Sir Michael Howard expressed it this way:

“I am tempted indeed to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. . . . It is the task of military science in an age of peace to prevent the doctrines from being badly wrong.”<sup>77</sup>

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<sup>76</sup> Colonel David Fastabend, "That Elusive Operational Concept," *Army*, June 2001.

<sup>77</sup> Sir Michael Howard, "Military Science in an Age of Peace," *Journal of the Royal United Services Institute*, 1973.

**APPENDIX E: REFERENCES**

Aldridge, Honorable E.C., et al., *Joint Defense Capabilities Study: Improving DoD Strategic Planning, Resourcing and Execution to Satisfy Joint Capabilities*, Final Report, January 2004, pp. 2-4 to 2-7.

*CJCSI 3010.02B*, draft dated 1 September 2005, pp. D-1 and D-2.

*CJCSI 3170.01C*, 24 June 2003, pp. 1-2.

*CJCSI 3170.01E*, 11 May 2005, pp. A-1, A-2, A-3, and A-5.

*CJCSM.3170.01B*, 11 May 2005, pgs. A-1, A-2, A-3, A-4, and A-7.

*Concept for Future Joint Operations: Expanding Joint Vision 2010*. May 1997, pp. i-ii. Accessed 10 November 2004 at the Joint Electronic Library website, <http://www.dtic.mil/jointvision/history.htm>.

*Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*. 24 May 1995, pp. 2-2 and 2-3.

Fastabend, Colonel David., *That Elusive Operational Concept*, U.S. Army, June 2001.

Howard, Sir Michael, *Military Science in an Age of Peace*, Journal of the Royal United Services Institute, 1973.

*Joint Capabilities Integration and Development System*. *CJCSI 3170.01E*, 11 May 2005. (These are the current Chairman's Instruction.) The initial JCIDS directives were published in June 2003. They were revised in March 2004 and again in May 2005. The accompanying manual is *Operation of the Joint Capabilities Integration and Development System*. *CJCSM 3170.01B*, 11 May 2005.

*Joint Operations Concepts (JOpsC), GO/FO coordination draft*. *CJCSI 3010.02B*, 1 September 2005, pgs. 1-2 and GL-4.

*Joint Requirements Oversight Council (JROC) Programmatic Processes for Joint Experimentation and Joint Resource Change Recommendations*. *CJCSI 3180.01*, 31 October 2002.

*Joint Vision Implementation Master Plan (JIMP)* *CJCSI 3180.01A*, 15 April 2001, p. A-1.

*Management Initiative Decision (MID) 913: Implementation of a 2-year Planning, Programming, Budgeting, and Execution Process*, May 22, 2003.

Millett, Allen R., *Assault From the Sea in Military Innovation in the Interwar Period*, edited by Williamson Murray and Allan R. Millett, pp. 77-78.

*Overview briefing of the Commission to Assess the Threat from High Altitude Electromagnetic Pulse - EMP threat information*  
<http://empcreport.ida.org/3militaryVGversionJuly.pdf>, accessed 11 August 2005.

*Quadrennial Defense Review Report*, 30 September 2001.

*Reflections of LTC Kevin Woods, U.S. Army (Retired)*, who planned and served during JFCOM's major warfighting experiment, MILLENNIUM CHALLENGE 2002.

*Secretary of Defense "Snowflake" Memorandum to Larry Di Rita*, subject: Documents, 3 January 2003, quoted in Rowan Scarborough, *Rumsfeld's War: The Untold Story of America's Anti-Terrorist Commander*, Washington, DC, Regnery Publishing, Inc., 2004, p. 187.

*Secretary of Defense Memorandum*, subject: Initiation of a Joint Capabilities Development Process, 31 October 2003.

Shelton, General Henry H., U.S. Army, *Chairman of the Joint Chiefs of Staff at the Fletcher Conference 2000*, Arlington, VA, November 16, 2000. Accessed 19 November 2004 at the JCSSLink website, <http://www.dtic.mil/jcs/>

Starry, General Donn A., *To Change an Army*, Military Review, March 1983, pp 20 - 27.

*Strategic Planning Guidance*, Fiscal Years 2006-2011, March 2004, p. 24.

*The Functional Capabilities Board Process. CJCSI 3137.01C*, 12 November 2004, p.C-3.

Till, Geoffrey, *Adopting the Aircraft Carrier in Military Innovation in the Interwar Period*, edited by Williamson Murray and Allan R. Millett, pg. 224.

*TRADOC Commander's Note No. 3, Operational Concepts and Doctrine*, 20 February 1979. The "Central Battle" referred to in the quoted passage was the name assigned at the time to the concept that eventually became Air-Land Battle.

*Transformation Planning Guidance*, April 2004, p. 4.

*Transformation Study Report, Executive Summary, Transforming Military Operational Capabilities*, April 27, 2001. Accessed 15 November 2005 at <http://www.defenselink.mil/news/Jun2001/d20010621transexec.pdf>

*Transforming Defense: National Security in the 21st Century, Report of the National Defense Panel*, December 1997, pp. Accessed 9 November 2004 at <http://www.dtic.mil/ndp/FullDoc2.pdf>.

U.S. Atlantic Command Designated Executive Agent for Joint Warfighting Experimentation. DoD News Release Number 252-98, 21 May 1998, accessed 9 November 2004 at DefenseLink website, [http://www.defenselink.mil/releases/1998/b05211998\\_bt252-98.html](http://www.defenselink.mil/releases/1998/b05211998_bt252-98.html)

U.S. Joint Forces Command Joint Lessons Learned Program. Draft USJFCOMINST 3150.25, 27 July 2004.

## PART 3: MULTI-AGENCY INTEGRATION PANEL REPORT

|                                                 |     |
|-------------------------------------------------|-----|
| Chapter I. Executive Summary .....              | 171 |
| Chapter II. Introduction .....                  | 175 |
| Chapter III. Findings and Recommendations ..... | 181 |

### PART 3 APPENDICES

|                                   |     |
|-----------------------------------|-----|
| Appendix A. Panel Membership..... | 193 |
| Appendix B. Guest Briefers.....   | 194 |
| Appendix C. Acronym List.....     | 196 |





## I. EXECUTIVE SUMMARY

As a sub-panel to the overall Defense Science Board's (DSB) 2005 Summer Study on Transformation: A Progress Assessment, the Multi-Agency Integration (MAI) panel focused its efforts on researching and identifying improved means for the Department of Defense (DoD) to better employ its personnel and resources to improve and enhance the mission and activities of the United States Government (USG), particularly in the role of national defense.

The National Security Strategy extends beyond combat objectives—and beyond stability and reconstruction before, during, and following combat—to establishing functioning free enterprise economies and democracies. It is important to understand that the National Security Strategy is about much more than combat objectives or even stability and reconstruction operations. In fact, the set of broader goals are far more demanding, complex, costly, and wide reaching in scope than achieving victory on the battlefield. Meeting the National Security Strategy objectives requires a robust and integrated civilian-DoD, multi-agency capacity as part of a broader strategic focus to enable the full array of available U.S. capabilities to achieve strategic objectives.<sup>78</sup>

Through its assessment, the MAI panel determined that the U.S. Government does not have a multi-agency integrated planning capability that is able to produce executable multi-level campaign plans, such as campaign plans to serve major strategic objectives (e.g. weapons of mass destruction (WMD) proliferation, China, Struggle Against Violent Extremism, etc.), and campaign plans for a range of places and issues to achieve specific strategic objectives (e.g. North Korea, Iran, maritime interdiction, covert action, pop-up contingencies, etc.). These integrated, multi-agency campaign plans are needed to mobilize, commit and employ the needed set of national capabilities to serve major strategic objectives and to direct the needed capabilities to achieve strategic objectives in more narrowly define places and issues. The process also needs to include dynamic planning to deal with pop-up contingencies and needs to be able to support strategic operations ranging from long-term shaping and strengthening the capacity of institutions, to stabilization and reconstruction activities before, during, and after combat. It is important to note that the need for this process cannot be adequately addressed after the onset of a crisis. These multi-agency efforts must be integrated, synchronized, and resourced from the onset of strategic operation planning.

The MAI panel also discovered that U.S. government-civilian agencies and the DoD do not have sufficient experience in multi-agency activities and lack training and educational programs to provide competence in multi-agency campaign planning and execution. It is essential that multiple agencies employ shared collaboration, decision-making aids, and execution tools to assess, plan, and execute integrated operations.

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<sup>78</sup> The National Security Strategy for the United States of America. <http://www.whitehouse.gov/nsc/nss.html>, September 2002.

While the Department of Defense cannot control or assume responsibility for multi-agency integration, it seems clear that success will require the leadership of the agency with the greatest stake in most operations—the DoD. Accordingly, the Secretary of Defense (SecDef) should lead the National Security Council (NSC) in creating the mechanisms and processes required to deliver a multi-year National Security Strategic Plan (NSSP) for the President’s consideration every other year. The plan needs to contain enough detail to be executable by identifying likely places and issues (and assigning strategic objectives for each), by describing the plan’s desired outcomes, and by assigning specific responsibilities with metrics to agencies.

Based on the President’s NSSP, the NSC also needs to establish standing oversight groups and task forces to produce the needed multi-agency campaign plans focusing on proactive shaping, but also providing for the full range of possible responses if shaping proves inadequate. The MAI panel believes that none of this will be effective unless there is a standard process to ensure resource allocation to meet objectives. The NSC should require a review by the Office of Management and Budget (OMB) during the annual budget cycle for that purpose.

As suggested earlier in this section, there will be unique training, education, and experience requirements to provide competency for multi-agency planning and execution. This means there must be sufficient resources to allow people to gain the competency, rewards for that competency, and active work to persuade the right people to engage in multi-agency activities. There also needs to be a standardized set of tools across appropriate agencies to facilitate planning collaboration and integrated execution.

In addition to the leadership role with the NSC, the SecDef needs to strengthen DoD capabilities for multi-agency operations by developing doctrine for military support of civilian agencies, creating mechanisms for DoD support to the multi-agency planning process, and adapting proven DoD planning processes to multi-agency compatibility. Furthermore, the Department’s training and education system can and should include multi-agency planning and education.

## *RECOMMENDATIONS*

The following recommendations are resultant from the MAI panel work conducted for the 2005 Summer Study on Transformation:

The SecDef should lead the NSC effort to create a mechanism to provide the President with a five-year NSSP that:

- Identifies the places and issues requiring multi-agency campaign plans;
- Establishes the strategic objective of each place and issue;
- Details the end-state and metrics; and
- Assigns specific taskings with key performance parameters (KPPs).
- Establish standing multi-agency oversight groups and task forces led by the NSC for each selected place or issue. Each task force is to:
  - Produce a multi-agency campaign plan for each selected place or issue;

- Focus on proactively shaping the environment in selected nations and regions; and
- Provide for a range of responses if shaping is inadequate.

With OMB, conduct a review during the annual budget cycle to ensure that resource allocations and expenditures match the selected priorities and plans.

- U.S. Government agencies need to provide training, education, and experience for competency in planning and executing integrated multi-agency operations to include:
  - Resources for training and billets for cross-agency personnel exchanges;
  - Establishing career paths and incentives that reward multi-agency experience similar to DoD practices for Joint service;
  - Recruiting personnel who seek overseas deployments, and reward those who accept such assignments; and
  - Developing standardized tools to assess, plan, and execute missions.
- SecDef should strengthen DoD capacities for effective integrated multi-agency operations by:
  - Developing doctrine that guides military support of civilian agency diplomatic and economic solutions to strengthen nation states;
  - Creating mechanisms for responsive DoD support of multi-agency planning processes;
  - Adapting Joint planning processes for multi-agency inputs and to inform multi-agency integrated planning;
  - Structuring DoD's training and education system to include the Services professional education to reflect these new requirements; and
  - Establishing criteria so that the officer promotion system rewards MAI education and experience in a manner similar to Joint education and experience.



## II. INTRODUCTION

*“[T]he assessment should examine how well the Department integrates the rest of the U.S. government (USG) capabilities to provide the capabilities to deal with 21st Century adversaries. The Study should address alternative operational constructs and concept development processes, which would enable the Department of Defense to better meet the challenges of the 21st century by applying the entire array of power available to the USG.”<sup>79</sup>*

In the context of an overall review of Transformation, and with specific mission guidance as directed by the 2005 Summer Study Terms of Reference (TOR), the MAI panel searched for methods to better utilize the vast array of power available to the Nation—in particular the talent and resources resident in the civilian agencies and the private sector for those activities traditionally undertaken by the USG in support of global engagement. The impact of better leveraging, integrating, applying, and balancing these resources toward these activities, would be truly transforming and, a necessary precondition to successfully meet the wide array of the challenges facing the Nation.

The work of the MAI panel is a natural extension of, and complementary to, the 2004 DSB Summer Study, *The Transition to and from Hostilities*.<sup>80</sup> The panel began its examination of the current state of integration of USG resources in those timeframes. The panel also looked to operations and timeframes other than immediately before and after the cessation of hostilities. The panel then focused our attention on how to best to accomplish the National Security Strategy goals by utilizing other resources, at alternative scale. In particular, the panel looked for the highest payoff opportunities well before crises develop. The panel concludes with recommendations for the NSC, and civilian agency and DoD capabilities, capacities, and processes to more effectively integrate the full array of national power.

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<sup>79</sup> Terms of Reference, Defense Science Board 2005 Summer Study on Transformation: A progress Assessment. [http://www.acq.osd.mil/dsb/tors/TOR-2005-01-13-SummerStudy\\_Transformation.pdf](http://www.acq.osd.mil/dsb/tors/TOR-2005-01-13-SummerStudy_Transformation.pdf).

<sup>80</sup> Report of the Defense Science Board 2004 Summer Study on Transition to and from Hostilities. [http://www.acq.osd.mil/dsb/reports/2004-12-DSB\\_SS\\_Report\\_Final.pdf](http://www.acq.osd.mil/dsb/reports/2004-12-DSB_SS_Report_Final.pdf), December 2004.

This depiction (see Figure 1) of the interrelationships of the many USG departments and agencies involved in the execution of national, foreign, and defense policy goals illustrates the extent to which success is dependent upon the orchestration of a wide array of USG enterprises, cultures, and capabilities. The complexity of this task, and by inference its cumbersomeness, is readily apparent in this diagram.

Figure 2 illustrates the complexities of the USG effort in a very real theater-level task. The complex and

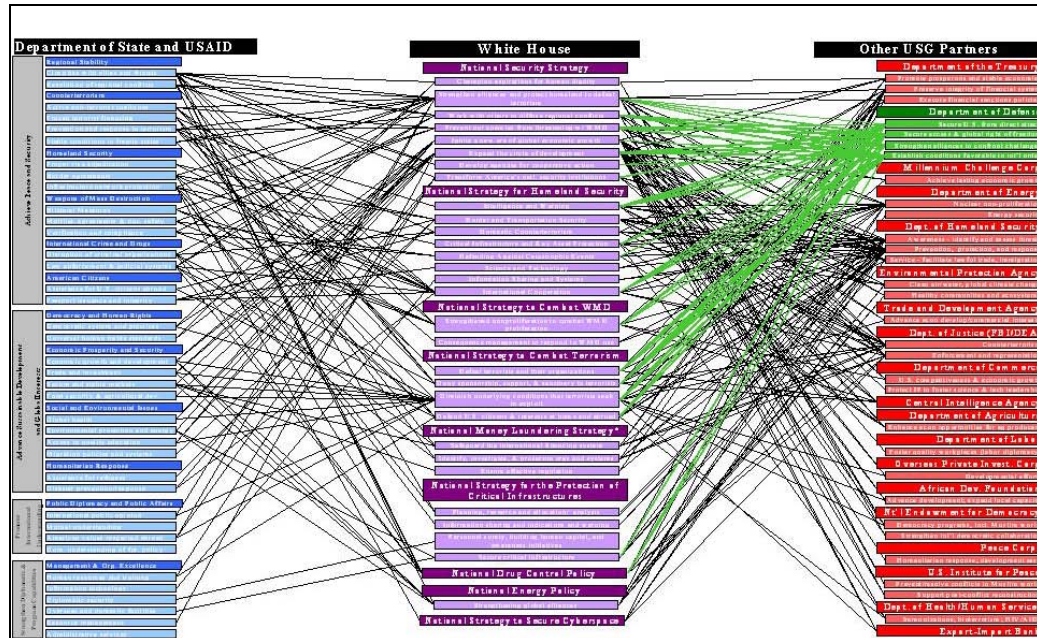


Figure 1. Execution of National Goals Matrix

cumbersome structures that result from the disparate array of USG capabilities in Iraq are well beyond the ken of all but the most skilled professionals.

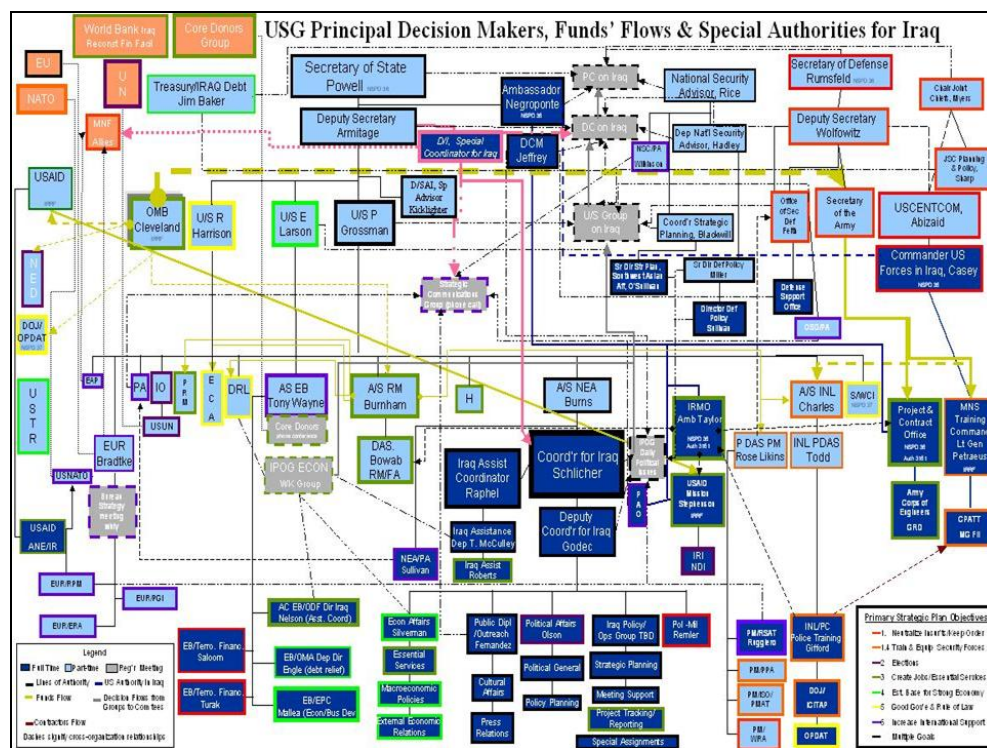


Figure 2. USG Decision Making Matrix for Iraq's Area of Operations



## NATIONAL SECURITY STRATEGY

The National Security Strategy (NSS), adopted in 2002, sets forth ambitious national goals, including a recognition that the Nation's security cannot be achieved solely by defeating its enemies on the battlefield. Today's global terrorist enemy is highly dependent upon failed or deteriorating nation-states for shelter, as a source of disaffected young men willing to die for their interests around the world, and as a safe harbor from which to project these terrorist forces. Therefore, the U.S. finds itself at interest and potentially engaged in many more places around the world, required to perform tasks hitherto rarely performed, as the Nation now seeks to prevent this terrorist infestation. The USG best serves these interests in those nations not yet on the brink by strengthening their capability to build the economic capacity and political consensus necessary to defend themselves from this scourge. Therefore, achieving our security goals is ultimately dependent on the expansion of thriving democratic and economic institutions around the world; those institutions are the best antidote to the infection that the terrorists seek to spread.

## TRANSFORMATION IMPERATIVE

Since the end of World War II, the primary focus of the U.S. military has been to develop the capability to swiftly and completely defeat any adversary that engages us on the battlefield. The U.S. has been well-served by this strategy; and the success of the U.S. military during this period is without precedent. The transformation initiatives underway at the DoD seek to assure that U.S. supremacy on the battlefield endures.

However, we have also come to realize that the national security goals cannot be achieved solely on the battlefield. The 2002 NSS makes clear that beyond the warfighting objectives, we must further seek to strengthen or even create free societies and robust market economies in order to achieve strategic victory.

In many nations, the cost and scope of establishing this free economy and a robust democracy will vastly exceed the cost and scope of the major combat operations that preceded it. As we have seen in Operation Iraqi Freedom (OIF)/Operation Enduring Freedom (OEF), the proportion of cost (resources and personnel) for the relatively brief major combat operations is dwarfed by the costs of the open-ended, post-conflict phase.

## COST OF WINNING THE PEACE

As illustrated in Figure 3, taken from the 2004 DSB Summer

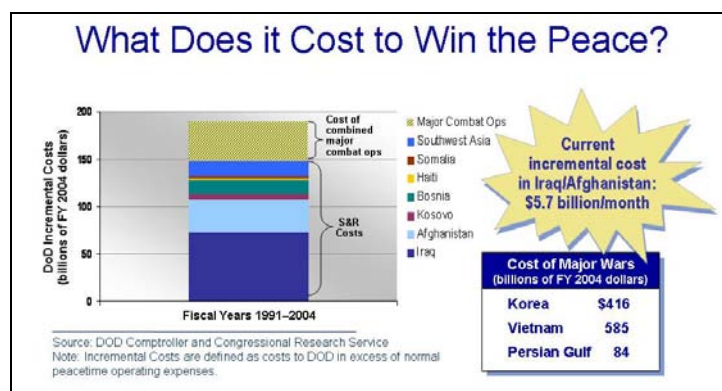


Figure 3. Cost of Winning the Peace



Study,<sup>81</sup> this is not a challenge unique to Iraq. Since the end of the Cold War, it has become increasingly evident that while the increases in lethality and survivability of the transformed military have made kinetic operations ever more efficient, faster and lower cost, post-conflict expenses have been growing at a significant rate. The data from 1991 to 2004 show the vast sums expended *after* traditional kinetic operations. The months and years ahead in Iraq and Afghanistan will surely continue this trend.

The Nation's experience in OIF and OEF demonstrate beyond a doubt that the USG civilian agencies are ill-equipped to partner with the DoD and engage decisively at necessary scale. Further, the concept of a "Golden Hour" - a quick intervention and at significant scale to "jump start" broken societies and economies - is likely only available long after routine operations have been mastered and scale developed. While efforts such as those at the Office of Stabilization and Reconstruction (S/CRS) at the Department of State are laudable first steps, the required capacity is years if not decades in the future, at the current pace of civilian agency transformation.

In the meantime, truly vast military resources are required while the civilian agencies struggle to begin to accomplish the end-state objectives. This asymmetry robs the U.S. of the capability for other unforeseen challenges. This is a prospect not long lost on our enemies. We have reason to fear that our adversaries will understand the situation and attempt to apply a cost-imposing strategy.

Given the range of states and non-state actors that could be sources of instability, states that may become unstable and the areas that are "ungoverned," the cost of the ambitious goals that the Nation has challenged the national security establishment to accomplish around the globe are impossible to ascertain (see Figure 4).

## TRANSFORMING ALTERNATIVE

The number of potential interventions is not possible to estimate with certainty. The 2004

DSB 2004 Summer Study identified a range of 2-10 countries where the problems were sufficiently "ripe and important" such that it was prudent to plan for post-conflict requirements.

In the 2005 Summer Study, the panel considers conflict prevention and post-conflict efforts as investments with implicit cost/benefit trade-offs, to balance the investment in shaping, to achieve the NSS.

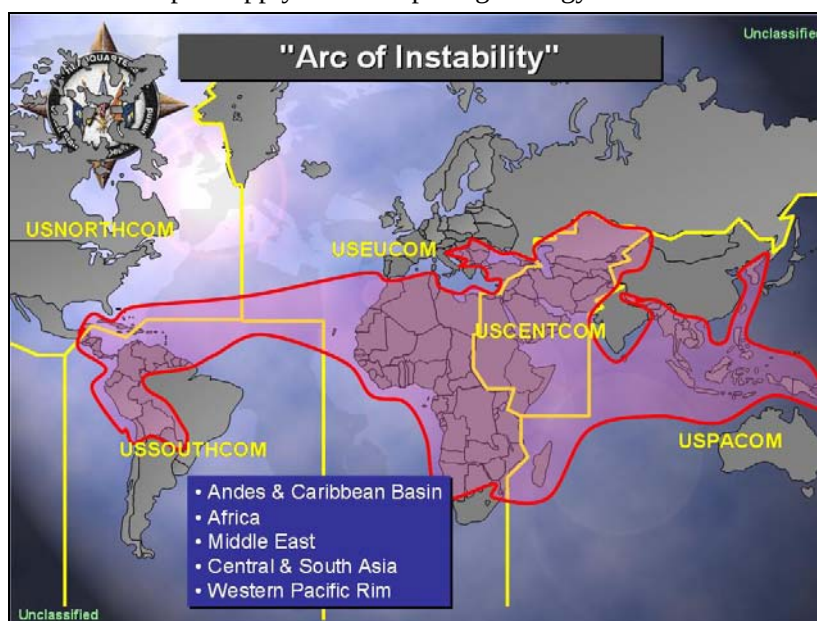


Figure 4. Arc of Instability

<sup>81</sup> Report of the Defense Science Board 2004 Summer Study on Transition to and from Hostilities. [http://www.acq.osd.mil/dsb/reports/2004-12-DSB\\_SS\\_Report\\_Final.pdf](http://www.acq.osd.mil/dsb/reports/2004-12-DSB_SS_Report_Final.pdf), December 2004, p. 18

The panel believes that an earlier engagement to achieve the goals of promoting open democracy and free economies could shape the outcomes in many of these countries and prevent the need for subsequent kinetic operations and the vastly more expensive stabilization and reconstruction operations that follow.

Unfortunately, to date, the national investment track record in shaping has been poor. This is clearly demonstrated in the paltry effort in the important and potentially unstable Gulf of Guinea region. Nigeria, for example, is of strategic interest, in part, because of its vast oil supply. The U.S. is currently investing only \$1.3 million/year in that country, which as a population of 137 million and a per capita income of \$1,000.<sup>82</sup> This reflects a distorted discounting of the future pay off. The panel's strategic view of security includes a greater emphasis on this sort of engagement, by means of a more effectively deployed national power at lower cost.

The U.S. investment strategy cannot be accomplished overnight. The U.S. has not had a sustained strategic focus toward this sort of engagement policy since the Eisenhower era. Further, the effort will require a synchronized, integrated deployment of the full array of the Nation's capabilities.

The 2004 DSB 2004 Summer Study appropriately focused its attention on the need to plan better for post-conflict contingencies, in which it identified as likely candidates, nations or regions that are both "ripe and important." The key is to array the Nation's resources to accomplish the end state objectives as quickly and efficiently as possible. Post-conflict operations have been costly and are increasing dramatically. If the USG attacks some of the likely problems before they "ripen," it has the opportunity to achieve objectives at far lower net costs and avoid the need for conflict (see Figure 5).

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<sup>82</sup> U.S. European Command Documents. See also <http://www.eia.doe.gov/emeu/cabs/nigeria.html>. (accessed November 17, 2005).

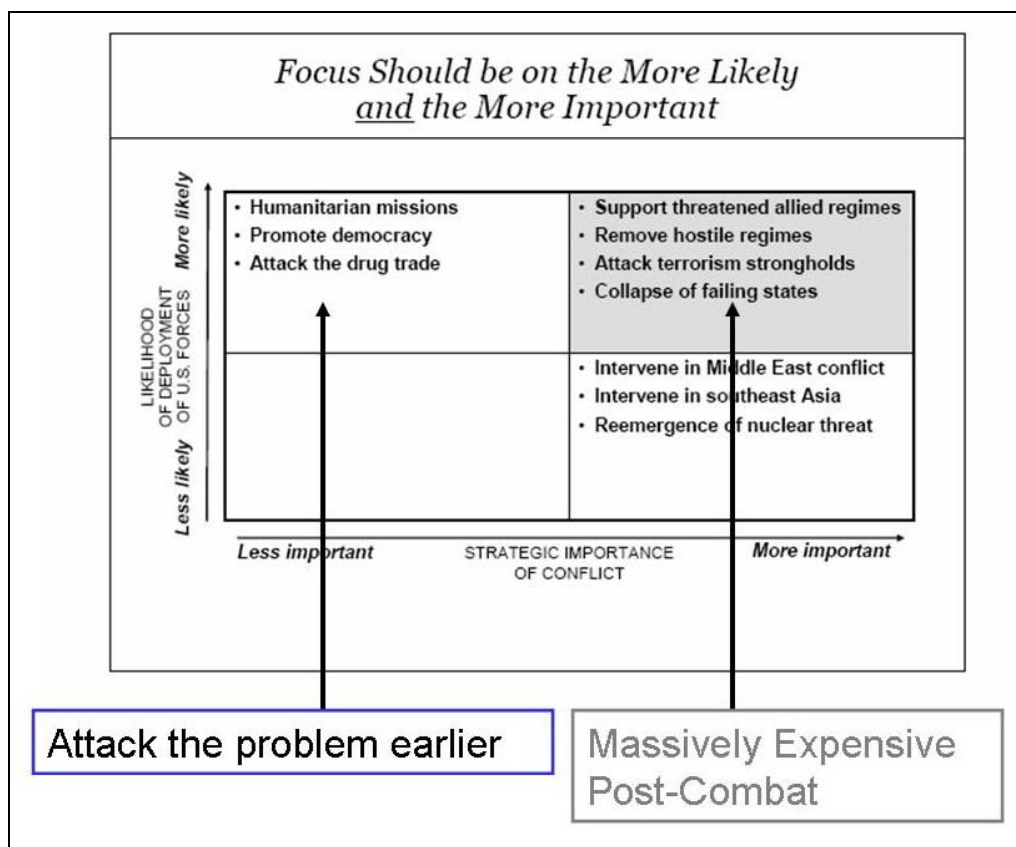


Figure 5. Strategic Planning Matrix

## TRANSFORMING FOR THE FUTURE

Currently, there is no robust structure, process, or sufficient emphasis on those shaping operations that can avoid conflict by turning around a declining nation-state and securing the national objectives. Ideally, the USG would:

- First, identify those important countries and sub-regions that are important but not yet ripe for contingency planning;
- Second, define the end-state goals it has for those countries and a path to achieve them;
- Third, looking at the array of national power, including military, civilian, and private sector resources, to develop an integrated matrix of activity that brings to bear the best capabilities available. The pieces most often missing in today's efforts are the competencies uniquely resident in the USG civilian agencies;
- Fourth, establish clear lines of authority, responsibility, and accountability among the lead and supporting agencies; and
- Fifth, commit to the expenditure of those resources, but do so against specific long view timelines supported by budgets and driven by clearly understood measures of effectiveness.

This approach is strategic in nature and not crisis driven; it seeks to anticipate those crises and invests people, resources, and attention to avoid them. It recognizes the value of seeking to develop the internal demand for institutions of democracy and open economies rather than constructing those institutions, often without a committed populace, in the aftermath of conflict.

### III. FINDINGS AND RECOMMENDATIONS

#### *NATIONAL SECURITY COUNCIL*

##### **Findings — National Security Council**

The current U.S. national security decision-making process is focused almost entirely on the near term. For senior leaders in the national security arena, the “tyranny of the inbox” is more aptly “the tyranny of managing today’s crises.”

This focus on today’s crisis is understandable. For reasons both practical and political, the day’s headlines, meetings with counterparts, the agenda on Capitol Hill, and crises in the U.S. and abroad often set the day-to-day agenda for senior leaders in government. The problem is that this near term focus often precludes strategic thinking about the future. This is a classic case of the urgent crowding out the important.

Furthermore, when U.S. leaders are preoccupied with crisis management and fail to look beyond the horizon, they also miss opportunities to shape the international environment in ways favorable to U.S. interests and to hedge against developments detrimental to those interests. Without a long-term perspective, policymakers also lack the bigger picture necessary to set the Nation’s priorities wisely and make tough choices about where to place emphasis and manage risk in a resource-constrained environment.

The USG currently lacks the mechanisms, capacity, and incentive structures necessary to support strategic planning and coordinated execution in the national security arena. It lacks a process for developing a set of clear, common, long-term goals and objectives. Although the Congress sought to address this problem in the 1986 Goldwater-Nichols Act by requiring the President to submit an NSS each year with the budget, in practice the development of the NSS has generally been an exercise in creating a document for external consumption rather than undertaking a rigorous internal strategic planning process. Consequently, the NSS is not seen as authoritative Presidential guidance with respect to the allocation of senior leader attention and agency resources.

It is worth noting that Presidents have used the development of Presidential Decision Directives and National Security Presidential Directives to identify objectives and priorities for the long term in specific mission areas such as homeland security or combating terrorism. But there is no overarching guidance to integrate the substance of these directives and reconcile competing priorities and approaches.

As a result, the USG as a whole still lacks a regular, institutionalized process for setting clear national security goals and objectives for the long term and for translating these goals and objectives into a coordinated set of policies, programs, and activities.

The U.S. also lacks common planning templates and a standardized process for integrating individual agency or component plans into an overall campaign plan. As a result, multiple agencies approach a given operation or set of activities with multiple plans—or none at all.

The links between stated national security policy priorities and the means by which agencies allocate their resources are often weak. Current processes fall short of ensuring that Presidential priorities are reflected in agency budgets.

For the most part, agencies prepare their budgets in their own agency “stovepipes.” These budgets are driven by top-line fiscal guidance issued by the OMB and by the priorities of the individual agency, not by common strategic priorities articulated at the national level. No interagency process exists for developing budgets across agencies against national policy priorities.

This is a serious problem in an era in which nearly all national security priorities require the coordinated efforts of multiple agencies. Yet, current processes for tying policies to budget priorities and a review of cross-agency trade offs are sporadic at best. There is, for example, insufficient coordination between defense and non-defense budgets, and across non-defense budgets, during their development within the Executive Branch.

Furthermore, the absence of an established process for ensuring that budgets reflect long term national security priorities hampers the ability of the USG to address identified capability shortfalls, such as the lack of rapidly deployable civilian capacity for complex operations, and to assess progress and make adjustments to policies and programs over time.

The absence of a more integrated resource allocation process also makes it difficult to overcome the influence of interest group lobbying, which often results in funding earmarks that restrict USG freedom of action and hamper its performance.

## **Recommendations — National Security Council**

There must be a bridge between the NSS and its execution by the agencies and departments. The USG needs an authoritative, internal guidance document, signed by the President, which articulates U.S. national security objectives, sets clear priorities that indicate where to place emphasis and how to manage risk, and directs agencies to pursue specific courses of action and develop needed capabilities. We recommend that every two years, the President should issue a five-year NSSP. This plan should be developed and refined through an iterative process involving the NSC, agencies, and OMB. As will be discussed in more detail below, the NSC planning staff will draft the NSSP with agency input. The NSC will then make rough cost-benefit trades, and OMB will provide a preliminary estimate. After agency comment and interagency reconciliation, the President will issue the NSSP.

Every two years, the NSC staff should lead an interagency process to review, update and refine the NSSP. This is essential to ensuring that the NSSP remains a living and relevant document—one that can adapt to changing realities and policy imperatives over time.

This NSSP will undoubtedly require a serious level of effort and argues for the establishment of a new NSC office responsible for strategic planning. The panel believes that this additional expenditure of energy and resources at the highest levels of the USG could go a long way to restoring the strategic focus of the NSC—akin to the Eisenhower era—and to creating a more proactive and effective U.S. national security policy.

One of the central elements of the NSSP process should be to identify those issues, countries or sub-regions that are important but have not been deemed ripe for contingency planning and/or intervention. This is to identify opportunities for the U.S. to shape the future course of a country or sub-region and prevent crises and detrimental developments by applying a broad range of U.S. instruments of power in a proactive and integrated manner.

For each country or sub-region selected, the NSSP should establish clear U.S. goals and objectives over the five-year period (and longer), an overarching concept of operations for how the USG intends to achieve these objectives, and assign agency roles, authorities, responsibilities, and accountability. The intent is to provide an authoritative framework for all subsequent USG planning and action.

In addition, in each case, the NSSP should include a detailed discussion of the desired end state and the metrics to be used for measuring success over time (i.e. specific, measurable, time-sensitive key performance parameters (KPP)). Such a framework would also provide the basis for tasking individual agencies to assess and to develop within their normal budgeting processes the competencies, capabilities, and resources needed to undertake their assigned responsibilities and meet key milestones.

In order to be effective, the NSSP must have an oversight mechanism. The panel recommends establishing standing multi-agency groups in Washington—one for each critical country sub-region, or issue—to monitor progress, clarify policy guidance as needed, resolve any agency disputes over who is responsible for what, and/or who should pay for what as these issues arise, and ensure that agency efforts are as integrated as possible. These multi-agency groups would be sized and staffed in proportion to the magnitude of the challenges they are addressing. Thus, some task forces may be standing organization; others may only meet periodically.

As they are established, each multi-agency task force would:

- Review agency planning documents (the combatant commanders' Theater Security and Cooperation Plans (TSCP) and the Ambassadors' Mission Performance Plans (MPP)) prepared under the NSSP.
  - Are the objectives consistent, the time horizons adequate?
  - Are the proposed courses of action in keeping with the overall multi-agency concept of operations?
  - Are there clearly defined metrics that are derived from national objectives?
  - Are the resources available adequate to implement the strategy?
  - Are there capability gaps that need to be addressed?
  - Are the efforts of various agencies well coordinated and timed?
  - Are the dashboard metrics adequate for the relevant leaders?
- Conduct annual substantive KPP reviews of each case, involving all agencies with responsibility for execution. The aim of these KPP reviews would be to determine whether or not the US is meeting key milestones on time and "on budget" or not—and if not, why not—and trigger adjustments to U.S. efforts as necessary.

- Coordinate outreach to allied partners, multi-lateral organizations, including International Organizations and non-governmental organizations (NGO) that are key partners in the targeted countries or regions and the private sector, to insure robust participation.

Each department or agency would then conduct quarterly reviews of its KPPs in order to be able to adjust the level and focus of its efforts, and to provide critical “ground truth” input into broader multi-agency review processes.

Finally, each priority country, sub-region, or issue needs a tactical-level, multi-agency task force focused on implementation. In most cases, this task force would be the country team. For countries in which the U.S. does not have an embassy or for sub-regional agendas involving groups of countries, the

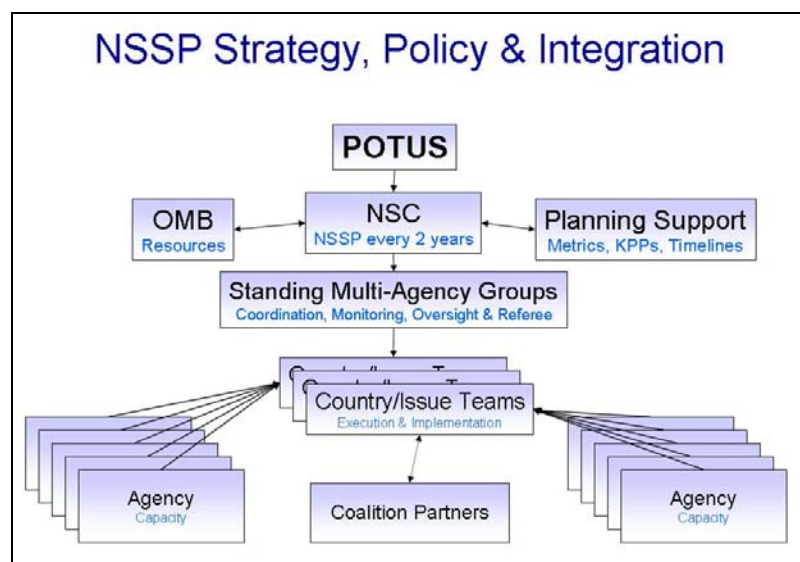


**Figure 6. NSSP Strategy, Policy, and Integration**

multi-agency task force should be chartered by the NSC and chaired by a designated lead agency, based on core competency, and should include others assigned to support as required based on their core competencies or available contractor support. These task forces should be based in the country or sub-region on which they are focused. Task forces for global issues, however, will most likely be Washington-based. This policy process is illustrated in Figure 6.

These recommendations stop far short of providing the NSC a role in directing or executing operations. To the contrary, the proposed approach would strengthen the NSC role in strategic planning, policy oversight, and integration of agency efforts, while also strengthening agency capacities for planning and execution in sufficient timeframes better suited to NSC fiscal cycles and resource allocation capabilities.

To tighten the link between policy priorities and resource allocation, particularly in addressing priority issues, countries and sub-regions, the panel recommends that NSC and OMB co-lead an interagency review process within the normal annual budget cycle to ensure that resource allocation, expenditures, and agency activities match the selected priorities and plans over a five-year planning cycle. While NSC would provide the focus on policy guidance, OMB would provide the focus on fiscal guidance. Such a review process could include the following elements:

- First, the NSSP would be taken as the baseline policy and programmatic guidance against which agency spending plans should be evaluated. In the early summer, before agencies submit their budget proposals to OMB for review, the NSC and OMB would co-chair a multi-agency review designed to clarify and emphasize the policy, programming, and fiscal guidance that agencies are expected to meet in drafting their budget submissions. These meetings would build on the “hearing” process in place today, but would be broader in scope and participation and would be held on a regular basis;



- Second, OMB and the NSC would co-chair another round of interagency meetings in the Fall to review draft budget submissions for consistency with the NSSP before the budgets are finalized; and
- Third, in the course of execution, OMB would review with each multi-agency task force the individual agency resource allocations and needs to make any required adjustments.

In the course of this process, any significant unresolved issues would be raised to the President for decision, as is the case today.

The Nation has not had a sustained strategic focus for its engagement policy development and execution since the Eisenhower era. To be effective, it will require a synchronized, integrated deployment of the full array of the Nation's capabilities. Changing our investment strategy cannot be accomplished overnight; a decade or more is likely required. Given our view, it is logical and prudent to begin this new construct with carefully selected long lead time shaping operations. Experience in engagement for selected issues, countries, and sub-regions will position the USG to ramp-up to larger scale engagement.

Figure 7 summarizes how the NSSP process would operate. First, the NSC drafts the NSSP, based on agency input. From the NSC rough cost benefit trades, the OMB will generate the cost involved, which in turn provides the basis for preliminary budget estimates of the draft NSSP.

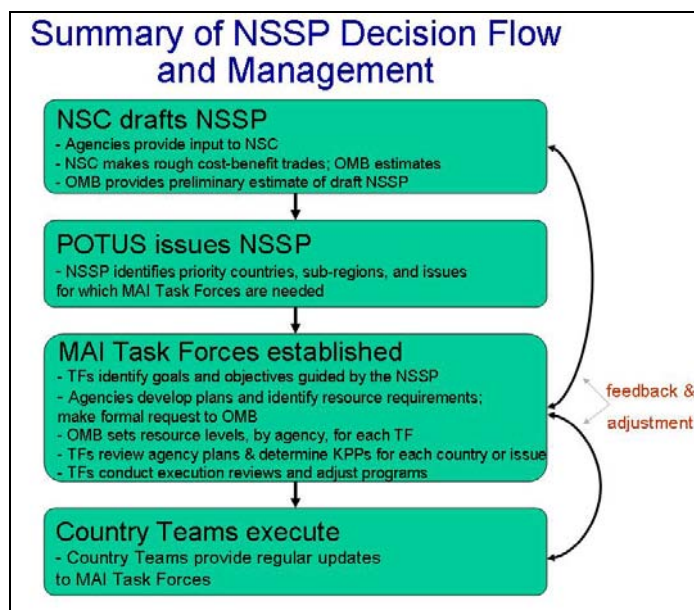


Figure 7. NSSP Decision Flow

Second, the President issues the NSSP. The NSSP identifies the priority issues, countries and sub-regions for which MAI Task Forces are needed.

Third, MAI Task Forces will be established. They will identify goals and objectives that will be guided by the NSSP. Agencies involved will develop plans and identify resource requirements as well as making formal budget requests to OMB, which will serve as the basis for the annual budget submission. OMB will then set resource levels, by agency, for each task force. The task forces will review agency plans and determine KPPs for each country or issue at hand. The task forces will also conduct execution reviews and adjust programs.

Finally, the country teams execute the approved programs. The KPPs for these plans are executed under clearly established lines of responsibility, authority, and accountability. Country teams provide regular updates to the MAI Task Forces.



## *MULTI-AGENCY INTEGRATION*

### **Findings — Capacity Building and Multi-Agency Integration**

The NSS sets forth ambitious goals, including the promotion and development of institutions of democracy and free enterprise. In some nations those goals can only be achieved only if the basic stabilizing institutions are fostered in order to enable the country to resist those that would undermine progress toward democracy and free enterprise. Each case may present special challenges and issues that will require carefully tailored and nuanced plans.

Clearly, shaping activities designed to create demand for and facilitate the development of democratic institutions and promote open and robust economies are no simple matter. They are not only difficult and complex; they need to be carefully choreographed to avoid unintended consequences. Even the most basic of activities cannot be done in a vacuum and without close coordination with other USG agencies and departments that are uniquely competent in the required domains for building free economies and democratic institutions. Indeed, in many shaping operations it is the civilian agencies, and not DoD, that will have lead responsibility. Moreover, these operations will frequently benefit from the participation of other nations, international organizations, and, of course, the involved country, all informed by the ongoing ebb and flow of the actions of non-governmental actors in politics, culture, and economics.

There are significant barriers to multi-agency coordination and integration. In broad terms there are two related problem areas:

- (i) The civilian agencies lack the capacity to be an effective partner with DoD in planning, managing and executing complex operations overseas; and
- (ii) Largely because of this asymmetry, there are cultural and institutional barriers that have impeded integration of effort.

In the civilian agencies, there is an absence of the basic capacities essential to being an effective partner: an expeditionary organizational culture; capacity to surge to action; a training and planning ethos; incentives to interact with other agencies to achieve specific goals; people (with resources) who have experience in massing and deploying resources; managing complex operations; and the funding flexibility to act and react promptly to seize opportunities, overcome impediments, and avoid failure. Moreover, the agencies lack the ability to deploy personnel to overseas operations, as the desk that would be vacated would remain unfilled during the course of such a deployment. Simply put, the agencies and their personnel do not expect that part of their mission is overseas deployment.

Moreover, civilian agencies generally do not have the capacity to plan, manage or execute overseas missions. The most basic tools resident at DoD (planning, exercising, red teaming, managing) are largely foreign to the civilian agencies.

Within the USG, the DoD, by virtue of the fact that it alone has forces at the ready and awaiting assignment, is perhaps uniquely capable of quickly responding to operational demands overseas. As a result, DoD is often called upon to operate in domains that are actually within the core competence of the civilian agencies or even the private sector.

Deployability and surge capacity are poor rationales for utilization of our national resources, compared to optimizing the allocation of expertise across the spectrum of USG capabilities.

To the extent that civilian agencies have people and resources overseas, these are typically fully committed and neither operational nor expeditionary. The lack of surge capacity and deployability is compounded by funding streams that are usually restricted to specific activities designated in annual appropriations bills. These pre-programmed categorical or earmarked funds do not provide civilian agencies with the contingency resources required to adapt to developing missions.

Initial steps, including the creation of the S/CRS, suggest there is growing recognition of this problem. The efforts at S/CRS have been promising and should be built upon, but in much greater depth, scale, and breadth. Absent a vastly greater investment, the U.S. civilian capacity will remain insufficient to meet the demands of the NSS.

Creating a civilian agency culture and capacity for action to complement those of the military will be expensive, difficult, and will take time—perhaps a decade. As that capacity is built, it will also be necessary to take concrete steps that will overcome the substantial cultural and institutional barriers that divide DoD and its civilian agency counterparts, much like the divide that separated the Services prompting the Goldwater-Nichols reforms.

## **Recommendations — Capacity Building and Multi-Agency Integration**

The solutions recommended match two distinct but related problems: The lack of adequate capacity in the civilian agencies that have the required expertise, and the cultural barriers to the integration of that expertise into an orchestrated effort with DoD.

Absent the required capacity in the civilian agencies, DoD lacks an effective partner that can plan and execute complex operations. However, even a robust civilian capability will not be effectively brought to bear if there are impediments in the integration of that capability with those of other agencies, including DoD. The DoD can both help bridge this divide and at the same time help build civilian agency capacity, by making accessible many of the kinds of tools and experience that it has, but that the civilian agencies lack.

At bottom, achieving close and coordinated integration of agency effort will not occur simply by requiring it; it is not a self-executing solution. This coordination will not happen unless the President demands it. It will further require a substantial investment in the civilian agencies and years of experience crossing the cultural divide. Like Goldwater-Nichols, implementation must occur with strong leadership (top down) and experimentation and experience in the day-to-day work of our soldiers and civilian personnel (bottom up). The ambitious goals set out in the NSS will simply not be achieved merely by making the kinds of modest investments made in S/CRS. Ambitious goals require ambitious actions. The civilian agencies' capacity for these tasks must be built virtually from the ground up.

- Civilian agency career paths and incentives must encourage and reward multi-agency education and assignment. This cannot happen without first creating billets designed for cross-agency exchanges. Not all exchanges need be formal or lengthy, and may consist of engagement on a

project or for a limited amount of time. Maximum flexibility should govern the design of various approaches that assure the experiences are useful for the agencies and the personnel involved;

- Civilian agencies must have the capacity to permit civilian agency education, training and deployment without crippling agency performance. This will require building-in a large (10%) “float”; and
- Current civilian agency personnel generally do not exist in an expeditionary culture. While that culture can be nurtured through incentives, it will also be necessary to recruit personnel who seek overseas deployments, and reward those who accept such assignments, particularly for assignments to out-of-the way places for extended periods.

The integration of civilian agency efforts, together with those of DoD, will require a fundamentally new way of doing business and the crossing of a vast cultural divide. The effort must be nurtured in a sustained fashion. Leaders’ support for coordination and collaboration with their counterparts is a necessary component of multi-agency integration. Yet, leaders’ concepts of how to facilitate multi-agency coordination should be supplemented and refined by the real-life experience of what works “in the field” or what happens in the “real world.”

To enhance the prospects of working together, DoD and USG civilian personnel should experience—in advance of a crisis—how to plan and work together in situations other than those currently existent in Afghanistan and Iraq. As the USG organizes to do such unique tasks, leaders will build trust and cohesion across the government and create multi-agency career paths and educational opportunities to produce well-rounded and culturally aware personnel. The foundation of skills and insights acquired by patient, long-term engagement will far better serve the Nation should the area fall to crisis. This will better inform the subsequent trades and paths available.

The use of a common set of tools and a uniform language to plan, execute, and assess missions is essential to success. Currently, DoD and the civilian agencies approach their individual missions with disparate sets of tools. To the extent that they even use the same kinds of tools (e.g. planning tools), they do not share common characteristics; they are individually created and tailored. It is not necessary to invent all such tools from scratch, as there are many workable planning, execution, and assessment tools available—many have been used by DoD for years. S/CRS, for example, has been developing multi-agency planning templates that could be utilized.

These models and tools should exist not only at the macro level but also at the micro level to guide field implementation. For example, imagine the potential power of a “Sim City” kind of tool in the hands of Civil Affairs officers and USAID counterparts who together are making critical investment decisions in towns and villages during the so-called “Golden Hour.” The often improvisational choices made in the field to spend the Commander’s Emergency Response Programs (CERP but also called CERF for Commander’s Emergency Response Funds) and Economic Development funds must be buttressed by models and tools that can be called upon to guide such decisions.

In some cases, there is a need to develop new tools to match new tasks. For example, there are few government models to guide the institution building and development in Afghanistan and Iraq. There are, however, a variety of development models used by the private sector that might be good places to start for long run shaping decisions. Experiments to develop new concepts of operations and models are an essential component of the building process. In addition, exercises and red teaming, essential elements of

the military's toolbox, need to be applied to multi-agency activities and operations to test and improve performance.

While it may not be necessary that the perfect tools exist before action can be taken, it is essential that the metrics are clearly understood and will tell us the extent to which we have been successful. The after-action reports and lessons learned can only be useful bases for modifications and improvements when we can measure success and understand the extent that we have achieved mission goals against the key performance parameters. While such measures exist in parts of the DoD environment, they are not used in Theater Security and Cooperation Plans, and there are few exemplars in the civilian agency environment that measure mission success vice activity levels. Unity of purpose cannot be achieved unless there are standardized tools by which we measure progress toward the achievement of goals.

Moreover, it is necessary to look outside the USG for solutions. It is necessary to survey, assess, and integrate the approaches and capabilities resident in allied militaries, NGOs, international organizations, and the private sector to ensure the USG is employing the best available tools and techniques.

## *DEPARTMENT OF DEFENSE*

### **Findings — Department of Defense**

Poor inter-Service coordination, lack of interoperability, and disparate efforts stimulated Congress to pass the 1986 Goldwater-Nichols Act.

The great complexity of the current security environment presents organizational challenges similar to, and perhaps even more difficult than, those addressed by Goldwater-Nichols. For example, currently the DoD lacks a formal process to align combatant commander TSCPs with State Department Mission Performance Plans; and there is too little multi-agency representation in important DoD decision-making bodies, especially at the operational level.

There is little DoD guidance that defines when and how to involve civilian agency partners in DoD's planning processes. The focus of security cooperation, for example, is too limited. TSCPs are under funded and too focused on strengthening foreign military capabilities, rather than enhancing the long-term stability of client nations by supporting actions that improve prospects for democratic forms of governance and market economies. USG support for the spread of democracy and market economy receives inadequate support from the DoD.

The challenges to effective multi-agency integration partly flow from some DoD processes and practices. DoD personnel do not have the training, education, and tools necessary to be effective in multi-agency planning—there are inadequate multi-agency exchanges, too few training and education programs, and too few DoD detailees to civilian agencies.

Figure 8 lists the agencies that have gained DoD detailees and the numbers of people assigned to such duty. The small numbers of DoD detailees to other parts of the USG illustrates that the human contacts and inter-personal trust necessary to carry out tasks is too thinly distributed given the skill-sets required for the complex and difficult goals of encouraging the formation of democratic institutions and free

market economies or for effective conduct of contingency and crisis operations. Consequently, interpersonal relationships necessary for multi-agency integration have to be created just-in-time or under extraordinary circumstances.

The MAI panel research and interviews lead to the simple conclusion that DoD personnel have not been prepared well to work with multi-agency partners in the field.

| ALL GAINING AGENCIES **                                             |             |            |           |           |           |
|---------------------------------------------------------------------|-------------|------------|-----------|-----------|-----------|
| (Details ending as of 08/02/2005)                                   |             |            |           |           |           |
| FOR OFFICIAL USE ONLY                                               |             |            |           |           |           |
| Activity                                                            | Row Summary | Officer    | Enlisted  | Civilian  | Unk Rank  |
| CENTRAL INTELLIGENCE AGENCY                                         | 32          | 19         | 5         | 8         |           |
| CIA/COMMUNITY MANAGEMENT STAFF                                      | 1           | 0          | 0         | 1         |           |
| CIA/COUNTER-PROLIFERATION CENTER                                    | 1           | 1          | 0         | 0         |           |
| CIA/NATIONAL INTELLIGENCE COUNCIL                                   | 1           | 0          | 0         | 1         |           |
| DEPARTMENT OF ENERGY                                                | 25          | 25         | 0         | 0         |           |
| DEPARTMENT OF ENERGY/NATIONAL NUCLEAR SECURITY ADMINISTRATION       | 1           | 1          | 0         | 0         |           |
| DEPARTMENT OF HEALTH & HUMAN SERVICES/CENTER FOR DISEASE CONTROL    | 1           | 1          | 0         | 0         |           |
| DEPARTMENT OF HOMELAND SECURITY - DOMESTIC NUCLEAR DETECTION OFFICE | 3           | 1          | 0         | 2         |           |
| DEPARTMENT OF INTERIOR                                              | 1           | 1          | 0         | 0         |           |
| DEPARTMENT OF JUSTICE                                               | 3           | 3          | 0         | 0         |           |
| DEPARTMENT OF STATE                                                 | 67          | 62         | 1         | 1         | 4         |
| DOJ/FEDERAL BUREAU OF INVESTIGATIONS                                | 1           | 0          | 0         | 1         |           |
| DOT/FEDERAL AVIATION ADMINISTRATION                                 | 12          | 10         | 2         | 0         |           |
| DRUG ENFORCEMENT ADMINISTRATION                                     | 23          | 12         | 11        | 0         |           |
| IG CRIMINAL INVESTIGATOR ACADEMY - Rosslyn                          | 1           | 0          | 0         | 1         |           |
| NATIONAL AERONAUTICS & SPACE ADMINISTRATION                         | 34          | 34         | 0         | 0         |           |
| NATIONAL COUNTERTERRORISM CENTER                                    | 59          | 2          | 0         | 2         | 55*       |
| NATIONAL SECURITY COUNCIL                                           | 36          | 12         | 0         | 17        | 7         |
| OFFICE OF NATIONAL DRUG CONTROL POLICY                              | 8           | 8          | 0         | 0         |           |
| OFFICE OF THE VICE PRESIDENT                                        | 2           | 1          | 0         | 1         |           |
| SENATE                                                              | 1           | 1          | 0         | 0         |           |
| U.S. COAST GUARD                                                    | 4           | 3          | 0         | 1         |           |
| WHITE HOUSE GENERAL COUNSEL                                         | 2           | 1          | 0         | 1         |           |
| WHITE HOUSE HOMELAND SECURITY COUNCIL                               | 2           | 2          | 0         | 0         |           |
| WHITE HOUSE MILITARY OFFICE                                         | 1           | 1          | 0         | 0         |           |
| <b>TOTALS</b>                                                       | <b>323</b>  | <b>201</b> | <b>19</b> | <b>40</b> | <b>62</b> |

\*There are approx 55 Defense Intelligence professionals (civilian and military) assigned

\*\* Source: Office of the Director of Administration & Management, OSD

Figure 8. All Gaining Agencies Matrix (dated)

## Recommendations — Department of Defense

There are several concrete actions to foster multi-agency integration. Guidance should be developed to foster multi-agency planning. This guidance would provide the means to insert multi-agency inputs into the Joint Planning Processes.

This doctrine might include the creation of new mechanisms to enable robust DoD support of MAI planning processes building on the Joint Inter-Agency Coordinating Groups (JIACG). Current JIACGs are chartered and manned to focus primarily on supporting the combatant commanders in a lead agency capacity (e.g. counter terrorism operations). In those countries where the DoD is not the lead agency, the lead agency in the country team should evolve the JIACG concept to be a tool that better integrates the multi-agency team to execute the NSSP. The overall goal is to foster and enable holistic, operational-level, full-spectrum, civil-military planning and create greater unity of effort.

The MAI panel recommends opening up to 10% of the current Joint Professional Education seats in our Joint and Service schools to non-DoD multi-agency civilian professionals— and sending a commensurate percentage of career military officers to multi-agency educational opportunities. The DoD training and education system will have to develop an appropriate curriculum for instruction at all levels of professional development. This should be augmented by utilizing the full range of USG and civilian higher education institutions in much the same way as they are used for Foreign Area Officer Specialists, engineers, physicians, or other professionals.

There are several nascent attempts to “cross pollinate” officers, including Service National Fellows Programs to United States Agency for International Development (USAID), Center for Strategic and International Studies (CSIS), and RAND Corp; military officers; the Foreign Service Institute; and non-DoD officers attending National War College and Marine Corps Command and Staff College. These programs are creating well-rounded multi-agency qualified officers, but the attendees are not being tracked or utilized to their full potential following training. To make this cross education work, screening and utilization of multi-agency officers must be standardized and made a desirable career choice for our top performers.

The DoD should inculcate, into the entire officer corps, the perspectives and skills sets of the Nation’s very best combatant commanders. Implementing this recommendation entails adding MAI skills to the current mixture of Service and Joint skills, increasing the number of MAI qualified personnel to 10% of the warfighters eligible for Joint assignment, adapting DoD’s training and education system to these requirements, and ensuring that the officer promotion system rewards MAI education and experience in a manner similar to that of Joint education and experience.

Related to increasing the number of DoD educational slots available to non-DoD personnel, the MAI panel recommends increasing the number of DoD detailees to civilian agencies by a factor of ten. The point of this recommendation is to leverage DoD planning expertise and populate diverse multi-agency staffs. It is important to underscore that the Panel is not recommending details exclusively of long length. Indeed, it may, in many circumstances, be more useful for the agencies and for the DoD personnel for details to be project oriented or limited to short periods of time. The key is for there to be an important learning experience and contribution.

Finally in this regard, it is essential that DoD track the personnel who have gained these experiences (in the classroom, training, or by details), in order to assess individual career development and to build a database of expertise that can be tapped.

The MAI panel sees a requirement for a dedicated Diplomatic Advisor to the SecDef. This senior foreign service officer would function as the direct liaison between the Secretary of State and the SecDef. The Diplomatic Advisor is not intended to replace the close historic interaction required between the two senior cabinet secretaries, but rather serves as a dedicated asset for the SecDef to be intimately involved in all aspects of DoD planning and execution so that the Secretary has a ready resource to consult. Additionally, the Diplomatic Advisor could keep the Secretary of State fully informed of DoD issues that would require support from other agencies of the USG.

While complementary education and cross assignment of personnel will assist with multi-agency integration, a major impediment to integrated planning continues to be the disparity between classification

systems and levels of access between the multiple government agencies. DoD and Intelligence Community concerns with operational security (OPSEC) have unduly inhibited effective multi-agency integration, especially in planning. These OPSEC concerns have been exacerbated by past bad experiences with leaks of classified information when plans were shared, or over-classification of contingency plans that have effectively shut out multi-agency partners from critical planning until the last minute. An environment of distrust has inhibited multi-agency efforts.

Civilian agency expertise cannot be applied effectively to the large, complex, and cross-cutting shaping problems unless civilian personnel have been cleared and granted access to operational and contingency plans. Applying civilian substantive expertise is necessary to ensure the inclusion into DoD planning of realistic assumptions and a thorough understanding of civilian agency authorities, capabilities, and limitations. This can be done in ways that do not undermine OPSEC.

Because the routine operational environment in many relevant civilian agencies does not require them to handle classified information, the civilian agencies do not have adequate cleared personnel to participate in DoD operational and contingency planning. Civilian agencies may need DoD assistance in obtaining the necessary clearances.

Finally, DoD planning and execution are conducted in a distributed collaborative network that operates at multiple classification levels and extends from Washington down to the tactical level. This same capability must be extended to civilian agencies in order for them to contribute effectively in a holistic planning and execution environment. Initially, this can be accomplished in a cost effective manner by extending the capability to relevant civilian agency planning and leadership nodes as well as selected U.S. embassies. In the long term, however, a true U.S. government-wide, multiple classification level system is required in order to achieve holistically integrated civil-military planning and execution with the capacity to extend into the multinational environment. This system must be developed and fielded with U.S. multi-agency and key multinational partners to ensure seamless interoperability.

## **APPENDIX A: PANEL MEMBERSHIP**

### **CHAIRPERSON(S)**

Mr. Michael J. Bayer, *Consultant*

### **MEMBERS**

Ms. Michele A. Flournoy, *Center for Strategic and International Studies*

Mr. Alan R. Schwartz, *Private Consultant*

### **GOVERNMENT ADVISORS**

Col Christopher C. Conlin, USJF, USMC, *Multinational/Interagency Experimentation Directorate*

Mr. Phillip Kearley, *Interagency Experimentation Directorate*

Dr. Mark D. Mandeles, *OSD, OFT*

Dr. John G. (Jerry) McGinn, *Special Assistant to the Principal Deputy, OUSD(P)*

### **DSB SECRETARIAT**

LtCol David Robertson, USAF, *Defense Science Board*

### **STAFF**

Ms. Kimberlee Moore, *SAIC*



## **APPENDIX B: GUEST BRIEFERS**

### **FEB 23, 2005**

---

- Ambassador Jim Dobbins, *The Rand Corporation*
- Secretary Marty Hoffman, *DoD Reconstruction Support Office*
- Ambassador Carlos Pascual, *Coordinator, Office of the Coordinator for Reconstruction and Stabilization*
- Mr. Daniel Serwer, *United States Institute of Peace*

### **MARCH 9, 2005**

---

- Mr. William Cave, *SAIC*
- Mr. John Hamre, *President & CEO - Center for Strategic & International Studies*
- Mr. David R. Oliver, *EVP and COO - EADS North America*
- Robert M. Walker, *Senior VP - Plexus Scientific*

### **MARCH 23, 2005**

---

- Dr. Jeffrey Nadaner, *Deputy Asst SecDef, Stability Ops*
- ADM Dennis Blair, *USN (ret.), President, Institute for Defense Analyses*

### **MARCH 25, 2005**

---

- BGen John F. Kelly, *Legislative Assistant to the Commandant of the Marine Corps*
- Mr. Len Hawley, *Consultant to USJFCOM*

### **APRIL 6, 2005**

---

- Mr. Vince Vitto, *DSB, President & CEO -The Charles Stark Draper Lab, Inc.*
- Dr. Craig Fields, *Senior Fellow, Defense Science Board*
- Mr. Andy Hoehn, *The RAND Org.*
- Mr. Lawrence Cooley, *President, Management Systems Int'l*
- Prof Erik Kjonnerod, *National Defense University; Institute for National Strategic Studies*
- Dr. Linton Wells II, *Asst SecDef for Networks & Information Integration, DoD CIO (Acting)*
- Mr. Chris Burnham, *Acting Undersecretary for Resource Management, State Department*
- Mr. Sid Kaplan, *DAS, Strategic and Performance Planning*
- COL Joe Anderson, *U.S. Army*
- Mr. Andrew Natsios, *Director, USAID*

- Mr. Frank Miller, *The Cohen Group*
- MG Robert Wood, *JE/JFCOM Joint Futures Lab*

***MAY 10, 2004***

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- MG Altshuler, *CG U.S. Army Civil Affairs and PsyOps Command (Airborne)*

***MAY 24, 2005***

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- Mr. Paul McHale, *Asst SecDef Homeland Defense*
- COL John Peabody, *U.S. Army*

***JUNE 2, 2005***

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- Mr. John Hartford Sr., *Advisor to the NCIX, ONCIX*

**APPENDIX C: ACRONYM INDEX**

|        |                                                                |
|--------|----------------------------------------------------------------|
| CERF   | Commander's Emergency Response Funds                           |
| CERP   | Commander's Emergency Response Program                         |
| CSIS   | Center for Strategic and International Studies                 |
| DoD    | Department of Defense                                          |
| DSB    | Defense Science Board                                          |
| JIACG  | Joint Inter-Agency Coordination Group                          |
| KPP    | Key Performance Parameters                                     |
| MAI    | Multi-Agency Integration                                       |
| MPP    | Mission Performance Plans                                      |
| NGO    | Non-Governmental Organizations                                 |
| NSC    | National Security Council                                      |
| NSS    | National Security Strategy                                     |
| NSSP   | National Security Strategic Plan                               |
| OEF    | Operation Enduring Freedom                                     |
| OIF    | Operation Iraqi Freedom                                        |
| OMB    | Office of Management and Budget                                |
| OPSEC  | Operational Security                                           |
| S/CRS  | Office of the Coordinator for Reconstruction and Stabilization |
| SecDef | Secretary of Defense                                           |
| TOR    | Terms of Reference                                             |
| TSCP   | Theater Security and Cooperation Plans                         |
| USAID  | United States Agency for International Development             |
| USG    | United States Government                                       |
| WMD    | Weapons of Mass Destruction                                    |

## PART 4: FORCE CAPABILITY EVOLUTION PANEL REPORT

|                                                                            |     |
|----------------------------------------------------------------------------|-----|
| Chapter I. Introduction.....                                               | 199 |
| Chapter II. The Culture of Transformation.....                             | 205 |
| Chapter III. Overview of the Progress in Institutional Transformation..... | 207 |
| Chapter IV. Joint Combat Operations Transformation.....                    | 211 |
| Chapter V. Joint Command and Control Transformation.....                   | 213 |
| Chapter VI. Network-Enabled Operations Transformation.....                 | 217 |
| Chapter VII. Operational and Tactical Intelligence Transformation .....    | 221 |
| Chapter VIII. Joint Force Management Transformation .....                  | 223 |
| Chapter IX. Force Deployment and Sustainment Transformation .....          | 227 |
| Chapter X. Education and Training .....                                    | 229 |
| Chapter XI. Transformation in Resourcing Joint Solutions.....              | 233 |
| Chapter XII. Key Recommendations.....                                      | 235 |

### PART 4 APPENDICES

|                                   |     |
|-----------------------------------|-----|
| Appendix A. Panel Membership..... | 237 |
| Appendix B. Guest Briefers .....  | 238 |
| Appendix C. Acronym Index .....   | 239 |



## I. INTRODUCTION

This report represents the assessment of the panel on Force Capability Evolution on the progress of transformation and identifies key areas for accelerating transformation. The panel addressed transformation issues through the lens of three different perspectives: an historical perspective that compared the performance of U.S. military forces in the Gulf War of 1991 with that of Operation Iraqi Freedom; the Secretary of Defense's own "Transformation Perspective" of April 2001; and the Department's "Defense Strategy" of March 2005. From those perspectives the panel identified key areas of force capability transformation and then assessed the progress or the weaknesses in the Department's transformation efforts. The panel has followed a consistent format in this report by first presenting a series of background assessments on transformation areas – in positive as well as negative terms – before making specific, actionable observations as to those measures and actions which the Department should take to improve its efforts to transform and innovate. This report concludes with five specific recommendations for the Secretary of Defense.

### *KEY AREAS OF FORCE CAPABILITY TRANSFORMATION*

The Panel organized the key areas of transformation in the following ten sections:

1. The Culture of Transformation
2. Institutional Transformation Progress
3. Joint Combat Operations
4. Joint Command and Control
5. Network-Enabled Operations
6. Operational and Tactical Intelligence
7. Joint Force Management
8. Force Deployment and Sustainment
9. Education and Training
10. Resourcing Joint Solutions

### *HISTORICAL PERSPECTIVE ON TRANSFORMATION*

The period from the Gulf War of 1991 to Operation Iraqi Freedom in 2003 – twelve years – suggests much, not only about the changes that took place during that period, but about the nature of transformation itself. However one might judge the Department's efforts, it was clear by April 2003 that U.S. military capabilities had improved enormously in a number of areas over that period. Thus, the hows and whys of that improvement, as well as the weaknesses that remained in the second conflict against Iraq possess important lessons for thinking about potential courses the Department might chart in its future transformation efforts.

Transformation is much more than simply modernizing equipment. In effect, the period between the two Iraq wars was one of limited resources and increasing operational tempo. The Services, as well as the Joint world, reacted differently, but all drew significant lessons from the first Gulf War, most of which, when implemented, served to improve operational and tactical capabilities significantly. Moreover, the experiences of Vietnam had burned themselves into the psyche of senior officers in all the Services of the need for fair, honest, and ruthless examination of the lessons learned in combat.

The leaders of the Army and the Marine Corps drew the most profound lessons from the first Gulf War. Senior leaders in both Services felt that the absence of a ground component commander had a negative impact on the hundred-hour war that had allowed the bulk of the Republican Guards to escape from the Kuwaiti Theater of Operations. Moreover, given General Norman Schwarzkopf's dismissal of special forces, there was a belief among many that the Joint Commander would have to utilize the full panoply of special operations forces (SOF) capabilities in the next conflict.

The Air Force moved in a different direction, but one suggested by the conceptional and technological success of its air campaign against Iraq's integrated air defense system (IADS). In the conceptual area, the influence of the effects-based approach that destroyed Iraq's air defenses in a matter of hours pushed air planners to move from the target lists of the Vietnam War to a targeting philosophy that aimed to achieve the systemic collapse of the enemy's capabilities and will. On the technological side, the success of the F-117s and precision weapons led the Air Force to emphasize a wide range of technological developments to improve the implementation of an effects-based approach. The emphasis on stealth and precision weaponry led to considerable improvements in capabilities. But equally important were the improvements in surveillance and reconnaissance platforms, such as JSTARS and UAVs and their integration into operations. At the end of the last century the Air Force also moved to an organizational approach that emphasized Air Expeditionary Forces, a move that made it more deployable and flexible in meeting the operational and tactical challenges that might confront its forces.

The Navy recognized that it had not been connected to the emerging Joint world, when its carriers had arrived in the Gulf at the end of 1990 and early 1991. The fact that the Air Tasking Order (ATO) had to be flown out to the carriers every day, because they did not possess the communications and computers to download the ATO speaks volumes as to the lack of connectivity between the Navy and the other Services. Nor did Navy aircraft possess either stealth or precision capabilities. The implications of the first Gulf War, as well as the new strategic environment which emerged with the collapse of the Soviet Union, led the Navy to develop with the Marine Corps the concept of "From the Sea" – one of the first concepts to move beyond the Cold War. Moreover, both Navy and Marine aircraft now worked smoothly in the Joint environment to strike deep into Afghanistan and Iraq with precision weapons. And in Operation Iraqi Freedom, the Marines went farther and deeper from the sea than had ever been the case before in their history.

In many ways, the changes in this period were more impressive than those occurring between the end of Vietnam and 1991. Yet, not all of the transformation that took place between the Gulf wars resulted from the lessons of the first. The successes of the second period rested on the intellectual and doctrinal ferment that had occurred in the 1970s and 1980s. The debates within the Army had resulted in no less than three different iterations of FM 100-5 between 1976 and 1986, but they also unleashed a revolution in how ground forces conceived of maneuver and fire, which reached full fruition in 2003. Similarly, debates within the Marine Corps led to the publication of FMFM 1, *Warfighting*, in the late 1980s, which

in turn pushed development of a series of carefully crafted and perceptive Marine doctrinal manuals in the late 1990s. Thus, the transformation that occurred between the two Gulf Wars rested on a firm foundation of the intellectual developments of the 1970s and 1980s.

Similarly, significant changes occurred during the earlier period in Service approaches to professional military education. In the Navy, Admiral Stansfield Turner's intellectual revolution at the Naval War College in the early 1970s reverberated through the systems of professional military education into the 1980s. At mid-point of that decade, the Army founded the School of Advanced Military Studies, which provided a second year of intensive education in operational concepts – past, present, and future – for a select group of graduates of the Command and Staff College. The Marine Corps and Air Force soon followed with their own second year programs, the School of Advanced Warfare and the School of Advanced Airpower Studies. By the early years of the twenty-first century, graduates of these schools were not only having a profound impact on planning staffs, but were beginning to reach the higher levels of command. Unfortunately, the advances in professional military education (PME) came to a halt in the 1990s. Stasis rather than change came to be the mark of the system, while senior leaders increasingly devalued the importance not only of PME but wider education in languages, culture, and history. Why this was so is not entirely clear, but the increasing tempo of operations and the retirement of most of the Vietnam War generation, with its sense of the ambiguities and uncertainties of war, undoubtedly played roles in the decline in interest in PME.

While these changes were occurring in the intellectual and conceptual framework within which the Services were transforming in a radically new strategic environment, the influence of the Goldwater-Nichols Act of 1986 was having a considerable effect on how the U.S. military thought about and prepared for war. The dismal lack of cooperation in “Urgent Fury” – the invasion of Grenada in October 1983 – had pushed the Congress to impose a fundamentally new approach to Joint warfare on the Department. By 1990 when the Iraqis invaded Kuwait, the renewed emphasis on Jointness had reached the point where there was a Joint Air Component Commander and a single Joint air campaign that wrecked Iraq's air defenses and military. However, there was no ground component commander, and the Army and Marine Corps efforts represented, to all intents and purposes, independent campaigns. In 2003, a very different situation obtained. The role of the Coalition Forces Land Component Commander and the level of cooperation between the Army's V Corps and its 3<sup>rd</sup> Infantry Division on one hand and the Marine Corps' I MEF and 1<sup>st</sup> Marine Division speaks volumes about the transformation of ground operations that had occurred since the first Gulf War.

Another piece pushing transformation resulted from the revolution in how the U.S. military trained its forces. The National Training Center, “Top Gun,” “Red Flag,” Marine Air Weapons Training Squadron, and Twenty-Nine Palms all contributed by their realistic training regime to the sharpening of peacetime military capabilities to a degree that had never been possible before. This revolutionary training regime received additional impetus through the experiences the Services gained from their experiences on active operations. The first Gulf War is the most obvious case, but Panama, Somalia, Haiti, Bosnia, the air war against Serbia, and Kosovo all provided their share of lessons. Finally, Operation Enduring Freedom, which led to the overthrow of the Taliban in Afghanistan, provided a dress rehearsal for the campaign that overthrew Saddam's baleful regime. Included in the training revolution has been the creation of increasingly sophisticated lessons-learned processes that have enabled the Services and the COCOMs to focus on and absorb the lessons of Bosnia, Kosovo, the air war against Serbia, and Operations Enduring Freedom and Iraqi Freedom.



The results of the transformation that Operation Iraqi Freedom underlined are clear. The planning processes of Joint Staffs and among the Services have significantly improved. The level of cooperation, coordination, and collaboration in CFLCC – Combined Forces Land Component commander – between Marine and Army planners in V Corps and I MEF was unprecedented. Air-ground cooperation was almost seamless. Ground maneuver forced the Iraqis to move and that movement then allowed Coalition air power to ravage the enemy. Moreover, there was a willingness to use forces in non-doctrinal roles and to mix and match forces in accordance with mission needs rather than according to doctrinal preconceptions. This was particularly true of the extraordinary cooperation between SOF and conventional forces. In northern Iraq, special forces and conventional forces held the Iraqis in place, while they were seizing the oil fields around Mosul. Similarly, special forces prevented the Iraqis from firing SCUDs from the desert baskets where they had caused so much trouble in 1991 and managed to persuade Saddam that the main American drive was going to come out of Jordan rather than from the south. These transformations have carried over into cooperation among and between the Services in the current military operations in Iraq.

Perhaps the most important indication of transformation in the second Iraq War lay in the adaptability and flexibility that commanders displayed from platoon level to division commanders. The culture of command, particularly in the Marine Corps and in the Army, that had emerged by 2003 was that of mission-type orders, decentralized execution of orders, and adaptability to the actual conditions of combat rather than attempts to enforce preconceived assumptions. For the most part, subordinate commanders found themselves empowered by their superiors. Experiences in the post-conflict phase of Operation Iraqi Freedom have underlined that the adaptability and flexibility of subordinates is not only critical in the current fighting in Iraq, but may be even more important in the future.

There are two other areas where significant transformation has occurred. First, Service logistics were clearly more flexible and adaptable. Instead of the mountain of supplies and ammunition that showed up in the massive dumps in Saudi Arabia in 1991, Service logistics in Operation Iraqi Freedom were more closely tied to the operational design and unfolding military operations. Nevertheless, much remains to be done in terms of transforming logistical and deployment systems to make them more agile, responsive, and adaptable to operational and tactical needs in situations that will undoubtedly remain uncertain and ambiguous. Second, the fact that senior commanders in Operation Iraqi Freedom were comfortable working with and within a Joint environment played an important role in the success of U.S. military operations. The bottom line is that the American military did much more than simply modernize their forces between 1991 and 2003. In effect, it created forces that used new and existing capabilities in innovative and adaptable ways to transform significantly the ‘American way of war.’

## *IMPLICATIONS FOR THE FUTURE*

The revolution in technology which is having such an impact on globalization and the civil world has enormous implication for the processes and course of transformation within the Department. Just as the period between 1870 and 1914 saw civil science and technology drive military transformation, the U.S. military confronts a world that is undergoing enormous technological and social changes. The situation is very different from the Cold War or World War II where changes in military technology drove technological change in the civilian world. The result is that in many ways the young officers and enlisted

are more familiar with new technologies than their superiors. What the impact of this situation is going to be is difficult to predict, but it is profound.

What are the larger lessons of the transformation of the Joint and Service worlds and what do they suggest about how to think about future transformation? First and perhaps most important is the issue of how honest and forthright future lessons-learned processes will remain. So far the evidence indicates that the lessons of the current conflict have had a considerable impact on the Department and the Services. Nevertheless, there remain areas of concern. While the U.S. military has just conducted a brilliant conventional operation, it clearly needs to assess the political and strategic consequences for the post-conflict phase with considerable rigor and honesty. It will also confront considerable challenges in adapting to the culture of adaptation and flexibility that has emerged among junior officers and NCOs in Iraq and Afghanistan. It has been clear for a number of years that the acquisition system is far too complex, bureaucratic, and unimaginative. The requirements and acquisition communities require transformation into organizations that willingly and enthusiastically support those on the sharp end. Clearly, the emerging strategic environment suggests that Joint force commanders must be able to use the forces the Services provide with the same flexibility and adaptiveness that has been the case thus far in Iraq and Afghanistan. Over the past decade and a half the greatest advances have come from collaboration among the Services at the operational and tactical levels. Thus, one of the major difficulties the Department will confront will be to extend that culture of collaboration to areas beyond tactics and operations, particularly to the interagency arena.

The process of transformation requires a willingness to change the organizational culture and that effort demands an acceptance of external ideas, willingness to experiment, and an empowerment of subordinates to make fundamental decisions without interference from above. There are at present two cultures in the Department. The first is an open culture exemplified by the men and women serving in Iraq, who are enthusiastically embracing change in the face of an adaptive, murderous enemy. They are eager for new ideas and approaches and have been more than willing to experiment with non-traditional methods.

The second culture within the Department is entirely bureaucratic in nature. It has at its heart a “business as usual” attitude. It is risk adverse, suspicious of innovation, and hostile to non-traditional methods or ideas. Above all, it is uncomfortable with empowerment. This bureaucratic culture poses two dangers. If allowed to, it will stifle meaningful transformation. But equally important, it has the potential to drive out the most creative and effective practitioners of the Department’s real business: the preparation of its military forces for war.

In the following pages, we present a number of actionable observations that can speed transformation of the Department’s capabilities in a number of key areas. If implemented, they should help continue the Department’s trajectory, which over the past decade-and-a-half has achieved such an impressive record of success. They even offer some hope of transforming portions of the bureaucratic culture that is so bedeviling the Department at present.

## *THE ENGINES OF CHANGE*

There are several basic principles that have guided successful periods of innovation in the past, including the period between the two Gulf wars. Such principles were certainly major factors in the success of those efforts that transformed the American military that we discussed in the introduction. For the most part, they suggest simple truths, but as Carl von Clausewitz suggested in his classic *On War*, in human conflict, more often than not, “the simplest thing is difficult.” We believe that the “Engines of Change” can serve as a useful guide for the senior leaders in the Department as they address the critical tactical, operational, personnel, educational, and technological issues that must intersect, if America’s military organizations are to continue on their successful paths to transformation in the twenty-first century. Moreover, the Department needs to apply these “Engines of Change” to other mission areas such as stability operations and homeland security.

- *Commitment to the mission*
- *Clear accountability of outcomes*
- *Recognizing a changing world and operational environment*
- *Senior leadership guidance and support for change*
- *Conceptual underpinnings and operating concepts relevant to the environment – intellectual capital*
- *Innovative and adaptive operating forces*
- *Lessons of realistic experiments and combat operations*
- *Commitment to realistic training and professional education*
- *Accounting for an adaptable, learning adversary*
- *Key technologies – precision, ISR, communication*
- *Expand knowledge of other cultures*

## II. THE CULTURE OF TRANSFORMATION

An inherently, agile learning organization is key to the Department's transformation efforts. The integration and synergy that true Jointness brings in its wake represents the most powerful transformation concept. The American people have witnessed a significant improvement in the Joint performance of their military forces in Operation Iraqi Freedom, especially when compared to the conduct of Joint operations during the 1991 Gulf War. These improvements are attributable to several factors. First, the greatest advances have come from the Joint cooperation among the Services. Senior commanders, their staffs, and their subordinate elements are now comfortable in a Joint environment. Interdependence was the hallmark of Joint operations during Operation Iraqi Freedom, as compared to the conduct of separate Service operations during Desert Storm. Second, the operational demands of peacekeeping during the 1990s forced changes on the U.S. military, especially in the use of forces in roles inconsistent with then existing doctrine. Third, enlightened and empowered subordinate commanders have proven to be force multipliers.

During the period between the Gulf Wars, the Department has had to engage in a wide spectrum of activities – planning, major combat operations, peacekeeping, stability, security, and reconstruction. Joint warfighting skills have improved dramatically, with an emphasis on planning and more traditional military operations. Nevertheless, weaknesses in doctrine and training and a lack of conductivity has hindered the ability to support the increasing demands for peacekeeping and stability operations – especially those involving coalitions. The lack of conductivity with other U.S. government agencies in the planning and conduct of operations has also impacted negatively on the effectiveness of U.S. military power.

The ongoing redeployment of U.S. military forces to North America may have the unintended consequence of creating a more insular military, the leaders of which will possess less understanding of the cultural and historical differences that other peoples and religions possess. There are already some indications that U.S. military personnel, at different levels, have lacked the requisite cultural and historical knowledge to deal with situations in foreign lands and in some cases even with America's Allies.

Future cultural conflicts, clashes, and discontinuities will require intelligence organizations that understand other societies, cultures, languages, and histories, in addition to being able to analyze military capabilities and forces. Joint commanders and planners will also have to understand such factors, as they confront a spectrum of operations from peacekeeping through stability and reconstruction operations. Such understanding requires a long-term transformation of significant portions of the officer corps and portions of the NCO corps. It will also require substantial changes in the current PME and personnel systems and a shift in priorities to ensure that education receives as much attention as the Department's senior leaders currently devote to training.

### *THE CULTURE OF TRANSFORMATION: ACTIONABLE OBSERVATIONS*

The emerging strategic environment suggests the need for greater flexibility in career paths to achieve sustained competence in linguistic and cultural skills. Area experts, who possess the requisite linguistic

and cultural skills, will be key to the Department's ability to address the emerging strategic environment successfully. Moreover, the Department must spread such knowledge far more widely among its officers and NCOs than just a few foreign area specialists. The current personnel systems lack the flexibility to permit individuals to invest the time and energy to acquire such background knowledge. Flexible career paths, which encourage area specialization as well as specialized study, will help to ensure an agile, adaptive force that can deal effectively with the uncertain cultural conflicts of the future. Exchange tours for military and civilian personnel not only to other U.S. government agencies, but to foreign nations as well must become the norm rather than the exception. Expanded opportunities for exchange tours will result in an enlightened and empowered work force that looks for innovative and collaborative paths to identifying solutions to the problems of the emerging strategic environment.

The Department can accelerate the incorporation of operational lessons learned into doctrine, education, and acquisition strategies. Accelerating the incorporation of the operational and tactical lessons from ongoing operations and experimentation directly into U.S. forces, formal educational curricula at PME schools, and future acquisition strategies is essential to meeting the challenges of the future. Thus far, the Department has been most successful in sharing with, incorporating into, and integrating the lessons of its operations into the training base and its combat forces. It needs a similar focus on moving such lessons back into the school house and the acquisition communities.

### III. OVERVIEW OF THE PROGRESS IN INSTITUTIONAL TRANSFORMATION

The Services, the regional and functional COCOMS, the Department, the Department's agencies, and the Joint Staff have all taken steps to transform their operational approaches, management processes, and organizational structures with varying degrees of success. Interactions among and between these large organizations have provided both opportunities for and constraints on transformation. There remain areas where the Department has not clearly delineated or executed responsibility or accountability. The remainder of this section provides further background and assessments on how major Departmental organizations are managing their transformation efforts. It will then distill a set of actionable observations that, if implemented, will further accelerate institutional progress towards transformation.

#### *SERVICE TRANSFORMATION*

Each of the Services is clearly taking transformation seriously, although each defines and approaches the issue differently. The Army has moved to a modular brigade structure and is using the development of the future combat system (FCS) and spiral development as the best way to approach near-, mid-, and long-term force capability transformation. Within FCS and related programs (e.g. Joint Tactical Radio System, Warfighter Information Net-Tactical, and Deployable Common Ground Station) Army innovators are working to network-enable the entire force.

The Navy is already an expeditionary force, so its focus is on evolving capabilities it already possesses in programs like F/A-18/F/G, Joint Strike Fighter (JSF), Multi-Mission Maritime Aircraft (MMA), and DDX. The Navy, along with the Marine Corps, is also examining the implications of radical capability shifts with major initiatives like Sea Basing and FORCE Net, although to date neither program has been adequately scoped or funded. Like the Navy, the Marine Corps is already expeditionary, so its major focus is on current capability evolution with programs like the Advanced Amphibious Assault Vehicle (AAAV), V-22, CH-53X, and the STOVL version of the JSF.

The Air Force has moved to an Air Expeditionary Force (AEF) structure and has numerous capability programs underway such as the F/A-22, JSF, and MC2. It also has a robust set of S&T efforts underway in areas like space (surveillance, imagery, and communications), directed energy, and hypersonics, all of which will possess transformational possibilities.

Senior Service leaders have committed themselves to greater Jointness, while Service transformational efforts are sustaining momentum. Nevertheless, prevailing doctrine, existing processes, long-standing sub-cultures, and past decisions have a considerable impact on Service efforts and choices. Unfortunately, Joint concept processes remain disconnected and dysfunctional, which has provided the Services no Joint roadmap to follow. Given that Department investment accounts will likely decline significantly in coming years, the Department is going to have to make tough decisions and programmatic choices. The current processes do not serve the Department well.

However, when combat operations occur, the deployed forces have found ways to work together in a truly transformational fashion, as Operations Enduring Freedom and Iraqi Freedom have amply

demonstrated. At present the Service systems capture the lessons from combat operations and apply that knowledge to their training programs as well as their future operational planning efforts. Nevertheless, they are not so successful in incorporating the lessons of recent combat experience into their systems of PME.

## **Regional COCOM Transformation**

The Regional COCOMs are literally transforming how they operate on the fly. As amply documented elsewhere in this report, CENTCOM has transformed OEF and OIF operations due to the adaptability and flexibility that commanders have displayed from platoon level to division commanders. The other three Regional COCOMs are also on the move. Examples of truly outstanding transformational performance include PACOM's lead in South Asia Tsunami relief, SOUTHCOM's continued war on the drug trade, and EUCOM's military initiatives throughout Eastern Europe and their implementation of a comprehensive C2 system.

Regional COCOMs can play a valuable role in defining the required capability needs of military forces. However, the current Integrated Priority List (IPL) is not effective in gathering capability needs and influencing the front-end of the programming cycle. In general the Department has failed to assess how well the finalized POM output has satisfied COCOM requirements.

In terms of the Department's programmatic processes, the Regional COCOM voice is relatively weak. This is understandable, given their principal focus on operations and the lack of sufficient staff and analytic capability to participate in the resource allocation processes effectively. Access to a system engineering capability, allowing the COCOMs to make force-mix trades, would also be beneficial. This, of course, would involve overlap with Service, Joint Staff, and OSD efforts, so some form of collaboration is essential. The rub would come when the different organizations reached different conclusions on what the "right" force mix might be.

## **Functional COCOM Transformation**

The Functional COCOM missions continue to evolve and grow. At JFCOM this mission evolution includes new responsibilities for establishing standing JTF Headquarters, Joint Battle Management C2, Joint Concept Development and Experimentation, Joint Deployment process owner, Joint force provider, Joint lessons learned, interagency and multi-national transformation, mobilization, Joint National Training Center, and Joint urban operations. TRANSCOM has become the distribution process owner. SOCOM is lead for the GWOT and psychological operations. Finally, STRATCOM is lead for global strike, global missile defense, global IO, global C2 service, and combating WMD.

However, authorities, resources, and the current mix of skills are not fully commensurate with these expanded functional COCOM charters. In addition, ambiguities and overlaps exist between JFCOM's and STRATCOM's charters and responsibilities for C4ISR. The roles and relationships between the Functional and Regional COCOMs are evolving generally in an ad hoc fashion. Service and Joint Staff concept development, validation, and approval processes would also benefit from a stronger voice from the Functional COCOMs. Similarly, service and agency capability definition processes would benefit from significant Functional COCOM input.

## Transformation and OSD and DoD Agencies

There is a strong and pervasive commitment to transformation throughout much of DoD's leadership. The Secretary of Defense's personal involvement and commitment is well known. He established the Office of Force Transformation under the leadership of an innovative and provocative thinker. And that office has published a wide range of thought provoking white papers. However, the extent of influence that the Office of Force Transformation has had on the rest of the Department is debatable, and many view the office as merely an appliqué.

Transformational focus is not, however, evident in the daily activities of most of the staff offices within OSD. There is not a generally accepted intellectual framework for thinking about transformation that the OSD staff has embraced. Furthermore, the staff's focus on following process at the expense of output (i.e. tough issue resolution) is quite apparent.

Moreover, the Department's agencies possess limited visions of transformation or change activities. Not unexpectedly, they generally focus on the daily demands that confront them and are slow to implement significant process or organizational changes. DARPA represents an interesting positive example, since its mission is to stimulate breakthroughs in transformational technologies. Some agencies/organizations, like NRO and NSA, have had sporadic success in bringing forward technology breakthroughs. However, the record of other agencies, such as the Defense Logistic Agency and the Defense Intelligence Agency, is hardly impressive. All such agencies/organizations need to make transformation the norm rather than the exception.

## Joint Staff Transformation

There is no doubt that the Joint Staff consists of dedicated and hard-working individuals. It has grown considerably since the Goldwater-Nichols legislation passed (1986) and, to an extent, has taken on staff roles from OSD, while at the same time shifting responsibilities to the COCOMs. The Joint Staff has become overwhelmed by processes (e.g. JCIDS and Joint concept development) at the expense of providing useful input to senior decision makers. There appears to be an inherent inability in its organization to establish priorities, focus on important issues, and avoid minutiae.

There are a number of inhibitors to the Joint Staff's effectiveness. Perhaps most important is the inability in the Pentagon to understand or accept warfighting realities, even though many of its officers have rotated from the field. Exacerbating this state of affairs is the fact that bureaucratic processes abound, intersect, and are often confusing relative to the roles and responsibilities (e.g. turf wars between the Joint Staff and OSD and between the Joint Staff and the Service staffs). The result is that useful Joint concepts and doctrines rarely emerge from Joint Staff deliberations and analyses. And finally, there exists a timid, bureaucratic culture that invariably forces decision making to occur only at the highest levels, if at all. Exacerbating this situation has been the *de facto* standard of twenty-two months on tours on the Joint Staff, which has resulted in a steep learning curve, accompanied by a prevalent attitude of "let me just survive this tour and I won't make waves."



## *INSTITUTIONAL OBSERVATIONS: ACTIONABLE OBSERVATIONS*

- 1. Transformation requires an intellectual framework for success rather than processes.*
- 2. The Department's energy would be better spent in improving capabilities rather than writing transformation plans.*
- 3. The COCOMs need a mechanism to articulate needed warfighting capabilities to CJCS during the annual budget cycle.*
- 4. The Joint Staff would be better utilized by focusing on difficult and immediate issues.*
- 5. Shortened Joint Staff tours are insufficient for officers to deal with the complexity of the issues they confront.*
- 6. The separation of command and control responsibilities between JFCOM and STRATCOM is ambiguous.*
- 7. There are no significant transformation efforts in DOD agencies.*

There are a number of steps the Department can take to improving its transformation efforts across its vast organizational structure. Above all, it needs a coherent intellectual framework that emphasizes the factors in past successful transformational efforts instead of its current habit of promulgating new processes and procedures that have the result of stifling creativity and meaningful change. Transformation plans are useless unless they are connected to the real world and understand the difficulties as well as the challenges in changing an organization.

In specific areas, the COCOMs need to play a more significant role in the Department's bureaucratic processes. It would be useful for them to articulate their capability needs to the Chairman earlier in the programming cycle. And as that process moves forward, the Joint Staff could monitor how well the Services and OSD are responding to COCOM concerns. This is the kind of immediate and difficult issue on which the Joint Staff should be focusing its energy instead of wasting its time in writing concepts of little value. The shortened tour length for most Joint Staff officers does not allow for sufficient experience among them to understand, much less contribute to the addressing of major issues. There are some considerable ambiguities in the roles and missions among the functional COCOMs that need serious attention from the Department. Finally, all Department agencies/organizations need to make transformation a top priority.

## IV. JOINT COMBAT OPERATIONS TRANSFORMATION

Joint cooperation in major combat operations has improved significantly among and across the Services since the first Gulf War in 1991. The Services have proven adaptable and flexible in enhancing Joint combat operations and continue to improve in both Iraq and Joint exercises and wargames. The “Engines of Change” discussed earlier have contributed to that success.

The Global War on Terrorism, Operations Enduring Freedom and Iraqi freedom demonstrated that Joint operations were not only achievable, but also could contribute significantly to success on the battlefield. The Joint U.S. Army and Marine Corps operations in Falujah represent one of a number of examples. The conflict in Iraq has enhanced innovation particularly at the tactical level, with significant reductions in the cycle time to incorporation.

Contributing factors to success have come from a number of sources since 1991: Joint experimentation, exercises, war games (across command levels), technology (e.g. all-weather precision strike capabilities, digitization, and non-kinetic and directed energy weapons), and combat experiences. These Joint experiences, coupled with Joint presence and complementary force capabilities in the theater of operations, have forced greater cooperation among the Services and hence facilitated and enhanced Joint operations in war. Innovation has characterized Joint combat operations in Operations Enduring Freedom, and Iraqi Freedom. Accountability and responsibility have centered at the tactical and operational levels – from captain to major general. Commanders and leaders are innovative and empowered, while senior leaders are comfortable in the Joint Combat environment.

That is not to say that challenges in Joint combat operations do not exist. The transition from combat operations to stability operations still poses significant problems, with the need to conduct reconstruction operations nearly simultaneously with stability operations. Force protection of personnel and material is another significant challenge that is at present being met, but requires continued attention. Another shortfall in Joint combat operations reflected in recent experiences in Iraq and Afghanistan has been the failure of interagency cooperation.

### *JOINT COMBAT OPERATIONS: ACTIONABLE OBSERVATIONS*

1. *Services need to leverage recent operational and tactical experience better; and utilize junior officers/NCOs as “change agents.”*
2. *Joint Staff and Services are placing too much emphasis on capabilities in support of major combat operations at the expense of stability operations, peacekeeping, and the like.*
3. *COCOM efforts to expand training and exercise opportunities are hampered by schedule and resource constraints.*
4. *Service transformation would benefit from greater COCOM involvement.*
5. *Multi-agency representation in policy, training, and exercises is inadequate.*
6. *Serious challenges continue to exist with coalition doctrine and interoperability standards.*

In achieving integrated Joint forces, the focus of the Department must be on the needs of the warfighters. While the Joint Staff and the Services must not forget the capabilities and integration that has led to such success in major combat operation, there is a real need to extend Joint capabilities to establish expertise and capabilities for post-combat, stability, and reconstruction operations, which will also represent critical mission areas in the twenty-first century. Along these lines the Department must encourage the COCOMs, the Joint Staff, and the Services to establish effective lines of communications with the other agencies of the U.S. government both for planning and execution of the nation's policies.

Two major challenges confront the Department in this area. The junior officers and NCOs who have performed in such an extraordinary fashion in Iraq and Afghanistan represent a pool of trained talent that can contribute enormously to the processes of transformation, if they are used properly. If they are, however, ignored by the bureaucratic system that envelops so much of the Department and the Services, the U.S. military will confront major failures in its transformation efforts and will probably lose many of "the best and the brightest" to a civilian world which will prove willing to empower and promote them according to their abilities. The second challenge has to do with the weaknesses that have appeared in the ability of American forces to work with the militaries of the nation's Allies. Both coalition doctrine and interoperability standards need real attention, because without Allies the United States will not win the Global War on Terrorism.

## V. JOINT COMMAND AND CONTROL TRANSFORMATION

Command and control (C2) is central to the effective execution of Joint operations. It enables the coordination and synchronization of Joint forces in executing their missions. Furthermore, command and control represents a key factor in the future military effectiveness of U.S. forces. That is, the future military environment will be one characterized by uncertainty as to the threat and hence in the particulars of the missions required to confront that threat. Command and control, if properly developed in terms of procedures and supporting systems, can provide the adaptability in operations to meet uncertain and ambiguous threats.

Progress in Joint command and control has occurred on a number of fronts. The Department is deploying new capabilities at the strategic and operational levels (e.g. command facilities). Ad hoc advances are occurring as a result of combat and other operations at the tactical level, as recent activities in Iraq and Afghanistan have underlined. Furthermore, initial efforts at enterprise-wide systems engineering – the Global Information Grid (GIG) End-to-End Systems Engineering effort – have begun. That effort should provide the technical underpinnings to support development of future C2 systems and networks.

More broadly speaking, however, the Department and its subordinate entities have not articulated a general way forward for Joint command and control, especially to address tactical needs. A Joint Battle Management Command and Control (JBMC2) roadmap has appeared, and its second version is now in preparation. But that document lacks focus by attempting to address all command and control below the strategic level. Furthermore, it provides for no actions that will have immediate, realizable benefits for operational forces.

The interoperation of legacy C2 systems supporting tactical operations is a particular challenge, one to which the Department has devoted much effort with some success. Migration to a modern networked perspective – where the ability of all entities to interoperate with the network replaces the need for point-to-point interoperability – should offer opportunities for significant advances in interoperability.

Communications limitations in bandwidth throughput and availability represent another significant factor at the tactical level. The tactical level can never achieve the communications capacity of higher echelons – and that is not necessary – but improvement in current capabilities is clearly warranted. The Joint Tactical Radio System Program (JTRS), if successfully implemented, would provide significant advances in both tactical communications capacity and network capability. However, at present, the ground component of JTRS (Cluster 1) has encountered significant technical problems.

An important factor pertinent to Joint command and control is the fragmentation of responsibilities. The ASD(NII), the USD(AT&L), the Joint Staff J6, JFCOM, and STRATCOM all have roles in addressing Joint C2 matters, and the Department has failed to articulate a clear distinction among their roles. For example, there are three boards with apparently overlapping responsibilities – the DoD Chief Information Officer (CIO) Executive Board, the Military Communications Electronics Board (Joint Staff J6-led), and the JBMC2 Board of Directors (JFCOM-led, set up under the authorities in MID 912). In addition, there could be overlaps in the responsibilities assigned by legislation to the DoD Chief

Information Officer and the USD (AT&L). Moreover, the ASD (NII) is the principal staff assistant to the Secretary of Defense for command and control; yet, USD (AT&L) has OSD's lead on the JBMC2 Roadmap that it is developing in conjunction with JFCOM.

### *JOINT COMMAND AND CONTROL: ACTIONABLE OBSERVATIONS*

1. *Appropriate authorities have not been established for the development of Joint C2 capabilities.*
2. *C2 advances made in recent operations have not yet been institutionalized.*
3. *Adaptability of command and control requires further development of doctrine and TTPs.*
4. *The enhancement of tactical communications bandwidth is critical.*
5. *The development and fielding of Joint C2 capabilities require strengthened systems engineering.*

Authorities in developing Joint C2 capabilities refer to three broad areas: the definition of capability needs, resource allocation, and acquisition. The Department needs to ensure that clear authorities are established in each of these three areas.

A number of factors influence the definition of capability needs. Each COCOM has needs for command and control that are unique to its particular theater. Furthermore, those needs will evolve over time, particularly given the uncertainty of the future world environment. Thus, each COCOM must have an explicit role in relating C2 capabilities to the needs of its theater. This means it should specify the capabilities needed, review proposed solutions, and then have the ability to integrate new systems to meet its needs. Differing capability needs across the COCOMs should be rationalized through the JCIDS process.

Resource allocation for capability development is ultimately the decision of the Secretary of Defense. Since the COCOMs are the users of such capabilities, recognition of their priorities should play a mandatory role in how the Services and Agencies prioritize their allocation of resources. The JCIDS process should be the vehicle to adjudicate different priorities across the COCOMs.

With respect to acquisition, the Services and DISA are the capability developers. The DoD Chief Information Officer issues relevant policy (e.g. pertaining to architecture and standards). A basic question is whether the Department should create a "Joint C2 acquisition activity" to provide a more synchronized approach to the overall development of C2 capabilities. Such an activity could provide a means to help assure interoperability, but interoperability across all joint C2 systems is an extremely complicated matter involving legacy systems and numerous tactical C2 systems, both of which would most likely not be under the activity's control.<sup>83</sup> Some acquisition consolidation on a limited basis could be useful, however. For example, the Joint Command and Control program under consideration to replace the Global Command and Control System (GCCS) is intended to consolidate the GCCS programs in DISA and the Services into one program. Another example is the consolidation of the relatively small number of programs constituting the network-enabled information infrastructure discussed below. If examples such as these are successful, then the Department could consider acquisition consolidation on a larger scale.

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<sup>83</sup> The activity would be concerned with systems under development, and hence not legacy systems, and development and maintenance of most tactical C2 systems would be expected to remain with the Services.

A Department directive would be the appropriate vehicle for codifying the authorities for developing Joint C2 capabilities. To the extent feasible, the Deputy Secretary of Defense and his immediate staff should prepare this directive to avoid the “homogenization” that can result by having it staffed up the levels across the Department’s components.

The C2 advances made in recent operations in Afghanistan and Iraq have been in tactics, techniques and procedures (TTPs), and ways in which C2 systems (to include communications) were integrated. The TTPs so developed in an ad hoc manner have to be captured and conveyed to forces that need them. Likewise, the Department must capture the advances in systems integration and ensure they are conveyed to the appropriate technical personnel so that newly committed forces do not have to “reinvent” the integrations.

As noted, adaptability of force operation will be a key factor in confronting uncertain threats in the future. Thus, the doctrine and TTPs developed for future force employment should place a premium on adaptability (e.g. not tied to particular force configurations). Experiments and exercises can provide the means for developing and refining doctrine and TTPs. In addition, the enhancement of tactical bandwidth is critical. The primary program of interest here is JTRS. However, the Department should also consider less advanced systems, especially if the difficulties with JTRS continue.

Given the variety of C2 systems provided the COCOMs, they need the means to integrate the systems to serve their operational needs. This requires the support of systems engineering. Each COCOM should not have a separate systems engineering organization of its own. Instead, they should draw from a pool of talent existing in the Service systems commands and the Defense Information Systems Agency (DISA) and made available under the direction of a central coordinator such as JFCOM.

The clear authorities noted at the beginning of these observations are central to the realization of effective command and control. They are the first step in providing a more rationalized approach to providing C2 capabilities. Without them, one will continue to see difficulties such as those encountered in OIF – e.g. when different forces preparing to deploy (3 ID and 1MARDIV) had to “scramble” to make their C2 suites compatible; the failure to share valuable information (7 incompatible blue-force tracking systems in theater); and the long set-up times required for theater and tactical communications networks among multiple units (the time available in OIF will not always be available). More generally, the advances enabled in C2 capability will provide the basis for the adaptability that is the heart of a continually transforming force.



## VI. NETWORK-ENABLED OPERATIONS TRANSFORMATION

Networked-enabled operations are military operations facilitated by the widespread access to information provided by extensive network connectivity and data availability. The information sharing and collaboration possible with such capabilities should play a crucial role in making future forces adaptable.

At the current time, operational forces are making innovative ad-hoc applications of available communications and information technologies to operate in a network-enabled manner, as operations in Afghanistan and Iraq have indicated. Moreover, the Department is laying out and programming the broad outlines of the future technical information infrastructure. This activity includes the articulation of a strategy for data sharing and the establishment of several acquisition programs – e.g. GIG-Bandwidth Expansion (terrestrial communications), JTRS, the transformational satellite (TSAT) system, and Net-Centric Enterprise Services (NCES). The management structure to oversee and integrate these programs is under consideration, but that matter awaits resolution.

Despite the realization of network-enabled operations in the field, there has been little development and analysis of networked-enabled operational concepts based on future technical capabilities. This situation is particularly true at the tactical level. In that realm, one cannot assume the existence of the “internet model” of high-bandwidth, continuously available networks operating without specific guarantees of timeliness. Instead, one must develop operational concepts that, while benefiting significantly from network-enabled information sharing, also explicitly recognize the limitations on connectivity and the fact that some information transfers will have to occur within tight time constraints.

Furthermore, while major technical activities for developing an information infrastructure for network-enabled operations are underway, significant technical challenges remain. Information assurance is critical, since the consequences of an adversary exploiting network vulnerabilities grow as operational dependence increases. Successful implementation of a data strategy across the Department is essential to achieve the data availability and understandability central to network-enabled operations. Moreover, JTRS and TSAT offer particular programmatic challenges in terms of technical matters and the sustained funding required for successful execution.

At the enterprise level, systems engineering is necessary to integrate components of the information infrastructure to achieve proper interoperability. The GIG End-to-End Systems Engineering activity has initiated a start to this work, but it possesses neither the authority nor mechanisms to certify and enforce compliance with integration requirements (e.g. interface specifications and performance requirements).

### *NETWORK-ENABLED OPERATIONS: ACTIONABLE OBSERVATIONS*

1. *Network-enabled operational concepts from current operations are not institutionalized.*
2. *Network-enabled operational concepts applying future technical capabilities are not being developed.*
3. *No systematic process to establish priorities for balancing resource allocation among competing*



*information infrastructure programs could be found.*

- 4. Authorities for the development of a network-enabled operations information infrastructure are not fully established.*
- 5. Committed leadership and resources are required to execute the proposed network-enabled operations data strategy.*
- 6. Systems engineering for the developing, fielding, and integration of the network-enabled operations information infrastructure is inadequate.*

Network-enabled modes of operation have developed in an ad hoc manner during current and recent operations. TTPs and systems integration to support them characterize these modes of operation. The Department needs to capture these TTPs and integration approaches, convey them to the forces that need them, and use them to establish doctrine where appropriate. The Department should also look beyond operational concepts developed during actual operations to a broader set of concepts, especially those that would anticipate the availability of future technical capabilities. In fact, such operational concepts would help guide the development of the technical capabilities. To develop these future-looking operational concepts, members of the relevant operations and technical communities have to interact closely with one another.

The ongoing programs (JTRS, TSAT, NCES, etc.) will be fundamental contributors to the information infrastructure for network-enabled operations. As they continue, maintaining the proper balance in funding among them is necessary. For example, if one of the programs were to encounter technical difficulties that required additional funding, or a new near-term need were to arise, then the Department would need to reallocate funds among the whole set of programs, if the resources for the infrastructure remained fixed. The fact that the set of programs is spread across the Services and DISA would inevitably lead to complications. Strong OSD leadership and a change in current PPBE practice would be required to effect such a reallocation.

The integration of components to form an effective information infrastructure requires that the Department establish authorities over the overall infrastructure. There are two broad aspects to this matter – definition of capability needs and acquisition. USSTRATCOM, given its responsibilities under the Unified Command Plan, is an appropriate organization to lead the definition of capability needs. Acquisition is carried out by the Services and Agencies. The key issue there is the degree of centralized authority provided to some one party to effect the integration. That authority can range from configuration management of the interfaces between the components to total control over development and procurement of individual components. The challenge is to find the right balance between these two extremes.

Successful implementation of the proposed data strategy is central to the widespread realization of network-enabled operation. The strategy envisions establishment of different communities of interest (e.g. referring to different operational mission areas) and having them determine data standards for their respective communities. Establishing a proper set of communities of interest across the Department, having them interact effectively, and then enforcing the standards they develop represents a considerable challenge. Successful execution of that endeavor requires top-level leadership and focus as well as resources for execution.

Also of critical importance is infrastructure-wide systems engineering to integrate the individual programmatic components. Such systems engineering refers to two different functional areas – acquisition (i.e. development) and operations (i.e. deployed forces). Systems engineering in acquisition develops the components to facilitate their integration, when deployed for operation. The support to acquisition represents “hard core” systems engineering, involving factors such as interface specifications, performance allocation, and certification testing. It must be accompanied by an acquisition authority to enforce the interface specifications and performance requirements across the infrastructure. Systems engineering support to operations involves the integration of systems with already defined interfaces.

The need for systems engineering support in the two different functional areas could lead to two different support organizations. An organization within DISA, for example, could provide the infrastructure-wide systems engineering for acquisition with support from the National Security Agency and Service systems commands. An organization in JFCOM, for example, drawing on technical resources from the Service systems commands and DISA, could provide support to the individual regional COCOMs. Such an organization could be the same as that described in the previous section for systems engineering support to the COCOMs for C2 capabilities.



## VII. OPERATIONAL AND TACTICAL INTELLIGENCE TRANSFORMATION

The current conflict in Iraq suggests much about the challenges the American military will confront in the twenty-first century. It involves cultural, tribal, and religious divides within Iraqi society. It has placed demands on soldiers and Marines similar to the “three-block war” posited in the mid 1990s by General Chuck Krulak, Commandant of the Marine Corps at the time. Above all, such wars will require intelligence based on an understanding of foreign societies, their cultures, their languages, and their histories. At present America’s intelligence agencies emphasize none of these attributes. But knowledge of those human and cultural factors must also reside outside of the intelligence community.

A major lesson of recent operations has been that the supporting force deployment system lacked the speed, accuracy, and fidelity of tactical battlefield intelligence and situational assessment desired by senior leaders for the swift and comprehensive planning and execution of these operations. Multiple commissions, a new Intelligence Reform Act, the standup of the ODNI and the USD(I), and other initiatives, all have the aim of restoring intelligence capabilities by reform. They include an emphasis on support to those fighting on the modern battlefield. Investments in remote battlefield surveillance capabilities (UAVs), improved HUMINT and human-technical operations, and attention to the human aspects of intelligence all aim at delivering a more diverse, better trained, and more technically and operationally capable force. These transformational efforts are ongoing and accelerating. In the long term they should result in a more integrated community. Moreover, the intelligence community must focus on improving its acquisition processes in order to prevent the kind of cost, schedule, and performance problems that have plagued programs such as Future Imagery Architecture.

### OPERATIONAL AND TACTICAL INTELLIGENCE: ACTIONABLE OBSERVATIONS

1. *Dramatically improving collection, analysis, and customer support processes and collaboration requires working across DoD and DNI.*
2. *Significant improvement in the ability to track people and entities (finances, weapons, relationships, materials, infrastructure, etc.) is necessary.*
3. *Persistent surveillance, horizontal integration, and transformational battlefield ISR capabilities and support require working across DoD and DNI.*
4. *New policies and solutions for maximizing information sharing while simultaneously protecting new deep penetration sources and methods will require collaboration among DoD, DNI, and the Presidential Information Sharing Executive.*
5. *Intelligence support for strategic communication and influence, messaging and information warfare/operations requires working across DoD and DNI.*

The intelligence community, including DoD agencies, has been working on reform, while simultaneously undergoing significant outside reviews that have recommended further transformation. The goal of these efforts should be to deploy and employ transformed intelligence capable of supporting the nation’s transformed Joint forces with greater flexibility, situation awareness, and effectiveness – where they are needed and when they are needed. In addition to identifying and tracking normal

adversary battlefield weapons, sensors, and platforms, recent conflicts have demanded that ISR work against individuals and human-related entities and support systems. New concepts related to horizontal integration of intelligence, the development of transformational ISR and new sources and methods, and most importantly, pulling together concepts, doctrine, and capabilities for persistent surveillance need acceleration. The intelligence community needs to work with the new Presidential Information Sharing Executive to ensure that it develops new thinking and policies to maximize pervasive information sharing, while simultaneously protecting the new or adapted sources and methods, developed by the ISR communities.

With 24/7 surveillance in critical areas of Iraq, as part of a horizontally integrated intelligence network, we could better deal with the increasingly lethal IED, vehicle-borne IED, and suicide bomber threats. This surveillance would include real-time identification and tracking of IED placers back to their source, as well as pervasive and uninterrupted tracking of suspicious individuals and vehicles. The technology exists to do this, but a system-of-systems approach must be implemented to make it happen.

## VIII. JOINT FORCE MANAGEMENT TRANSFORMATION

A major lesson of recent operations has been that the supporting force deployment system lacked the speed, accuracy, and fidelity desired by senior leaders for the swift and comprehensive planning and execution of these operations. The operational planning system needs the capability to quickly deploy forces to, and employ forces in places not addressed by existing plans. In addition, even for potential conflicts that have received detailed attention and planning for a number of years an operation as actually executed can differ significantly in initiation, scope, objectives, and supporting structures from what the deliberate planning process has posited.

At the same time, the complete deliberate planning process requires upwards of two years to put in place the detailed information needed to support mobilization, deployment, bed down, and eventually, option execution. In the twenty-first century, a two-year-old-plan will hardly be responsive to changing requirements, available capabilities, and evolving guidance associated with dynamic, asymmetric terrorist threats.

On the other hand, a continuously exercised plan-building process does offer value in keeping planning staffs familiar with changing threats and the forces available to U.S. commanders in a crisis. It allows the building of plans in modules that permit phasing in execution and options to cover uncertainties, including the availability of access in certain locations and situations. Unfortunately, the information management process and procedures which currently gather, store, and pass on relevant information to the larger community often significantly lag behind real-time developments and thus, result in inaccurate information and inflexible reporting processes.

Operation Iraqi Freedom highlighted a number of instances where unit descriptions and capabilities, reported at higher levels, led to specific transportation requests that failed to reflect the unit's actual military capabilities or its associated transportation requirements. In other cases units with embedded capabilities found themselves mobilized as a full unit, when the plan only required the smaller embedded capability. Increased discipline in data collection and maintenance would help, as would the ability to mobilize sub-elements of a unit, but none of this would overcome other barriers inherent in the current legacy system. The panel believes that approaches and technology currently available, such as those identified in the adaptive Planning initiative and the Global Force Management process, could improve the situation significantly.

Part of this problem is the inadequacy of the present readiness system. It is focused on traditional missions, measures readiness in categories that are too broad, emphasizes inputs over outputs, and is not timely. It does not permit measuring improvements in readiness that would incentivize unit commanders to achieve higher levels of readiness.

For years, the time-phased force and deployment data (TPFDD) has been the key to deployment feasibility planning and initial construction of the appropriate transportation force flows. While its data provides a baseline for determining the feasibility of deployment options, in practice it has not been as useful in executing the force flow. On-hand unit equipment and disposition at the time of execution and

the COCOM's immediate mission requirements create very different execution realities than those associated with the TPFDD.

Resolving problems associated with the force flow led to the initiation of the dedicated deployment VTC to coordinate the elements of the planning and execution teams. While a useful initiative, it served to underline the lack of visibility inherent in current data bases and processes. Such visibility is necessary at all levels of command across all participating organizations. Decision makers and commanders need to know what capabilities are available, which have been selected and are moving, and which will be ready at a certain time at a given location for commitment to the operation. The same information must be available to support efficient and effective redeployment at the conclusion of an operation. The present situation underlines the need not only to create processes that are better integrated and more streamlined, but also for an underlying information architecture that supports the engaged planning and execution organizations more effectively.

The panel believes that the Department can only achieve these goals by adopting a new planning construct that combines the existing deliberate planning and contingency processes into a single, flexible set of processes and procedures. Only then can planning meet the goals associated with the separate elements in a more unified, but adaptable methodology. Such an overarching system would combine current processes and prioritize steps by noting those that are open to streamlining and those to be skipped in times of crisis, but worthy of implementation when longer timelines prevail. The new process would address all the units and personnel involved in the operation, active as well as reserve and provide a basis for tracking individual units, personnel, equipment, and sustainment stocks.

### *JOINT FORCE MANAGEMENT: ACTIONABLE OBSERVATIONS*

1. *A new end-to-end Joint Force Management System is required.*
2. *A JFCOM initiative that would form the foundation of such a system is unfunded.*
3. *Joint Force Management would greatly benefit from an improved force readiness system.*

The Department needs to develop a Joint Force Management system to enhance the transformation capabilities, particularly in deploying forces to meet the strategic and operational challenges of the twenty-first century. At present Joint Forces Command has already identified key elements of such a system, but since its efforts in that area have yet to be funded the Department needs to provide the resources to develop such a capability. Such a system would optimize the Services' force provider function, reduce deployment lift requirements, and speed the deployment of military capabilities to the COCOMs.

Viewed from the higher levels, this new operational force management system would comprise four main elements. It would include capabilities planning process, a deployment planning and approval process, a deployment monitoring process, and an information support network to provide common databases and integrated support to the other elements in the system. Joint Force Management would greatly benefit from an improved force readiness system.

A key feature of the system would be its ability to state requirements in terms of desired capabilities, a capacity that would enable JFCOM as the Joint force Provider to offer force package options that meet

the COCOM's capability requirements. JFCOM, working with the Services, would determine global Joint sourcing solutions, assess and report applicable military risks associated with Joint sourcing solutions, and identify capability and force availability concerns. JFCOM would provide the Joint Staff and ultimately the Secretary of Defense with force identification and deployment recommendations for approval. Throughout the process, the gaining COCOM, TRANSCOM, the Joint Staff, OSD, and the Services would have full visibility to the process and be able to initiate actions to speed forces to the COCOM.

Implementing the Joint Force Management system will impact at least three significant operational limitations. COCOMs will be able to request specific operational capabilities and specify the desired deployment sequence. The efforts to change the forces and the flow sequence in OEF resulted in significant airlift inefficiencies estimated at 20 percent. The system will also avoid the unit's understatement of lift requirements which also created significant lift inefficiencies. It will also permit matching unit alerting and reserves activations to scheduled deployments. In OIF some reserve units moved to training bases and waited over two months for lift after training. Proper sequencing of all the elements of operational force management will produce significant savings.





## IX. FORCE DEPLOYMENT AND SUSTAINMENT TRANSFORMATION

The rebasing of substantial portions of U.S. military forces to North America, coupled with the need to respond to contingencies in diverse locations, force deployment, and sustainment, have become major challenges confronting the Department. How DoD meets these challenges will play a major role in the effectiveness of U.S. military forces in addressing the contingencies of the twenty-first century.

In the major contingencies that the United States has confronted in the recent past, particularly in Afghanistan and Iraq, strategic deployment has proven dynamic and agile. There have been evolutionary improvements in strategic lift capability. However, extended and dispersed conflicts will require rapid movement in the battlespace with agility and distributed forces. Access, global reach, and capacity are crucial. Yet, there remains incompatibility of planned forces and planned lift capability. This will serve either to delay deployment of forces or to a failure to deliver the right force with the right mix at the right time. In the realm of strategic deployment, the U.S. Navy's Sea Basing concept appears transformational, but numerous technical and resource challenges remain.

Thus far, the U.S. military has achieved operational maneuver from strategic distances – especially for aviation, special forces and specialized troops. However, the Department needs to focus on extending strategic maneuver to encompass major conventional forces. And except for aviation, there has been little appreciable change in the ability to operate in anti-access environments (e.g. mines, supersonic cruise missiles, etc.). The U.S. military has not confronted such an environment since the Korean War, but it is unlikely that that free ride will continue in the twenty-first century.

There have also been numerous evolutionary improvements in the ability to sustain U.S. forces. The differences between the Gulf War of 1991 and the Second Gulf War of 2003 speak volumes on the operationalization of logistics. Nevertheless, the Department needs to take substantial steps to improve its ability to sustain forces in rapid, decentralized operations. The recent augmentation of U.S. Transportation Command's (TRANSCOM) role in distribution and sustainment represents a step in the right direction.

At present, U.S. forces are able to sustain Joint combat operations from austere locations, but with substantial difficulty. Moreover, there has been an increasing reliance on contractors to perform essential force support functions. That alone carries with it important implications for the future sustainment of U.S. forces. Finally, Service logistic systems are in need of transformation. Future combat platforms must include built-in reliability and fuel efficiency considerations. In addition, stability operations in Iraq underline the importance of protection of crew and materiel.

### *FORCE DEPLOYMENT AND SUSTAINMENT: ACTIONABLE OBSERVATIONS*

1. *Implementation of the DSB Strategic Mobility Capabilities recommendations will significantly improve force deployment and sustainment operations - some key study recommendations:*
  - a. *Improve pre-positioned force capabilities.*

- b. *Improve asset visibility and logistics automation.*
- c. *Ensure strategic lift is aligned with various force mix and composition scenarios.*
- d. *Invest in use of precision air drop and unmanned vehicles for re-supply.*
- e. *Invest in new mobile power sources and identify alternate fuel capabilities.*

While transformational progress in deployment and sustainment has occurred, some critical issues remain. The Defense Science Board conducted a study in 2004-2005 entitled “Strategic Mobility Capabilities.” A number of its key recommendations will serve to address major deployment and sustainment issues. Among its more important recommendations this panel has listed five as actionable recommendations that it believes are worthy of specific attention.

## X. EDUCATION AND TRAINING

Much of the success of U.S. forces in the Gulf Wars at the operational and tactical levels has been the result of the extraordinary training regimen that the Services established in the decade following the Vietnam War. In many respects this aspect of the U.S. military represents a true revolution in military affairs in perhaps the most important aspect of the effectiveness of military institutions. Flavius Josephus, the historian of the Roman-Jewish war, had the following to say about the importance of training to the Roman Army—a military organization that ruled the Mediterranean for over six centuries:

“[The Romans] do not begin to use their weapons first in time of war, nor do they put their hands first into motion, having been idle in times of peace; but, as if their weapons were part of themselves, they never [desist] from warlike exercises; nor do they stay till times of war admonish them to use them; for their military exercises by no means fall short of the tensions of real warfare, but every soldier is every day exercised, and that with real diligence, as if they were in time of war, which is why they bear the fatigue of battles so easily;... nor would [one] be mistaken [who] would call their exercises unbloody battles, and their battles bloody exercises.”

Much the same could be said of today’s military. The addition of electronic and other training support systems has improved the training regimens of U.S. forces, but they have not eliminated the need for hard, unremitting, physical, and realistic preparation for combat. And that is precisely what our troops are getting. There is one area where improvements could occur and that lies beyond the training the Services perform in the realm of Joint training. Here, the experiences in the current war in Iraq should point the way to areas where Joint training could profitably add to the military effectiveness of U.S. forces on both the operational and tactical levels.

The picture is, unfortunately, quite different in the realm of professional military education. In the 1970s and 1980s the American military made considerable strides towards improving the quality of education that its officers received in both Service schools and universities. Admiral Stansfield Turner’s reform of the Naval War College produced a world-class faculty and course of study, particularly in strategy. The creation of second year courses for the best command and staff students at Leavenworth, Quantico, and Maxwell underlined the thirst for knowledge about their profession that many officers possess. And finally, the House Armed Services Subcommittee on Professional Military Education underlined the importance of PME to creation of Service and Joint officer corps that possessed the intellectual vitality and agility to deal with an increasingly complex and ambiguous world.

In the 1990s the momentum for improvements in PME almost entirely ceased, and in some cases the Services and the Joint world took substantial steps backwards. At present the Services are offering non-resident courses that possess neither intellectual content nor relevant material the equivalent of attendance at in resident PME institutions. The Navy rarely sends its best officers to PME schools. Moreover, its personnel and training processes are mounting a serious challenge to the Naval War College’s academic integrity and rigor. The Army is no longer sending the number of officers to graduate school that it once did. Attendance at the Marine Corps’ Command and Staff College is no longer by board selection. Significantly, several senior leaders in the Pentagon considered shortening or closing down the course of study at the staff and war colleges, because of the intense personnel turbulence that has resulted from the post-conflict situation in Iraq. In nearly every respect PME has become the step child of Service cultures

that emphasize today's demands as of such great importance as to close off intellectual preparations for the future.

There is considerable irony in this situation, because American experiences in Iraq over the course of the past two years have all underlined the importance of knowledge of history, language, and culture as being of key importance in dealing with the complex, ambiguous, and uncertain challenges that U.S. Soldiers and Marines confront every day on the streets of Iraq. Many of the difficulties that senior leaders have confronted in Iraq have also underlined the importance of history, culture, and language in dealing with the highest policy issues.

The emerging strategic environment – with terrorism on the rise, with threats to the world's oil supplies not only in the Middle East but in places as far removed as the straits of Malacca and Columbia and Venezuela, with Islamic fundamentalism threatening to topple regimes friendly to the United States in the Middle East, and with a simmering conflict in Iraq – underlines to an even greater degree than during the Cold War the importance of serious PME in preparing officers to meet not only the challenges of today, but of future high command. All of this suggests that the Department needs to focus major attention not only on the educational career path of its officers, but of its NCOs as well.

## *EDUCATION AND TRAINING: ACTIONABLE OBSERVATIONS*

1. *Joint training requires a revolutionary improvement similar to that achieved in Service training.*
2. *Transformation of leadership requires an emphasis on professional military education: intellectual development of officers and NCOs in culture, languages, and history; intellectual rigor; and performance in PME should be included in evaluation for promotion.*

The training regimen of U.S. forces is in excellent shape; at least as far as Service responsibilities go. However, the Department does need to focus attention on joint training by using the experiences gathered in Iraq as a model for the future.

The Department needs to focus major attention on PME as well as increase the resources available. History, cultural studies, and language proficiencies are all of much greater importance than they are presently receiving throughout much of the Department. The intellectual preparation of its officers, NCOs, and its future leaders will be a major factor in the performance of the U.S. military in the future, especially given the likely strategic and operational challenges the United States is likely to confront over the course of coming decades.

Nothing has underlined more clearly the penalties involved in the weak system of PME than the initial failures in the post-conflict phase of Operation Iraqi Freedom. In 1989, the military forces of the United States executed a brilliant military plan that destroyed the regime of Manuel Noriega in a matter of hours. However, that success was immediately followed by massive looting that wrecked the Panamanian economy and resulted in considerable political instability, neither of which U.S. forces were prepared to deal with. The SOUTHCOM combatant commander, General Max Thurman, then ordered that his staff undertake a major effort to identify the lessons-learned from the post-conflict phase in Panama. The resulting report was then made available in both classified and unclassified versions to the Army's Command and General Staff College where it promptly disappeared. It has certainly not been used in the curricula of any of the other staff or war colleges. Moreover, it is not as if the post-conflict phase of

American – or other nations’ for that matter – military operations have not contained considerable difficulties in the post-conflict phase. Nevertheless, the year-long period after the completion of major combat operations in April 2003 would suggest a general failure of the PME system to prepare America’s military leaders for the wider aspects of military operations.



## XI. TRANSFORMATION IN RESOURCING JOINT SOLUTIONS

The regional COCOMs depend on the Service Executive Agents for all funding requirements both for the near term and the long term. In this era of zero budget growth, the Service program offsets fund the capability requirements of the regional COCOMs. At present there is no effective process for resourcing emerging near term Joint warfighting needs that fall between the categories of “urgent and compelling” and “compete in future POMs.” As a result the Department has missed a number of opportunities to integrate institutional responses to operational lessons and experimental results.

The current PPBE process for funding unprogrammed, near-term requirements involves decrementing existing Service programs to create offsets from which to fund such requirements. Any program funded on behalf of a Joint community – from the Service perspective – occurs only at the expense of another Service requirement. This is unacceptable to the Services because to one extent or another it requires the “breaking” of an existing program or programs.

Aside from the COCOM’s Initiative Fund and sporadic supplemental funding, there are no Joint funds. The former fund is too narrowly scoped and has a limited amount of funding available each year. In addition, its uses are tightly prescribed and involve a lengthy approval process. Supplemental funding requests are closely scrutinized and unpredictable. Funding for Joint requirements flow through and are derived from the Services’ budget year allocations.

### *RESOURCING JOINT SOLUTIONS: ACTIONABLE OBSERVATIONS*

1. *The COCOM’s initiative fund could be enlarged and streamlined to furnish a mechanism to satisfy emergent needs for the GWOT and Joint transformation.*

The Joint warfighter needs access to resources and acquisition authorities to provide solutions for *near-term* capability requirements. The combatant commander’s Initiative Fund, if modified, represents one possible solution. Changes might include its becoming a revolving fund and expanding it beyond its current narrow scope. The Department could also change the rule set to allow COCOM’s to make requests directly to the Chairman with Direct approval from the Secretary of Defense and an annual report to Congress as to how the funds were expended.





## **XII. KEY RECOMMENDATIONS**

While we believe that all of our actionable observations are worthy of serious consideration, the below recommendations highlight the panel's view of the most important of them. Their early implementation would have the largest transformational influence over the Department's future course.

### **The Secretary of Defense should direct:**

- The Deputy Secretary of Defense to establish clear authorities and accountability for development of joint C2 capabilities and supporting information infrastructure.
- USD(P&R), working with CJCS and Service Chiefs, to embark on comprehensive PME reform.
- Commander JFCOM to lead development of an end-to-end joint force management system.
- CJCS and USD(I) to define the concept of persistent surveillance in operational terms.

This panel was impressed with the dedication and professionalism of the men and women from the various communities with whom we spoke. It is clear to us that the Department is fairly embarked on the voyage of transformation. It is our hope that our recommendations and observations speed the voyage.



## **APPENDIX A. PANEL MEMBERSHIP**

### **CHAIRPERSON(S)**

GEN James McCarthy, USAF (Ret.), *US Air Force Academy*

Gen Michael Williams, USMC (Ret.), *Private Consultant*

### **MEMBERS**

Mr. Robert Fitton, *Resource Consultants, Inc.*

Dr. Richard Ivanetich, *Institute for Defense Analyses*

Dr. Williamson Murray, *Institute for Defense Analyses*

Mr. Ronald Mutzelburg, *Boeing*

Mr. John Quilty, *Private Consultant*

ADM William Studeman, USN (Ret.), *Private Consultant*

Mr. Mike Swetnam, *Potomac Institute for Policy Studies*

Mr. Larry Wright, *Booze, Allen and Hamilton*

### **GOVERNMENT ADVISORS**

LTC Robert Larsen, *USA*

LtCol Mark Murphy, *USAF*

Captain Melanie Winters, *USN*

### **DSB SECRETARIAT**

LtCol. David Roberston, USAF, *Defense Science Board*

### **SUPPORT**

Mr. Robert Genkinger, *SAIC*

## **APPENDIX B. GUEST BRIEFERS**

### ***FEBRUARY 15, 2005***

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LTC Robert Larsen, *U.S. Army*

### ***MARCH 25, 2005***

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Col Leonard Blaisol, *U.S. Marine Corps*

Col Gail Wojtowicz, *U.S. Air Force*

COL Rick Smith, *U.S. Army*

CDR Bryan Clark, *U.S. Navy*

### ***APRIL 11, 2005***

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MG Robert Scales, *U.S. Army, ret.*

Dr. Williamson Murray, *Institute for Defense Analyses*

Mr. Patrick McCarthy, *U.S. Joint Forces Command*

Mr. Stephen Moore, *U.S. Joint Forces Command*

### ***MAY 10, 2005***

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COL Peter Zielinski, *U.S. Central Command*

Mr. Mark Greer, *Defense Intelligence Agency*

CAPT Al Nadolski, *U.S. Joint Forces Command*

### ***JUNE 29, 2005***

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Col Bruce Hollywood, *U.S. Air Force*

COL Al Sweetzer, *U.S. Army*

**APPENDIX C. ACRONYM INDEX**

|           |                                                                       |
|-----------|-----------------------------------------------------------------------|
| ASD(NII)  | Assistant Secretary of Defense for Network Information Integration    |
| COCOM     | Combatant Command                                                     |
| DoD       | Department of Defense                                                 |
| JCD&E     | Joint Concepts, Doctrine, and Exercises                               |
| JCIDS     | Joint Capabilities Integration and Development System                 |
| JFCOM     | Joint Forces Command                                                  |
| JROC      | Joint Requirements Oversight Council                                  |
| OSD       | Office of the Secretary of Defense                                    |
| PME       | professional military education                                       |
| SOF       | special operations forces                                             |
| STRATCOM  | Strategic Command                                                     |
| USD(AT&L) | Under Secretary of Defense for Acquisition, Technology, and Logistics |
| USD(I)    | Under Secretary of Defense for Intelligence                           |
| USD(P&R)  | Under Secretary of Defense for Personnel and Readiness                |



## PART 5: DEFENSE INDUSTRY AND ACQUISITION PANEL REPORT

|                                              |     |
|----------------------------------------------|-----|
| Chapter I. Executive Summary .....           | 243 |
| Chapter II. Introduction .....               | 247 |
| Chapter III. Background Considerations ..... | 249 |
| Chapter IV. Military Capabilities .....      | 251 |
| Chapter V. Resource Allocation .....         | 255 |
| Chapter VI. Acquisition system .....         | 257 |
| Chapter VII. DoD Industrial Base .....       | 269 |
| Chapter VIII. Concluding Comments .....      | 275 |

### PART 5 APPENDICES

|                                    |     |
|------------------------------------|-----|
| Appendix A. Panel Membership ..... | 277 |
| Appendix B. Guest Briefers .....   | 278 |
| Appendix C. Acronym Index .....    | 280 |





## I. EXECUTIVE SUMMARY

Within the context of a transforming Department of Defense (DoD), the Acquisition System has become the “weak link in the chain.” Unless the capability definition, resource allocation, acquisition, and business processes are transformed to the same extent that the military doctrine and operations are being adapted, then the transformation of the defense enterprise will fail.

### *SUMMARY OF KEY FINDINGS*

The Capabilities, Resource Allocation and Acquisition processes remain too inflexible, slow and risk averse for today’s strategic environment. Transformation requires the opposite-speed, agility, and responsiveness. These processes must all be significantly improved in order to be flexible and supportive of defense transformation.

Recruiting, training and retaining the right human capital are increasingly difficult for government. Industry also faces challenges in some areas (e.g. systems engineering) and faces shortfalls in program management and experienced personnel in system of systems integration. The defense industry is becoming increasingly isolated from the larger economy.

The defense acquisition reform initiatives of the past are essentially “dead.” Barriers are plaguing efforts to attract commercial industry and their technology to the defense market as well as access the global supply chain and technology base in support of defense industry.

### *SUMMARY OF KEY RECOMMENDATIONS*

#### **Military Capabilities**

The capabilities requirements planning process and the JCIDS/JROC processes need restructuring to deliver attainable capabilities rapidly and minimize development and production delays and unnecessary cost growth. The Secretary of Defense and Chairman of the Joint Chiefs of Staff (CJCS) must give combatant commanders (COCOMs) a greater role in acquisition. This means greater access to analytical/technical support and increased responsibility in the JCIDS/JROC processes. The JCIDS process must also be re-engineered to focus on the CJCS’ responsibility to effectively advise the SecDef on joint priorities.

To avoid excessive technical reach, highly experienced “Red Teams” should assess technical feasibility of proposed capabilities/programs early in the process. These assessments should also rigorously measure manufacturing readiness and integration risk, and assess risk reduction alternatives (e.g. spiral development and fielding with planned future enhancements and upgrades).

## **Resource Allocation**

A multi-year, mission-focused business plan must be developed to better allocate resources to mission purposes and provide capabilities within achievable budgets and acceptable levels of risk. Part of the business plan should be an improved Planning, Programming, Budgeting, and Execution process that is more responsive to changing military needs. Furthermore, mechanisms that address/develop critical, near-term issues/capabilities should be in place to support ongoing combat operations.

## **Acquisition system**

The effectiveness, flexibility, and accountability of the Acquisition process must be improved. This means clear accountability of the military departments and agencies for program development—designating the Service Undersecretary as the Service Acquisition Executive (SAE) and requiring that all SAEs have had significant management experience in industry. Strong technical and program oversight from OUSD(AT&L) is also necessary.

USD(AT&L) must spearhead an initiative to strengthen systems engineering skills within the DoD acquisition workforce. An effective training and mentoring program must be established to attract, train, and sustain the systems engineering-skilled workforce.

The acquisition system development and demonstration process must be able to react rapidly to support ongoing military operations. Leadership from the Joint Chiefs of Staff, the Services, and USD(AT&L) as well as flexible budgets are necessary to formalize a system that enables rapid technology insertion into urgent operational requirements. Again, COCOMs should have an increased role in this effort.

USD(AT&L) should lead an initiative to manage cost growth and schedule slippage of development programs. This initiative should require the use of spiral development and enforce the budget and program boundaries and baselines that allow it to properly function. Moreover, DoD should fund competitive prototypes focused on providing discrete capabilities more quickly and more attractive costs.

The human resources that are key to successful management of the acquisition process need strengthening. The DoD is at a critical juncture with its workforce due to its loss of experienced personnel and the difficulty attracting new technical talent. Urgent attention is needed or DoD will be without the technical and leadership skills it needs for acquisition in the upcoming years. First, attract technical civil service personnel and fill senior civilian positions using aggressive and creative recruiting methods—on university campuses and through the National Security Personnel System (NSPS). Second, USD(AT&L) and Defense Acquisition University (DAU) must lead an initiative to improve acquisition personnel education. DoD must greatly enhance training and experience of its acquisition personnel to enable them to better understand issues of industry, business, and the economy. Rotation of personnel will be a key element.

## **DoD Industrial Base**

USD(AT&L) should lead an initiative to incent industry to close/reduce excess industrial capacity to provide DoD significant savings in the long term. USD(AT&L) (DUSD (Procurement and Acquisition Policy and Industrial Policy)) should work with OMB and industry associations to develop an approach that provides financial incentives for capacity reduction, including sharing the savings with industry. Strong analytic support is needed to demonstrate real savings. This is key to gaining Congressional support for shared savings approach.

Renewed efforts are needed to remove barriers that prevent non-traditional companies from entering the DoD market and to provide better access to commercial technology. USD(AT&L) should develop a new initiative to attack the myriad of rules, regulations, and practices that severely limit the use of OTA, Part 12, and other programs to reach beyond the traditional defense companies.

USD(AT&L), jointly with USD Policy, should lead an initiative to address the global supply base and develop policies and regulations to leverage global defense and commercial suppliers and technologies without risking important DoD equities. This effort will foster greater integration of DoD within the global defense and commercial supply chains, providing better technology and lower costs.



## II. INTRODUCTION

### *SUB-PANEL TASKING*

The 2005 DSB Summer Study was tasked to assess the state of Defense Transformation. This Sub-Panel was asked to address a series of issues related to:

1. The ability of the acquisition system to support the transformation of the Department of Defense's (DoD's) military capabilities. The term acquisition was defined in its broadest (big "A" acquisition) sense, covering the adequacy of the capability requirements process (what to buy) as well as the capacity to effectively develop and acquire those capabilities (how to buy).
2. The ability of the defense industrial base to provide the weapons, equipment, and services needed to support DoD's combat forces and related missions. Included in the terms of reference is the adequacy of industry's development and production capacity, as well as the innovation and competitive environments.

Each of these two broad issue areas is explored in detail in this report. The essence of the challenge is that Transformation requires a flexible and agile acquisition system and access to a responsive industrial base. Today, DoD has neither.

### *SUB-PANEL MEMBERSHIP*

A small, but expert and experienced Sub-Panel was assembled to address the above issues. Included were individuals with extensive government and business experience, economists and analysts, as well as a broadly experienced former Wall Street analyst. A list of the Sub-Panel members with brief bios is attached.

### *APPROACH/METHODOLOGY*

The Sub-Panel met five times over the March-July period, as well as attended monthly meetings with the Summer Study Co-Chairs and one meeting with the Senior Review Group. At each Sub-Panel meeting, several speakers addressed the group. The speakers represented the directly responsible government agencies, the defense industrial base, think tanks, and trade associations. The list of presenters is attached. In addition, Sub-Panel members met with various experts in the field and collected their reports and analyses. Early in the process, members developed a preliminary list of issues and tentative findings. These were frequently revised and updated over the course of the months leading up to the Summer Study session in Irvine. During the 2-week Irvine session, the Task Force completed its report and integrated the material into the Summer Study outbrief.



### III. BACKGROUND CONSIDERATIONS

**“Uncertainty is the defining characteristic of today’s strategic environment.”**

*-Secretary Donald H. Rumsfeld*

#### *SUCCESSFUL TRANSFORMATION*

Transformation is a complex process with many facets encompassing the entire Department of Defense. The success of the Transformation:

- Requires:
  - Transformed strategic and planning guidance;
  - Transformed joint concepts and force development; and
  - Transformed military planning/operations.
- Enabled by transformed supporting processes.

The Sub-Panel’s challenge is to provide recommendations to transform the defense acquisition system (broadly defined to include capabilities, resource allocation, development, and procurement) so that it operates effectively in a period of rapid change and uncertainty, possesses adaptable and flexible end-to-end processes, and provides choices that facilitate military agility/flexibility.

A transformed acquisition system is essential to military transformation for a number of reasons. In today’s environment, a responsive, rapid, and agile acquisition system is a necessity—the current model is not up to the task. Furthermore, the focus of military technology has shifted from Platforms to a radically different and more challenging development paradigm involving complex System of Systems.

The ever more important Intelligence, Surveillance, and Reconnaissance (ISR); Command, Control, and Communications (C3); Information Technology (IT) systems; and military networks rely heavily on commercial technology, software, intellectual capital and resources. These commercial systems regularly incorporate new technology and are updated frequently. The DoD acquisition system must be as agile if it is to expeditiously absorb these changes into military systems before a potential adversary.

DoD’s continued focus on the war on terror and ongoing operations in Iraq adds another dimension—the need for speed and agility in the acquisition system. The pressure of current operations demands a system capable of responding to critical short-term material needs (e.g. up-armored HUMVEES, anti-IED devices, tactical radios, etc.). The traditional, DoD 5000-based process is not optimized for speed and, despite the heroic efforts by many, is still inadequate for the challenge of war.

The Services also face a significant challenge in maintaining future force levels and capabilities needed to support foreign policy and national security goals. Recapitalization and transformation may not be affordable unless the continued cost growth of new systems is effectively managed. This problem must be addressed across the entire Acquisition System, beginning with the initial statement of capabilities needed so that affordability is considered in the context of a “value proposition.” **These**



**challenges are likely to be compounded by a future period of lower funding for investment. Thus efficient use of resources will matter more than ever.** Indeed it will be absolutely critical.

Rapid response, flexibility, and exploitation of novel technologies need to be moved up to the top of the list of acquisition priorities for the DoD. Today, DoD appears to give top priority to a wide array of programs and products—that drain very significant resources—to address legacy missions, often with some redundancy. The Department of Defense (DoD) and defense industry are weighed down by a legacy of infrastructure, processes, and mature product lines. DoD must create a strong impetus to further diminish the share of budget and talents being devoted to this legacy and free up U.S. resources to create the products, knowledge, and technology that are key to transformation. This calls for serious reexamination of priorities and portfolio rebalancing. The current acquisition system is not up to this challenge, and it was not substantively altered by acquisition reform attempts from the 1990s.

## IV. MILITARY CAPABILITIES

### A. ASSESSMENT

1. **The current process for generating capabilities is slow, unfocused and Washington-centric, i.e. – There is a broad consensus that it is “broken.”**
  - Office of the Secretary of Defense (OSD) guidance is broad and expansive, not prioritized or fiscally constrained. This gives the Services broad latitude to determine what goes into the Program Objective Memorandum (POM).
  - Combatant command (COCOM) input is limited and given the strong service influence with the Joint Staff, few capabilities are “born joint.”
  - Analytical tools and experienced personnel to support the capability process are inadequate. DoD has not yet moved fully beyond threat-based, “Cold War” approaches to construct and assess alternative value propositions.
  - Service inputs on costs, time frames, and technical risks are weak. Thus the capabilities are largely “unconstrained.”
  - The new Joint Capabilities Integration and Development System (JCIDS) process is, in practice, slow and manpower intensive. It covers multiple, small programs rather than focusing on the big, truly joint challenges. Given its ponderous nature, it is poorly suited to a world of rapid change in missions and technology.
  - Given these weaknesses, decisions on which systems to develop ultimately end up being brokered by OSD in the adversarial budget process.
2. **The lengthy timelines and inflexible outcomes tend to drive capabilities that are excessively demanding and entail serious technical risk (reflecting a culture of only “one bite at the apple”).**
  - DoD has experienced numerous examples of program delays and cost increases due to immature technology. The Government Accountability Office (GAO) has written several reports on this issue, and makes many valid points. Looking back 30 years or more, the DoD was conducting critical technology development and demonstrations to support key weapons systems. A good example is the ICBM program, which had a supporting, long-term technology development program to improve inertial guidance systems. The U.S. would not proceed with a new or substantially improved ICBM capability without first having demonstrated the requisite guidance technology. DoD needs to relearn the lessons from this approach and employ it in current and future programs.
  - While the DoD still has some technology development programs in place, it does not appear that the DoD is undertaking a program of technology development and demonstration of sufficient scope to reduce development risk to acceptable levels in many key acquisition programs.

**B. RECOMMENDED ACTIONS****1. Fundamentally restructure the capabilities requirements planning process—provide better focus, flexibility and rapid turnarounds. To this end, the Secretary of Defense (SecDef) and Chairman of the Joint Chiefs of Staff (CJCS) should:**

- Build the process on a foundation of clear and fiscally attainable strategies and planning guidance (the Business Plan would provide this).
- Give the COCOMs a much stronger role – both the regional and functional COCOMs.
- Ensure the COCOMs have access to the analytical/technical support they need to play a constructive role. As COCOMS become more involved with acquisition issues (notably U.S. Joint Forces Command (JFCOM) and U.S. Strategic Command (STRATCOM)), they will need skilled support to conduct tradeoffs among acquisition alternatives, and will also need to develop “value propositions” to assist in cost and requirements tradeoffs. Hopefully some of this capability is being developed in the COCOM staff. But there will surely be the need for external systems engineering and technical assistance (SETA) support. Such support could be provided by federally funded research and development centers (FFRDCs)—existing, newly created, or through contracts with private industry with careful attention to potential organizational conflicts of interest (OCI). Providing such support should be a very high priority for the COCOMS, and it is now time to plan and budget for the capability.
- Incent the services to provide well qualified and realistic inputs on costs, schedules, and technical risk. In return, DoD should reward good execution with increased stability in budgets, greater flexibility, and reduced micromanagement.

**2. The CJCS should revamp the JCIDS/JROC process to:**

- Focus the JCIDS process on serving the CJCS responsibility to advise on needed capabilities to provide integrated and effective joint forces.
  - Leave the detailed assessment of most programs to other existing processes.
  - Use the process to enable the CJCS to more effectively advise the SecDef on joint priorities across the spectrum of DOTMLPF.
- As a necessary complement, focus the Joint Requirements Oversight Council (JROC) on critical capability gaps lacking effective champions in the resource allocation process.
- Significantly re-engineer the ponderous JCIDS processes (J-8 has begun this effort—make this a priority second to none).
- Increase the formal role of COCOMs, USD(AT&L), and appropriate acquisition authorities in the JCIDS/JROC process (and insist that they participate).
- Support the process with strong system engineering and analytical capabilities sufficient to enable assessment and analysis of alternatives in order to adequately frame value propositions and reach informed judgments prior to making resource allocation decisions.
- Avoid excessive technical reach in determining capabilities. USD(AT&L) should establish a framework by Milestone 0 (Zero), to:
  - Build small, highly experienced technical teams to “Red Team” and independently assess proposed capability’s/program’s technical feasibility—inject realism.

- Rigorously assess the technology base and technical risk of proposed capabilities. Use the Technology Readiness Level (TRL) process with specific, defined technical criteria as best measure. In addition, it is important to also measure the manufacturing readiness of the technology, another source of delays and cost growth.
- When reviewing complex systems that could respond to the capability, assess the integration risk. Complex systems integration requires skilled and experienced personnel.
- Identify candidate areas for employing advanced technology development and demonstrations.



## V. RESOURCE ALLOCATION

**A. ASSESSMENT – Resource allocation is a critical element of the overall acquisition system, ensuring the right things are ultimately bought. Resource allocation is fragmented, affected not only by the budget/PPBE process but by major weapon system decisions.**

**1. The resource allocation process focuses on inputs and is driven by providers; the users (COCOMs) have only a modest role, and their views are not clearly articulated.**

- COCOMs provide little mission (output) guidance to the providers.
- COCOMs lack the staff support, visibility, and opportunity to make substantive enough inputs.

**2. The principal resource allocation process (Program Planning Budgeting and Execution (PPBE)) is rigid and unresponsive—out of synch with the needs of Transformation.**

- Not mission, priority driven or agile (allows only limited budget reserves and reprogramming authority).
- Does not focus on performance or have a timely feedback loop to impact subsequent budgetary decisions on programs.
- Lacks the flexibility to respond to the near term needs of the COCOMs or to respond to capabilities needed for ongoing operations.
- Focuses on capability gaps and ignores areas of excess capability (which could provide a source of funds).
- Forces last minute, arbitrary choices and trade-offs.
- Frequent funding changes caused by the last minute, arbitrary choices and trade-offs lead to the constant restructuring of programs which have a cost/schedule impacts.

**B. RECOMMENDED ACTIONS (Resource allocation is discussed in more detail in the Business Systems section of this report.)**

**1. Develop a multi-year, mission-focused business plan that allocates resources and provides capability output metrics.**

- Allocate resources to mission purposes.
- Constrain plans within achievable funding resource levels.
- Measure progress against plan objectives/metrics.

**2. Revamp the PPBE Process to make it more responsive to dynamic funding needs.**

- Provide more robust fiscal guidance up front to focus and prioritize the service/provider POM development (should flow from the Business Plan).
- Budget weapon system programs realistically upfront. The use of Cost Analysis Improvement Group (CAIG) estimates represents a big step forward (this is a practice that should be encouraged and sustained). Consider using “should-cost” analytic processes as well for new systems.

- Force trade-offs as new capabilities are proposed.
  - Intensify efforts to maintain stable funding and the use of multi-year contracts once trade-offs are agreed and programs mature.
- 3. Develop mechanisms to address critical near term issues where new, urgent funding needs must be met. Following the lengthy PPBS process to respond to these time-critical needs does not work. Examples of such needs include:**
- Near term urgent capabilities for the COCOMs.
  - Support for Combat Operations (e.g. OIF).

## VI. ACQUISITION SYSTEM

### A. ASSESSMENT

1. **The defense acquisition process is ill-suited to support Transformation. It remains too slow, inflexible, and inefficient. The system continues to deliver weapons years late or over budget. This often leads to “reforms” that end up adding more non-value added oversight.**
  - Accountability and responsibility are diffuse in an overly complex system.
  - Although the Secretaries of the Military Departments have clear authority on acquisition matters, they do not always exercise it. This is in part a function of the background and experience of the senior political leaders. Based on their specific interests or background, they become involved more or less frequently in major acquisition decisions and overall policy and program direction.
  - The role of the military leadership in major acquisition decisions varies by Service and is often unclear.
  - Joint Staff and COCOMs are not significant contributors.
  - Program managers spend far too much time reporting to satisfy oversight demands and too little time managing the program.
2. **Acquisition support for on-going operations (e.g. OIF) is clearly inadequate.**
  - Normal practices, oversight, etc. are excessive given the critical needs/short timelines.
  - Various Ad-hoc mechanisms have been developed to respond to OIF critical and immediate needs (8 rapid acquisition mechanisms currently exist).
3. **The traditional weapons development process is slow, inflexible, and provides narrow choices in the face of frequent change/uncertainty.**
  - Classic Example: F-22 (20 plus years in development—too costly to buy in quantity).
  - The lengthy process leads to a culture of “going for home runs”—i.e. attempted big leaps in capabilities, very demanding Key Performance Parameters (KPPs), undue technical risks, etc.—which result in high costs and schedule slips.
  - Inadequate numbers of new platforms/systems are being produced to equip future force structures. High unit costs make them unaffordable, which could significantly impact force structure over time.
  - It is difficult to rapidly deploy new technology into the fielded force in response to emerging capability needs.
4. **Excessive cost growth during the development phase also requires attention.**
  - Major systems average 50% cost growth (based on RAND SAR analyses).
  - Underestimating costs upfront is a chronic problem and is accepted to “sell” a new system, or shoehorn it into the FYDP. Immature technology is also often a cause of cost growth and schedule slips.
    - Technology critical to a system’s success is seldom developed and demonstrated in advance which would reduce risk and permit better cost estimates.



- Breaking out critical technologies provides a focus on these key developments, as well as proves points of competition necessary to spur innovation.
  - Management reserves at the program office are seldom allowed and contractors can't bid reserves—limiting the ability to fix problems early on.
  - Funding instability significantly exacerbates the problem (often leading to restructuring).
5. **With flat budgets and the urgent need to recapitalize its forces, DoD appears unable to develop and produce capable but less costly platforms/systems to provide the numbers needed for the force structure in the future.**
- New systems are significantly more costly than the ones they replace. DoD loses flexibility as it focuses very large investments in a few programs.
  - Numbers count. Quantity has a quality of its own. Future DoD budgets are not likely to sustain estimated capability needs. Particular problems must be faced with tactical aircraft and Navy surface combatants (are we headed for a 200 ship Navy?).
6. **The dramatic shift from procurement of hardware/material to services and from complex IT systems to outsourced maintenance support (now well over 50% of dollars) has not received adequate attention.**
- This new IT- and services-oriented landscape is not fully recognized or reflected in the procurement process. Increasingly large portions of the DoD acquisition budget go towards the acquisition of services, at times in place of more traditional acquisition of products (e.g. buying computer or network services, where once DoD might have bought the hardware). This shift in the DoD echoes the shift towards more service acquisition in the larger economy trend that is likely to continue and grow. The DoD has taken some initial steps towards recognizing this shift and altered some acquisition policies in response. However, the changes are not sufficient to fully embrace the potential it offers.
  - Most of the attention and best people are still focused on large hardware programs.
7. **Human capital issues exacerbate the problems of the acquisition process.**
- The DoD acquisition workforce needs strong systems engineering skills. Systems engineering is a process that is defined, repeatable, and supported by well defined processes, tools and infrastructure. System engineering integrates disciplines associated with understanding and defining needs (requirements) and proceeds through systematic tradeoffs to establish architectures, designs, and specifications. This leads to definition and breakout of products, and the functions associated with management of suppliers, test and evaluation, fielding, and support.
  - USD(AT&L) has lost much of the technical talent needed to provide rigorous oversight. In a multi-phased personnel downsizing that began in the first Bush Administration as the Berlin Wall fell, USD(AT&L) has lost scores of its most experienced personnel. Retirements were encouraged, many of which were early retirements. This downsizing also meant that virtually every senior civilian position (e.g. GS-15 or Senior Executive Service (SES)) vacancy was given up to reduce billet count; very few were opened to allow promotion opportunities that would retain and attract seasoned employees. In combination with lack of promotion opportunities and reduced manpower for staffing functions, the missions of various USD(AT&L) organizations over time diminished in technical focus to more administrative “corporate” oversight. Many OSD positions have turned into little more than “point paper” factories, and making the positions unattractive to skilled technical personnel.

- The technical capabilities and experience base of the Service acquisition work force are limited and declining; they find it difficult to match industry expertise.
- Acquisition training is narrow and inadequate. The Defense Acquisition University largely focuses on contracting skills and does not give enough attention to broad acquisition and program management challenges.
- Under-trained, risk adverse contracting personnel naturally revert to bureaucratic behavior, “the letter, not the spirit of the regulations.”
- Most Service War Colleges (ICAF is the exception) curriculums give little attention to capabilities planning, resource allocation, the acquisition process, or industrial issues. Thus future senior military leaders have little understanding of these matters or preparation for their important future roles.
- Government/military personnel (even in contracting) seldom understand business/finance or the dynamics of defense business.

**8. Despite years of Acquisition Reform, the process still discourages participation by non-traditional suppliers and impedes access to commercial and global technology.**

- Acquisition reforms designed to increase use of commercial practices and permit greater freedom of action have been rolled back. Over the last decade and a half, DoD has encouraged the use of commercial procurement practices to save time, money, and improve performance by gaining access to leading commercial products and technology. But this emphasis on commercial practices has waned in the past several years, in part because these reforms were blamed for enabling procurement scandals. Application of commercial practices becomes even more important to DoD in times of declining budgets, when lower spending by DoD can be better leveraged by suppliers who produce for both commercial and defense customers.
- Use of Other Transaction Authority and Federal Acquisition Regulation (FAR), Part 12 authorities are declining sharply at a time when the DoD acquisition system must be able to move quickly in fielding capabilities to match emerging threats. Further, the DoD will not access the best technology solutions available if its business processes create a barrier to entry for leading edge commercial firms. DoD regularly encounters reluctance by cutting edge technology suppliers to support DoD programs (the biotechnology sector is a good example).

## **B. RECOMMENDED ACTIONS**

**1. To meet Transformation goals, DoD needs to greatly improve the effectiveness, flexibility, and accountability of the Acquisition process.**

- Clear Leadership Roles and Accountability
  - **Need Service Accountability.** The DoD must give clear accountability to the Military Departments (Services) and Agencies for program development and execution by assigning explicit accountability for acquisition system and program performance to the Service Secretary and Chief of Staff (and the equivalent for defense agencies). As one way to bring more focus and accountability on acquisition matters, the DoD should propose legislative change, and other steps to designate the Service Under Secretary as the Service Acquisition Executive (SAE). The DoD should also propose legislative changes, requiring the SAE to have significant management experience in industry

similar to the legislative requirements of the USD(AT&L). This experience base provides the skills and insights SAEs need to successfully manage the extremely complex technical and financial acquisition enterprise and have a realistic view of industry performance and behavior.

- ***Need strong OUSD(AT&L) Leadership and Oversight.*** USD(AT&L) must provide vigorous technical and program oversight and drive the Defense Acquisition Board (DAB) process for milestone decisions. The leadership role of the USD AT&L in acquisition oversight is more vital than ever given the increasing need for joint considerations, ensuring acquisition discipline, and balancing budget and operational priorities. While the Services/Agencies must be clearly responsible for execution, the central authority for ensuring the SecDef’s overall acquisition programming and budgeting balance and policies are met reside with the position of USD(AT&L). Note that, with USD(AT&L), OSD(NII) has a cross-cutting role for C3I and information systems acquisitions. The centrality of the USD(AT&L) leadership, and the technical strength of the USD(AT&L) staff, needs to be reasserted and supported.
- USD(AT&L) needs to foster improvements in Acquisition System flexibility and effectiveness. The USD(AT&L) needs to promote flexible, effective acquisition policies and methods, and provide the oversight follow-through to make sure these are adopted in Service/Agency programs. To meet transformation goals, the USD(AT&L) has some particular challenges at this time:
  - ***DoD must place major new emphasis on tailored processes to handle the procurement of services.*** The DoD needs to assess the acquisition of services in its overall buying policies and determine how more streamlined procedures can be developed and implemented. Acquired services may provide some needed DoD capabilities rapidly and at lower costs than by procuring hardware. However, the DoD frequently applies the same thinking and the same acquisition and contracting processes that were created for product/system acquisition to service acquisition. As a result, the DoD fails to get the cost benefits or responsiveness it seeks.

OSD(AT&L) Defense Procurement and Acquisition Policy (DPAP) and Acquisition Resources and Analysis (ARA) should lead an initiative with the Services, and with other Government agencies as needed (e.g. Office of Management and Budget) to define and understand the types of services being bought/potentially could be bought, and to define more streamlined, lower cost ways to acquire these services.

- ***DoD needs to reinvigorate key “acquisition reform” tools (OTA, commercial practices, etc.) and work to resolve any issues of oversight and accountability.*** Several flexible acquisition tools defined and put into law during the 1990s’ acquisition reforms provide a good baseline for improved agility. The DoD needs to reinvigorate its use of these tools and expand, rather than contract, their use. USD(AT&L) should use its program and policy leadership position to push the use of Other Transaction Authority (OTAs) and similar mechanisms in applications that will benefit DoD.

USD(AT&L) also needs to address barriers that limit the use of these acquisition reforms. USD(AT&L) should tackle directly concerns or perceptions that using streamlined acquisition techniques limit DoD oversight or inhibit its ability to be fully accountable to meet the public trust. USD(AT&L) DPAP and ARA can select sample or demonstration programs and show how they met DoD’s acquisition needs in a streamlined way while still providing adequate DoD oversight. The USD(AT&L) and PDUSD and the SAEs should use the Acquisition Category (ACAT)/milestone approval process, DoD 5000 policy, publications, education and other avenues to underscore to the acquisition

community (inside and outside the DoD) that the most senior leadership of the DoD wants to use the most flexible route, access relevant commercial products, and at the same time provide proper oversight.

- **DoD Needs to Reinvigorate Systems Engineering.** The DoD acquisition workforce needs strong systems engineering skills. Systems engineering is a process that is defined, repeatable, and supported by well defined processes, tools and infrastructure. System engineering integrates disciplines associated with understanding and defining needs (requirements) and proceeds through systematic tradeoffs to establish architectures, designs, and specifications. This leads to definition and breakout of products, and the functions associated with management of suppliers, test and evaluation, fielding, and support. Various tools and techniques have been developed to enhance system engineering. Such tools include modeling and simulation to facilitate requirements analysis and the analysis of alternatives. The net output is Synthesis, applying tools to define architectures and top level specifications, robust designs, and balanced life cycle solutions.

USD(AT&L) needs to spearhead an initiative to reinvigorate and sustain the system engineering skills and tools that are critical to DoD programs. Steps that are needed include:

- a) Refresh continually systems engineering tools, and provide the training needed for effective exploitation and application.
- b) Attract and train the workforce to apply effectively these tools, DoD needs an effective training program that relies on mentoring by experienced systems engineers.
- c) Establish metrics to assess how well it is performing. The top level Capability Maturity Model Integration (CMMI) metrics provides a good foundation, but supporting metrics will need to be defined and iterated to provide meaningful indicators.

## **2. Increase the agility and responsiveness of the acquisition system development and demonstration process.**

- Formalize a rapid acquisition process for ongoing military actions. The current operations in Iraq and Afghanistan have underscored a dramatic need for a highly agile, broadly responsive, *clearly established* acquisition process for upcoming and ongoing operations. DoD should create formal framework for this so that Services and Agencies are not left to invent these in each instance or in isolation of each other, potentially facing the same barriers and concerns (e.g. legal constraints) repeatedly.

The USD(AT&L) Director (Defense Procurement)—with assistance of DUSD (Industrial Policy) and DUSD (Advanced Systems and Concepts)—should form and lead a Service/Agency team to create this new framework of policies and procedures. Some suggested criteria include:

- The DoD should use existing flexible acquisition contracting vehicles (Government Wide Acquisition Contract (GWAC), Indefinite Delivery/Indefinite Quantity (ID/IQ)) wherever possible. At the same time, pursue legislative or policy changes if new permissions would offer superior support to the Forces.
- DoD should delegate clearly defined authority to well trained/experienced on-site personnel (with reach back support).

- AT&L should create an oversight mechanism for this rapid acquisition process, but focus it on high risk, clearly material issues.
- AT&L should seek the DoD Office of the General Counsel assistance in establishing clear and consistent legal authorities (and waivers) across the Services/Agencies.
- USD(AT&L) should charter a study to “Look back” to successful past processes (e.g. Air Force Acceptable Quality Level (AQL)) as well as building from the lessons learned from current operations.
- Facilitate rapid technology insertion to meet urgent operational requirements. The DoD needs to create new mechanisms to permit the rapid insertion of new technologies, techniques, and other capabilities into the operational forces. This will require some new/additional capabilities, which will require JCS, Service, and USD(AT&L) leadership and budget support:
  - Create a rapid acquisition response fund for each COCOM. This should be a line item in the COCOM budgets in anticipation of needs as they are defined, rather than a reactive search for funds.
  - Help COCOMs generate good proposals by providing them with needed systems engineering support. (This support will likely need to be acquired by the COCOMS via FFRDC or contractor Systems Engineering and Technical Assistance (SETA) services, at least in part.)
  - Enable JFCOM to coordinate defense-wide response with systems engineering support, authorities and resources
  - Provide needed links between this rapid technology insertion capability and the rapid acquisition process (recommended for development, above, under USD(AT&L) leadership).
- Use technology demonstrations to speed new/improved product development and fielding. The DoD should fund technology and concept demonstrations in areas with potential to provide a needed capability to the field quickly and flexibly. DoD should increase the use and funding for Advanced Concept Technology Demonstrations (ACTDs) and Advanced Technology Demonstrations (ATDs). These acquisition avenues help DoD test new concepts and technology, but require funding mechanisms to allow transition of successful projects.
- Create DoD Acquisition Red Teams and Help Desks. The DoD should create small, highly skilled technical teams to focus on major systems development and management support, and to provide objective advice to Service leadership and the Joint Community. They should be used during early program formation (Request for Proposal (RFP), etc) and to address ongoing management crises. USD(AT&L) should lead an initiative to create cross-Service/Agency Red Teams for ACAT I programs, especially where Joint capabilities are indicated. The Red Teams should be composed of highly respected and credentialed cross-DoD acquisition personnel (Government civilian/active duty military, possibly augmented by retired Government/military personnel), representing the full set of skills needed to develop and manage acquisition programs in any phase (technologists, various disciplines of engineering, contracting, business and industrial capabilities, financial management, testing, etc.). Red Team network members would be tapped to form an operating team as needed—e.g. to help assess alternative material solutions for a needed capability; develop a program strategy and RFP documents; assess programs in trouble; etc. The goal is for the team to work constructively to advance DoD programs and policies, not to provide management auditing or oversight.

Red Team assignments must be seen as highly desirable, high visibility positions that can lead to promotion or a better job and not “detract” from the employees’ career path.

Similarly for ACAT II and smaller programs, each Service/Agency should create a permanent “Help Desk” of highly skilled, multi-disciplined experts in each Service to help program managers execute programs, not to provide oversight. (As an example, the USAF has established the Acquisition Centers of Excellence (ACE), who in part have the concept of providing such support across USAF programs. However, the ACE has not been provided with adequate resources to perform the mission as described herein).

### 3. Take actions to manage cost growth and schedule slippage of development programs.

- Emphasize Technology Demonstrations for large, long-term development programs. In addition to using technology demonstrations to move technology into DoD systems and products more rapidly, Technology Demonstrations are key to reducing risk for technologies that the DoD needs for its long-term development of new capabilities. These acquisition avenues can help DoD reduce the cost and schedule problems plaguing many of its most complex systems.

The DoD has a long history of such demonstrations as part of its technology roadmap planning, but the emphasis and funding to feed these long term paths seems to be slipping. USD(AT&L)/Director of Defense Research and Engineering (DDR&E) should lead a review of Service/Agency demonstration plans and programs and identify shortfalls. The goal would be to insure that long term demonstration paths are in place for critical technologies, to increase the funding plans for these paths as needed, and to fully exploit the well established mechanisms of Advanced Concept Technology Demonstrations (ACTDs) and Advanced Technology Demonstrations (ATDs), as well as Service/Agency demonstration mechanisms.

- Define programs so that technology and capabilities are achieved incrementally.
  - **Use Break-Out.** One way that DoD has at times successfully managed the complexity of bringing multiple new development capabilities for one program to fruition is through “break out.” Break-out in this context means competing the development of critical system and subsystem technologies in separate pieces, apart from the larger platform or system of system program. The break-out may be purposefully timed to be in advance of, or lagging, other system elements. The goal is to plan aspects of the overall capability in technical phases, reducing the full load of technical risk on a program at a given time, while still stimulating innovation and meeting the program’s capability goals long term. To work, the users may have to be willing to accept an initial product (platform, capability, etc.) with only some elements functioning while the remainder is planned for later insertion.
  - **Use preplanned spiral developments for all major programs.** Spiral Development is an approach for planning capability development in a purposefully incremental manner. It is discussed often, and the term is applied to various programs, but in fact it is seldom actually implemented. There are examples (e.g. Joint Unmanned Combat Air System (J-UCAS)) in which multiple spirals appear to be collapsed into the first spiral. Spiral development may be relevant and helpful for many programs (not only major programs), particularly many software intensive and information system developments.

The USD(AT&L) should lead an initiative to reinforce policies requiring the use of spiral development, and, more importantly, enforce the budget and program boundaries and baselines that allow it to properly function. Suggested steps include:

- a) Define spiral concept consistently and provide clear process guidelines for its implementation.
  - b) Require that each spiral focus on obtainable technology, allow the fielding of real capabilities and have a realistic time frame (2 to 5 years). More serious attention is needed to plan and execute spiral developments in which each new spiral will allow fielding an enhanced capability within 2-5 years of the previous spiral. This will require a parallel program of technology development and maturation. Candidate programs include J-UCAS, Global Hawk, Future Combat System (FCS), and Joint Tactical Radio System (JTRS).
- **Fund Competitive Prototypes to achieve discrete capabilities.** DoD should consider funding competitive prototypes focused on providing discrete capabilities more quickly and at attractive costs. This may help enable more affordable recapitalization of the Forces (various DoD programs have used this concept successfully in the past). The precepts of this approach include:
  - a) Using cost as a driving factor in the design and development of systems
  - b) Using competition to help stimulate innovation as well as contain costs

USD(AT&L) could underscore this approach in policy, and the Services would, as part of normal acquisition strategy formulation, identify capability or product areas where this may have the most payoff, and ensure that planning and budgets adequately consider this concept. Competitive prototypes could be for a subset of a larger acquisition strategy or for a complete capability. Selected capabilities would be competed to meet a general specification or requirements set.
- Redouble efforts to reduce funding turbulence.
- **Expand Earned Value discipline.** Earned Value management gives DoD insight into the relationships between program costs, schedules, and program progress. DoD needs to increase emphasis on disciplined use of Earned Value management. USD(AT&L) and DoD(Comptroller) should take steps that embed earned value management more deeply in DoD programs. Steps include:
  - a) *Create an approved “Earned Value Light” technique.* Require more programs to use earned value techniques or discipline concepts, if not full earned value management. Programs below certain thresholds are not required to implement earned value and firms who perform such programs feel that earned value is too onerous for such programs. While some programs should not have this level of management (e.g. commercial product acquisitions) almost all below threshold programs would greatly benefit from the discipline of these techniques. There are other techniques already in existence that could serve the disciplining control function of earned value for smaller programs – DoD should investigate this, develop or select an approach, and make it a requirement for the below threshold programs.
  - b) *PMs must manage by earned value.* Require that Program Managers, not just program budget and program control personnel; manage by earned value or an equivalent technique. The goal should be for all program office personnel, regardless of functional discipline, to be trained in earned value management.
- **Create tools to allow program obligation and expenditure tracking in real time.** In pursuit of “efficiency” and the need to use appropriated funds in a timely manner, funds

are often cut from program lines that appear to be obligating and expending too slowly. Such lagging expenditures can be due to slow reporting and oversight that cannot keep up with reality. Programs are then short of the funds planned and needed in a given time frame and must adjust program work to match the altered funding level and reprogram to seek the funds that were removed. This cycle creates added and unneeded turbulence in program cost, schedule and work flow. USD(AT&L) ARA and the DoD Comptroller should work with the Services/Agencies to create or adopt tools that offer much more real time program obligation and expenditure tracking.

- ***Continue to pursue and expand use of multiyear funding to enhance program stability.*** The USD(AT&L) and DoD Comptroller should examine the successes and limitations in multiyear funding for programs, and determine if this tool can be extended to more programs or to spending areas, e.g. services acquisitions.

**4. Take steps to strengthen human resources that are key to successful management of the acquisition process. The DoD is at a critical juncture for its workforce, and in turn, its training due to its loss of experienced personnel. Urgent attention is needed or programs will fail, and DoD will be without the technical and leadership skills it needs for acquisition in the upcoming years. An extensive series of actions is strongly urged:**

- All DoD organizations need to do more to exploit the National Security Personnel System (NSPS) to hire skilled, technical civil services personnel. Recruit aggressively on university campuses to attract new personnel to DoD. Use the NSPS flexibility to pursue more recruitment of experienced people from industry into senior (non-political) civilian positions.
- The DoD should investigate a formal initiative to bring back—on a part time basis—experienced personnel who have departed/retired to act as mentors. USD(AT&L) has been working on declining workforce skill issues for several years and needs to take the lead in this area and give it much greater priority.
- Realign and expand Defense Acquisition University (DAU) and DoD academic training to better meet needs
  - USD(AT&L) should oversee, and the DAU should lead, an initiative to greatly increase acquisition personnel training in systems engineering and essential program management, particularly cost realism estimating skills, earned value management, overall strategic planning and risk management, and business finance. DAU should take the following steps to expand intellectual and operational content of its program management curricula and broaden skill development for acquisition personnel.
    - a) Sponsor development or expansion of courses in the above areas at the Naval Post Graduate School, Air Force Institute of Technology, and other DoD academic institutions to work in conjunction with respected engineering and business management universities in the U.S. (e.g. MIT, Stanford, VPI, UVA, Harvard) to develop world-class training for DoD acquisition. This initiative should be a partnership with academia and industry to create multi-disciplinary systems engineering programs. These programs should also be made available to defense industry employees.
    - b) Make program management education, both short and long term courses, much more operational. The DAU needs to train personnel based on their current program assignments and the kinds of skills they need for program success now. While the generic DoD 5000 process and budgeting process must be taught, the DAU also needs to exploit modern training methods and media to make much



more tailored and relevant operational courses available. For example, distance learning, just-in-time training, and software training packages can be built up from building blocks and tailored to be address various kinds of program needs and challenges (development vs. production programs, large program vs. small program management, software intensive programs, C3I programs vs. large platform programs, programs based on limited development and commercial products, etc.). Training can be tailored to the needs of specific Service product centers (e.g. Army Communications Electronics Command (CECOM), and Air Force Aeronautical Systems Command (ASC)).

- c) Create seminar-type courses with DoD and industry leaders currently in or retired from acquisition management positions (e.g. former PEOs, retired defense industry executives) to provide an understanding of acquisition environment and challenges, and approaches that have worked in real life programs. DAU should create and maintain a network of former PEOs and program managers that they can tap to provide such seminars and mentoring. Services should set aside a portion of their acquisition program funds for System Engineering and Technical Assistance (SETA) and Advisory and Assistance Services (AAS) so that program personnel can get access to bring experienced mentors. Retired individuals are ideal mentors, as their organizational position in no way interferes with their mentorship role.
  - d) The DoD and industry operate as a team in acquisition programs; they should be trained as a team as much as possible. DAU course work should expand the inclusion of defense industry members as participants, and should offer case study seminars to purposefully place DoD and industry employees learning together.
- DAU should also be tasked to lead in creating and fostering DoD- wide and Service-centered Help Desk functions (outlined in Recommendation 2 above). This will allow synergy and coordination between acquisition training and real problems and challenges being experienced by the acquisition work force in program offices.
  - DAU should integrate specific education and training needs from all Service/Agency SAEs and product center/command commanders, to elevate attention to the training problem and ensure needs are properly identified.
  - USD(AT&L) should assist the DAU and Services in determining needed training budget funds to implement these recommendations. Training in many commands has been cut due to the need to reprioritize funds for the Iraqi conflict.
  - Services should expand curricula at their respective War Colleges to provide better insights on capabilities planning, resource allocation and acquisition. They should also integrate extended acquisition training into core required professional military education to foster the growth of officers ready to lead acquisition organizations and understand its challenges in the overall military and industry context.
- Facilitate broad exchanges of personnel between government and industry. Many acquisition workforce personnel, civilian and military, have extremely little insight into the operations of defense or commercial firms and the structure, performance and dynamics of the industry overall. In an era when government work is increasingly outsourced, defense industry is highly concentrated and the economy and technology are changing at a very rapid pace, the DoD cannot afford to have personnel with a dominant, internally-focused field of view. With the exception of a limited subsection in a few courses, there is virtually no training in the

DoD on business finance. DoD must greatly enhance training and experience of its acquisition corps so they understand key issues facing industry, business, and the economy. USD(AT&L) should oversee, and DAU and Services should take actions to:

- Create and promote industry-work exchange programs, wherein a quota of civilian and military personnel is required each year to work inside commercial companies, both defense and non-defense. This should be a career enhancing credential. Services will need encouragement from USD(AT&L) to free up personnel to do this, and it will require a funding commitment as well as persistent oversight. This should include an exchange, where industry personnel can be assigned into DoD positions. These exchanges are vital to foster the DoD/industry team environment essential to acquisition program success.
- Remove impediments to the flow of industry personnel into government for mid-level positions, if NSPS cannot resolve these issues. DoD can greatly enhance its technical and management skill set by moving personnel between DoD and industry. This is of long term benefit to both government and industry.

The JCS should oversee a serious review and revamping of the Industrial College of the Armed Forces (ICAF) curricula. The current program initiates many officers, and a few civilians, into (primarily) national security training, along with some training in economics and a visit into some area of the larger economy (e.g. agriculture, electronics, etc). The curricula should be reviewed relative to new challenges facing DoD and industry, including how new national security strategies relate to a global economy and homeland security and how the U.S. defense and commercial technology and industry relate in this setting.



## VII. DoD INDUSTRIAL BASE

### A. ASSESSMENT

#### 1. The new defense technology and business landscape impacts DoD's Technological, Industrial, and Service Bases in various ways:

- DoD has moved away from its long-standing platform-centric focus. This shift from platforms to a network centric model has profoundly affected the future shape of the industry. This places the emphasis on a wide variety of highly integrated capabilities in electronics, software, information technology, and services. This shift puts an even greater premium on systems of systems engineering skills in order to address very large scale systems architecture and integration issues, vice the more focused demands of managing large platform programs. That said, today's platforms also require extensive systems engineering to address highly complex systems integration challenges in communication, intelligence, offensive and defensive systems, etc.

The shift in DoD buying patterns has also left the U.S. with excess capacity in platform production facilities (e.g. aircraft, ship and submarine, satellite, large space launch). Because these facilities are largely, if not wholly, used and sustained by DoD programs, the Government is ultimately the bill payer for the excess capacity. A wide variety of issues, including environmental liability, regional job concerns, and the up front cost of closures, make this excess capacity difficult to eliminate. The defense industrial base must divest unneeded capacity and resources to focus its future resources on new, leaner, and more flexible industrial capabilities to address emerging DoD needs.

- Shifts in DoD buying have changed the defense business model, and the nature of defense product lines and funding streams has also changed dramatically in the last 15 years. Today, platform programs do not generally have long or volume production runs. In the past, if R&D phases of a program required higher outlays or resulted in lower margins, future high volume and long production cycles offset this, offering future profitability. Typically, firms would have an R&D program underway at low or no margin and at the same time have a production program in its more profitable phase. This balance helped firms to support their IR&D and to stabilize revenue and profits over long product and business cycles.

Today, firms must operate on the assumption that an R&D program may not be followed by a large production quantity or perhaps any production at all. Further, the long production runs from the past have dwindled, often leaving one or possibly two large development programs but no on-going production program to sustain profitability. This altered business model limits a company's flexibility and incentives to invest, select business strategies, or pursue new or modified lines of business.

- The broad industry consolidation of the last 15 years has left a much altered industrial landscape. Much of the critical defense technology, workforce, and infrastructure in the U.S. are now owned by fewer than 20 firms. Large platform capabilities, and to some extent, key defense unique subsystem technologies, are held by a handful of firms. The dynamics between primes and subcontractors have changed, as many integrated primes have less need to use subcontractor capabilities. Moreover, large defense firms that were once platform or hardware dominated have, by merger and acquisition, expanded to provide information technology and knowledge services.

- DoD must address these new challenges in order to have the industry it needs for transformation. Industry must maintain the needed technology base, personnel, and facilities to compete and provide attractive, affordable, competitive solutions to the uncertain and changing needs driven by Transformation.

- ***Firms’ strategies are shaped by risks and uncertainty.*** U.S. defense transformation, the global terrorist threat, and asymmetric warfare have resulted in much uncertainty for companies as they face unclear future customer and product demands. If DoD is to be ready to address a wide range of adversaries and conditions, it must be able to quickly alter its course and pursue new solutions as a threat develops. These complex threat conditions make it harder for firms to discern what DoD will be buying 5, 10 or 20 years from now. Certain technologies are clearly critical, but a technology investment only makes business sense if it is actually procured down the road.

Companies can only accept certain levels of risk, and business success means they must focus expenditures on those that are likely to have the real payoff. In some cases, they sell or drop product lines, or give up pursuit of some customers to focus on areas with clear revenue streams. This exacerbates the problems DoD already faces given reduced competition.

- ***Firms will face financial challenges given slowing R&D and procurement growth.*** Budget deficits and other federal needs are placing greater pressure on defense R&D/Procurement spending. Moreover, ongoing operations in Iraq and other conflicts will likely continue to absorb a significant share of the defense budget.

Solid cash flow and adequate profits will be essential to ensure defense company access to capital needed to sustain acquisition programs. A repeat of the industry financial crisis of the late 1990s is possible, when most major company debt burdens were high, profitability was strained, and bond ratings and market values suffered. This challenge could be even more difficult in the years ahead if investment spending declines as many projections suggest.

Given the already significant shortage of engineering and scientific talent, the DoD cannot afford a repeat of the late 1990s’ flight of highly skilled employees out of defense industry. A healthy defense industry with access to capital and the ability to attract talented personnel is clearly in DoD’s interest.

- ***Industry’s ability to execute large programs is in question, given the dramatic increase in systems complexity and scope.*** Developing complex systems of systems creates program management and systems engineering challenges that have increased geometrically. At the same time, the cadre of experienced program managers and systems engineering expertise has diminished. Further, it is very difficult to recreate the skills that have been lost. Sophisticated systems engineering and management experience comes from working on multiple programs over time. With far fewer new program starts, developing experienced technologists and engineering talent is more difficult. Moreover, the Government has the same issue, so that the loss of experience is occurring on both sides of the programs.
- ***Spending on IR&D is declining and there are fewer company “science centers” to spawn innovation.*** DoD Science and Technology spending has been level to declining in real terms, while industry’s IR&D spending is stagnant or falling at a time when more innovation is needed. IR&D rates have long tended to vary according to the nature of the products to which they relate. For example, IR&D rates as a percent of sales on armored vehicles have been low for many years, relative to IR&D rates as a percent of sales in

some defense electronics areas. Today, there remain some high interest areas where firms focus and expend a higher rate of sales on IR&D. However, even where IR&D/sales rates have not fallen, the nature of IR&D spending has changed in the last 15 years. Today, nearly all IR&D is focused on near-term “contract-oriented” opportunities, with very little emphasis on science or true independent research efforts. This echoes a U.S.-wide tendency for many larger firms to shed their lab-type expenses, which pay off in the longer term.

The defense industry consolidation also results in fewer laboratories and research centers in U.S. defense firms. One of the fallouts of integrating one firm into another was often to reduce the number of laboratories or research centers. While the consolidation was inevitable and the downsizing associated with it needed, it has resulted in fewer research centers devoted to defense related needs.

- **Issues with 2nd thru 4<sup>th</sup> tier suppliers are emerging.** There are a variety of dynamics that are placing pressure on the subtier supplier base”
  - a) **Low demand, specialized products.** There are product areas where supply is fragile, particularly where demand is limited and program cycles have long periodicity. This Sub-Panel reviewed specific examples of problems related to subtier products in space, shipbuilding, and ammunition industries.
  - b) **Regulatory requirements** that are flowed down to subcontractor tiers (Truth in Negotiations Act), Intellectual property, etc) can also be a factor. Small firms have expressed concerns that DoD’s removal of certain required and standardized procedures (e.g. Mil-standards) has forced them to support a multiplicity of varying procedures that are unique to companies in the value chain above them. (On balance, the reduction of MIL-standards should lower costs industry-wide.) The concern for DoD is that heavy cost pressure exerted by larger firms will result in smaller firms abandoning the market or having their financial health seriously impaired.
  - c) **Bringing money to the table.** Sub tier suppliers are increasingly required to provide investment funds for teaming with primes/firms in tiers above them. This funding demand is hard for small or specialized product line firms to sustain, creating pressure for firms to merge or be acquired to give them the resource mass to remain in their markets.
  - d) **Source restrictions.** Defense companies have many barriers that make it difficult for them to tap innovative technology from the global supply chain and so seek competition or a superior product from sources outside the U.S. (discussed at length later).
- 2. **The defense industrial base is more isolated and less agile and innovative than other industrial sectors.**

- Traditional defense companies are increasingly isolated from the broader economy.
- **Major defense companies operate primarily within DoD/Government markets.** Over the long term, DoD has experienced an inability to leverage U.S. commercial industry, let alone the global supply base and advanced technologies of other nations. This increasingly isolates U.S. defense firms from the larger economy, making DoD’s weapons more expensive and potentially less technologically advanced.

U.S. defense firms operate in the global marketplace via a hodge-podge of trade and export laws and policies that affect both the supply and demand for defense firms. On

the supply side, laws and regulations complicate the ability of U.S. firms to gain access to foreign technology and the robust global supply chain.

DoD's acquisition activities have no well-thought-through, consistent policy framework for addressing the 21<sup>st</sup> century global economic setting. Some legislative limitations in buying products are based on old or "grandfathered" technology concerns or special Congressional interests. Fears of loss of global primacy or supply dependence have recently resulted in renewed Congressional focus on Buy America. Further, the Services and Agencies exacerbate the isolation with their own policies and practices, restricting foreign supply—varying at times by product type or buying activity. This patchwork of foreign sourcing restrictions and localized policies or interpretations means that firms face an imposing set of foreign sourcing and export control barriers that make it unattractive or difficult for them to seek desirable foreign sourced goods or technology.

Affecting both demand and supply for firms, the U.S. Export and Technology control regimen has resisted reform efforts and is even more restrictive today. The technology control process locks U.S. suppliers out of international markets and causes serious issues with staunch allies who seek to do business with the DoD or U.S. industry (e.g. United Kingdom and the F-35). This restrictive environment has also made cross border industry partnerships and ventures less robust and productive to the disadvantage of DoD. This does not imply that all controls and oversight are bad but sensible, understandable regulations are needed.

Given the potential for global supply disruption, the DoD also needs to carefully monitor the impact of broader forces in the global economy. Regardless of restrictions and limitations to isolate its products from global turbulence, global supply conditions will affect DoD products and technology. The DoD needs to assign clear organizational responsibility to address these issues.

- ***Most large U.S. industrial broad-based companies have exited defense unique markets.*** Defense companies operate under a unique set of rules and regulations plus carry a heavy and costly oversight burden (creates high barrier to entry). Over the last few decades, as other forces pressed on U.S. industrial firms, they began exiting the defense market by divesting their defense product lines. The pace of these divestitures was hastened by the budget declines in the Post Cold War period.

While firms with well established or mature commercial product lines are normally willing to sell their products to the DoD, firms with the most leading edge capabilities are often not willing to do so. Their intellectual property holdings are critical, they often rely on making very high profit margins, and they are unwilling to address the overlay of Government procurement regulations and processes.

Access to the industrial base beyond traditional U.S. defense companies remains difficult—unfortunately it appears that the 1990's acquisition reforms are all but dead. The more streamlined acquisitions mechanism that were put in place, such as Other Transactional Authority, have never gained sufficient use to make real progress in routinely and easily reaching out to this desirable non-traditional defense base.

## **B. RECOMMENDED ACTIONS**

### **1. Strengthen the industrial base supporting DoD**

- Exploit prototype programs to develop experienced program managers and maintain design teams. Prototype programs can offer repeated and varying opportunities for needed

experience to develop deep systems engineering skills. They also provide potentially valuable product solutions to DoD users. This proposed action was described in detail in Acquisition System, Recommended Action #3.

- Expand education and training in system engineering and program management skills. The DoD needs to take aggressive action to develop better education programs for systems engineering and management for both DoD and industry personnel. This proposed action was described in detail in Acquisition System, Recommended Action #1.
- DDR&E should review S&T funding to determine the levels needed to provide needed technology to support transformation. Work with Services in program and budget guidance to increase S&T percentage of R&D budget. Investigate IR&D rates and seek ways to incent more IR&D spending.
- The USD(AT&L) should lead an initiative to incent industry to close/reduce excess industrial capacity; this offers sizable savings for the DoD in the long term. USD(AT&L) (DUSD (Procurement and Acquisition Policy and Industrial Policy)) should work with OMB and industry associations to develop an approach to create financial incentives for capacity reduction in defense firms, including sharing the savings with industry. Strong analytic support would be needed to demonstrate savings realization; this is key to gaining Congressional support for any given shared savings implementation.
- A further deterrent to companies closing underutilized facilities or capacity is the potential for local job loss and the accompanying political resistance, even if savings to the U.S. Government are made clear. USD AT&L/DUSD (Industrial Policy) should work with industry associations, OMB, Congress and Base Realignment and Closure (BRAC) authorities (as model) to determine if a BRAC-like process could be developed (an “industrial BRAC”). This is complex given the role of private corporations, but the DoD could assess the concept, using for DoD-owned plants that are currently underutilized.

**2. Renew efforts to remove barriers to entry into the DoD market by non-traditional companies and provide better access to commercial technology.**

- Reinvigorate and extend streamlined acquisition methods. USD(AT&L) must reenergize the advances made in earlier Acquisition Reforms. Develop a new initiative to attack the myriad of rules, regulations, and practices that severely limit the use of OTA, Part 12, and other programs to reach beyond the traditional defense companies. This proposed action, which also helps promote more streamlined and cost effective acquisitions, was described in detail in Recommended Action, Acquisition System, and Paragraph 1.
- Consider DoD-wide initiatives to access non-traditional suppliers and technologies via innovative approaches such as CIA’s IN-Q-TEL<sup>84</sup> and Army’s On-Point. DDR&E should take the lead, with DUSD (Advanced Systems and Concepts) and ODUSD (IP) support, to investigate and identify technology areas where the DoD is not gaining access to non-traditional technologies and suppliers. Identify the barriers, opportunities and promising areas for follow-up. Assign Services technology organizations or DARPA to follow-up in pursuit of areas identified as promising.
  - **Increase DoD’s role in oversight of the important 2<sup>nd</sup> to 4<sup>th</sup> Tier.** USD(AT&L) and SAEs should use the acquisition program review process to query programs explicitly about areas in the supply base below prime that are fragile, technically problematic, for which limited competition is available, and which could be a bottleneck if production had

<sup>84</sup> IN-Q-TEL – A private, non-profit enterprise funded by the CIA



to be increased to meet operational demands. USD(AT&L) should give ODUSD(IP) clear mandates (and resources) to address 2nd through 4th tier supply issues. ODUSD(IP) could use the input from the acquisition program review process, the recent efforts to work issues in the space sector, and other queries to the Services/Agencies to determine areas that need follow up. ODUSD(IP) should work with the Services and the Defense Contract Management Agency (DCMA) to develop programs and processes to remedy or maintain adequate oversight of critical materials and technology problems at the 3<sup>rd</sup> and 4<sup>th</sup> Tier.

- NRO’s Space Industrial Base Council is an example of how overall product areas may be monitored to identify industrial concerns. The ODUSD (IP) and Services should evaluate this as a model for Services/other Agencies to consider implementing in other key, large product areas

**3. Undertake a focused effort to foster greater integration of DoD within the global defense and commercial supply chains.**

- The USD(AT&L), jointly with USD Policy, should lead an initiative to address the global supply base and develop policies and regulations to leverage global defense and commercial suppliers and technologies.
  - Develop coordinated leadership among DUSD (International Technology Security), DUSD (Industrial Policy), Defense Threat Reduction Agency (DTRA) and Service Intelligence personnel who perform foreign industry analysis.
  - Work with the Services to develop a strategy-based policy to balance opportunities offered by foreign sourcing with risks. The goal is a policy framework that can be based ongoing analysis of what best serves DoD needs. Policies need to be flexible in openness to and level of foreign source involvement, depending on the opportunities offered by foreign sourcing and any issues posed. DoD may look at models in how the UK or other close allies have dealt with this issue.
  - USD(AT&L) should analyze the pay-off of changes to laws and practices that block access to the Global Supply System (build support for change).
- USD AT&L should work with industry associations, OMB, and Congress to address “Buy America” impediments. DoD should make wider use of waivers and other exceptions. Even incremental steps will be useful.
  - Examine Service-unique foreign sourcing policies and practices and determine how to normalize into the new DoD policy framework being created. Train contracting officers and other acquisition personnel to go beyond current risk adverse practices.
  - Direct DTRA to undertake a renewed effort to reform/simplify export controls and dramatically shorten the munitions list.

## VIII. CONCLUDING COMMENTS

The Secretary of Defense and his leadership team have invested great energy and focus to the transformation of U.S. military capabilities over the past four years. Much has been accomplished and many elements are in process. Yet a series of impediments block the full realization of the Secretary's transformation vision.

- An agile, mission-focused process to define the capabilities which U.S. forces must have to meet the challenges of the next decade and beyond.
- Processes that ensure that planned capabilities are affordable and the technical risks are acceptable.
- A responsive resource allocation system that channels funds to the highest priority needs and can be flexible in an era of uncertainty and rapid change.
- An acquisition system that is agile and responsive to meet shifting needs but also develops and buys complex systems at reasonable costs and schedules.
- A robust, technology-excellent industrial base that can access cutting edge commercial technical capabilities and the global supply chain.

The actions proposed in this report will minimize these impediments and accelerate the transformation process.



## **APPENDIX A. PANEL MEMBERSHIP**

### **CHAIRPERSONS**

Dr. Paul Kaminski, *President and CEO, Technovation, Inc.*

Mr. Philip Odeen, *CEO, QinetiQ North America*

### **MEMBERS**

Mr. Pierre Chao, *Center for Strategic and International Studies*

Ms. Christine Fisher, *Private Consultant*

Mr. Gil Decker, *Private Consultant*

Mr. Jack Welch, *Private Consultant*

### **GOVERNMENT ADVISORS**

LTC Bob Jones, *OSD, OFT*

Dr. Jerry McGinn, *Special Assistant to the Principal Deputy, OUSD(P)*

### **DSB SECRETARIAT**

LtCol David Robertson, *USAF, Defense Science Board*

### **STAFF**

Mr. Robert Genkinger, *SAIC*

Mr. Jonathan Hamblin, *SAIC*

**APPENDIX B. GUEST BRIEFERS****11 APRIL 2005**

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|                                              |                  |                         |
|----------------------------------------------|------------------|-------------------------|
| Past Defense Science Board (DSB) Studies     | Gen Larry Welch  | IDA                     |
| Services Industry in the Acquisition Process | Mr. Stan Soloway | PSC                     |
| The Defense Industrial Base                  | Mr. Jack Spencer | The Heritage Foundation |

**10 MAY 2005**

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|                                                   |                                  |        |
|---------------------------------------------------|----------------------------------|--------|
| USN Brief on Transformation                       | Mr. Thomas Essig                 | USN    |
| USA Brief on Transformation                       | Ms. Tina Ballard                 | USA    |
| Acquisition Policies, Regulations, and Procedures | Mr. Joe Kampf                    | Anteon |
| Industry Concerns regarding Acquisition           | LtGen Larry Farrell (USAF, ret.) | NDIA   |

**7 JUNE 2005**

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|                                         |                                                       |     |
|-----------------------------------------|-------------------------------------------------------|-----|
| Industry Concerns Regarding Acquisition | Ms. Susan Marquis<br>Mr. Bob Hale<br>Mr. Rick Jackson | LMI |
|-----------------------------------------|-------------------------------------------------------|-----|

**13 JUNE 2005**

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|-----------------------------------------|----------------------|------|
| Industry Concerns Regarding Acquisition | Ms. Natalie Crawford | RAND |
|-----------------------------------------|----------------------|------|

**23 JUNE 2005**

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|-----------------------------------------|------------------------------------------------|---------------------|
| National Security Space Industrial Base | Dr. Sumner Matsunaga<br>Mr. Jeffrey Poindexter | The Aerospace Corp. |
|-----------------------------------------|------------------------------------------------|---------------------|

**29 JUNE 2005**

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|                                       |                                  |          |
|---------------------------------------|----------------------------------|----------|
| Air Force Acquisition and Contracting | Mr. Charlie Williams             | USAF     |
| JCIDS Overview                        | Mr. Bill Cooper                  | JCS, J-8 |
| Commercial Acquisition Processes      | MGen Tim Malishenko (USAF, ret.) | Boeing   |

**26 JULY 2005**

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|                                   |                    |                  |
|-----------------------------------|--------------------|------------------|
| DoD Transactions                  | Mr. John Ablard    | LMI              |
| Major Acquisition Programs        | Mr. John Young     | Northrop Grumman |
| Defense Industrial Base           | Mr. John Birkler   | RAND             |
|                                   | Mr. Jeff Drezner   |                  |
| Selected Acquisition Report (SAR) | Mr. Obaid Younossi | RAND             |
|                                   | Mr. Mark Arena     |                  |

**APPENDIX C. ACRONYM INDEX**

|             |                                                                                                |
|-------------|------------------------------------------------------------------------------------------------|
| ACAT        | Acquisition Category                                                                           |
| ACE         | Acquisition Centers of Excellence                                                              |
| ACTD        | Advanced Concept Technology Demonstration                                                      |
| AQL         | acceptable quality level                                                                       |
| ARA         | Acquisition Resources and Analysis                                                             |
| ASC         | Aeronautical Systems Command                                                                   |
| AT&L        | Acquisition, Technology, and Logistics                                                         |
| ATD         | Advanced Technology Demonstration                                                              |
| BRAC        | Base Realignment and Closure                                                                   |
| C3          | Command, Control, and Communications                                                           |
| CAIG        | Cost Analysis Improvement Group                                                                |
| CECOM       | Communications Electronics Command                                                             |
| CIA         | Central Intelligence Agency                                                                    |
| CMMI        | Capability Maturity Model Integration                                                          |
| COCOM       | Combatant Command                                                                              |
| CJCS        | Chairman of the Joint Chiefs of Staff                                                          |
| DAB         | Defense Acquisition Board                                                                      |
| DAU         | Defense Acquisition University                                                                 |
| DCMA        | Defense Contract Management Agency                                                             |
| DDR&E       | Director of Defense Research and Engineering                                                   |
| DoD         | Department of Defense                                                                          |
| DOTMLPF     | Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities |
| DPAP        | Defense Procurement and Acquisition Policy                                                     |
| DSB         | Defense Science Board                                                                          |
| DTRA        | Defense Threat Reduction Agency                                                                |
| DUSD        | Deputy Undersecretary of Defense                                                               |
| FCS         | Flight Control System                                                                          |
| FFRDC       | Federally Funded Research and Development Center                                               |
| GAO         | Government Accountability Office                                                               |
| GWAC, ID/IQ | Government Wide Acquisition Contract, Indefinite Delivery/Indefinite Quantity                  |
| ICAF        | Industrial College of the Armed Forces                                                         |
| ICBM        | Intercontinental Ballistic Missile                                                             |
| IED         | Improvised Explosive Device                                                                    |
| IP          | International Programs                                                                         |

|            |                                                                          |
|------------|--------------------------------------------------------------------------|
| IR&D       | independent research and development                                     |
| ISR        | Intelligence, Surveillance, Reconnaissance                               |
| IT         | information technology                                                   |
| J-8        | Force Structure, Resource, and Assessment Directorate of the Joint Staff |
| J-UCAS     | Joint Unmanned Combat Air System                                         |
| JCIDS      | Joint Capabilities Integration and Development System                    |
| USJFCOM    | United States Joint Forces Command                                       |
| JROC       | Joint Requirements Oversight Council                                     |
| JTRS       | Joint Tactical Radio System                                              |
| KPP        | Key Performance Parameter                                                |
| NII        | Networks and Information Integration                                     |
| NSPS       | National Security Personnel System                                       |
| OCI        | organizational conflict of interest                                      |
| OIF        | Operation Iraqi Freedom                                                  |
| OMB        | Offices of Management and Budget                                         |
| OSD        | Office of the Secretary of Defense                                       |
| OTA        | Other Transaction Authority                                              |
| OUSD       | Office of the Undersecretary of Defense                                  |
| PDUSD      | Principal Deputy Undersecretary of Defense                               |
| PEO        | Program Executive Officer                                                |
| POM        | Program Objective Memorandum                                             |
| R&D        | Research and Development                                                 |
| RFP        | Request for Proposal                                                     |
| S&T        | Science and Technology                                                   |
| SAE        | Service Acquisition Executive                                            |
| SAR        | Selected Acquisition Report                                              |
| SecDef     | Secretary of Defense                                                     |
| SES        | Senior Executive Service                                                 |
| SETA       | Systems Engineering and Technical Assistance                             |
| USSTRATCOM | United States Strategic Command                                          |
| TINA       | Truth in Negotiations Act                                                |
| TRL        | technology readiness level                                               |
| USAF       | United States Air Force                                                  |
| USD(AT&L)  | Undersecretary of Defense for Acquisition, Technology, and Logistics     |





## PART 6: HUMAN RESOURCES PANEL REPORT

|                                                               |     |
|---------------------------------------------------------------|-----|
| Chapter I. Introduction.....                                  | 285 |
| Chapter II. A New Officer and Enlisted HR System.....         | 287 |
| Chapter III. Reserve Component .....                          | 291 |
| Chapter IV. The Service Contractor Force .....                | 295 |
| Chapter V. The National Security Personnel System .....       | 299 |
| Chapter VI. The DoD Training Transformation Challenge.....    | 303 |
| Chapter VII. The Need for Language and Cultural Studies ..... | 309 |

### PART 6 APPENDICES

|                                                                  |     |
|------------------------------------------------------------------|-----|
| Appendix A: Panel Membership.....                                | 317 |
| Appendix B: Briefings Received .....                             | 318 |
| Appendix C: Training Transformation Supporting Initiatives ..... | 319 |
| Appendix D: Acronym List .....                                   | 321 |



## I. INTRODUCTION

Human Resources are transcendent; they are a critical element in every section of this transformation study. The special concerns of each area of study are discussed in their respective sections although the overall issues facing human resources transformation cannot be covered in total by analysis of these specific issues.

The focus of this panel is overall human resources transformation within the Department of Defense (DoD). With the conversion of the U.S. military to an all-volunteer force, many existing policies for managing human relations in DoD required changes. Some of these transformations are already underway, such as the passage of legislation enabling the National Security Personnel System; however, much more remains to be done, including implementation within the Department of new authorities.

The following human resources section is organized into six chapters—each analyzing a major human resource issue: a New Officer and Enlisted HR System, the Reserve Component, the Service Contractor Force, the National Security Personnel System, the DoD Training Transformation Challenge and the Need for Language and Cultural Studies. Taken together, these chapters address the future management of all components of the integrated U.S. military all-volunteer force.

The Panel has compiled a comprehensive list of recommendations for the Department generated through numerous briefings, extensive research and the membership's background knowledge. The recommendations found in this section propose improvements upon existing systems such as enhanced predictability regarding tours of duty for the Reserve Component, and the revitalization of the Foreign Area Officers program. In addition, the proposed changes include action items, such as improving upon and clarifying the use of Service-Contractors, and restructuring the promotion and compensation packages for Officers and Enlisted members of the career force. While each chapter proposes improvements regarding specific areas of concern, the underlying effort remains constant – to improve upon the environment that hosts the Department's single greatest asset: its devoted personnel. A complete summary of the Panel's recommendations can be found on page 308.



## II. A NEW OFFICER AND ENLISTED HR SYSTEM

### BACKGROUND

The personnel profile of the U.S. military is unique among major military powers. In Europe, for example, career officers routinely serve until their late fifties whereas in the United States only the highest ranking flag and general officers serve past their early fifties. The U.S. system is shaped by the up-or-out promotion and tenure rules codified in the Defense Officer Personnel Management Act of 1980; the act allows full retirement as early as twenty years of service with mandatory retirement of all officers who have not reached the grade of O-7 by thirty years of service, despite the fact that the Goldwater-Nichols reform has added at least five years of additional career content to an already crowded career. In the enlisted force mandatory retirement often comes at an earlier age since many enlistees are younger than officers who are college graduates upon entrance to active service. As a result, the American military retires large numbers of highly skilled and proficient career officers and senior enlisted personnel who, by most accounts, could provide many more years of productive service. These retirements result in higher levels of new officer and enlisted accessions, additional training, and a more costly retirement system—factors that would be reduced if careers were extended. These additional costs more than offset the higher pay that longer serving career personnel would receive.

Upon becoming Secretary of Defense, Donald Rumsfeld immediately focused on three personnel issues as important to the future effectiveness of the military. First, he expressed dismay that officer assignments were so short that they did not become proficient in their assigned positions. Second, he complained that outstanding senior enlisted members and officers who had risen to the highest levels of command and responsibilities in their fields were being forced out by mandatory retirement rules at an age when they would be considered the most valuable if they were employed by private sector firms. He explained that neither of these personnel practices, embodied in existing law and regulations, were policies that any responsible chief executive would allow. Third, he was concerned that officers, although broadly knowledgeable of their Service, lacked an appreciation of the other services, which hindered the joint application of military power in favor of a parochial, service-centric, and narrower view of warfare.

This assessment of the military personnel system is not new. In 2000, the *Task Force of the Defense Science Board on Human Resource Strategies* saw the personnel challenge and wrote:

“Shaping and sustaining a total force of flexible capabilities will require a creative, thoughtful, and dynamic approach. Unless the Department (of Defense) makes changes in its personnel and compensation systems, the force will be unprepared for 21st century needs; quality people will not stay in sufficient numbers, and those who do will lack necessary skills and experience. A new system is needed—one unlike any DoD has had before.”

But why has the personnel system of the Department of Defense not been reformed in concert with other moves to reform the U.S. military? Studies of organizational change provide an answer. It is widely understood that changing a mature, complex organization is difficult, if not impossible, in the absence of crisis. Only when leadership recognizes and commits to addressing serious current problems is significant change possible, which is the case with the military personnel system. The current generations of military personnel, and those charged with managing the military personnel system, have worked their entire professional life under a single system. They know the rules and how to manipulate the system within the parameters they have been given. Furthermore, they know how complex and how

interdependent the system is with connections between compensation, tenure, and promotions. Service members have structured their whole lives around a series of expectations about when they will be promoted, when they will retire, how much they will earn, and what constitutes success. For them, "thinking-out-of-the-box" is almost impossible. Professional personnel managers are charged with working within the box or, at best, pressing on the sides of the box, but little effort is given to exploring alternatives to the box. The demands of the 21<sup>st</sup> century require more innovative thinking that recognizes the current one-size-fits-all system can no longer provide the technical and command expertise needed.

## RECOMMENDATIONS

The experience of the last half-century and the demands of the 21<sup>st</sup> century all argue for change. The Secretary of Defense has established personnel objectives for the 21<sup>st</sup> century, and the Department has begun to implement changes to address these objectives though compared to the challenge there has been little progress to date. The Panel feels that the Department must commit more energy and leadership to accelerate the advocacy and implementation of these reforms.

For officers, the changes proposed here build on the career selection recommendations of the Defense Manpower Commission. The proposed changes incorporate the two-tiered retirement system envisioned by the President's Commission on Military Compensation and those endorsed by the Defense Science Board Task Force on Human Resources Strategy Report of 2000. They also include the longer careers suggested by Senator Nunn in his charge at the beginning of the study of *Future Career Management System for U.S. Military Officers*. While the enlisted personnel system has not been as formally structured as the officer personnel system and, thus, has not been as extensively studied, the basic principles discussed below are also applicable, and changes along the same lines as suggested here should also be implemented.

The panel's recommended system for the 21<sup>st</sup> century would be a competitive up-or-out system in the junior grades with relatively high promotion rates, and then stringent selection into a career force. The promotion point for the career force should depend on the needs of the various occupations and should be allowed to vary across Services, and even within each Service. The numbers selected each year for the career force should equal the "steady state" number of expected losses from the career force. Unlike the current system with rigid predetermined selection rates, the new system would allow selection rates to float depending on the size of the initial entering cohort and the expected losses from the career force. In the new system the emphasis is on selecting a sufficient number of qualified candidates to replace projected losses from the career force. Unlike the current system, with stated promotion probabilities set in law, prospective entering officers will no longer be able to look to the future with the relative certainty that exists today. In this way, the new system is more like the private sector.

Once in the career force the norm would be very high promotion rates, e.g. promotion rates of 90 percent to 0-6 rather than the 50 percent of today. Longer tenure and higher remuneration for those selected and who join the career force should encourage people to stay for a full career—a career that would end at about forty years of service. Compensation packages would have to be restructured to motivate the best to stay and encourage those with limited potential for future service to leave. Limited competitive selection-out might be used to reinforce the compensation system—the stick—but challenging jobs and higher pay should be the prime way to motivate members of the career force—the carrot. Those who are not given, or do not take the opportunity to join the career force, will receive severance pay and an old-age annuity at the end of their working lives.<sup>85</sup>

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<sup>85</sup> This is somewhat arbitrary. Social Security defines it on a sliding scale based on year of birth. The Federal Government defines a full — no penalty for early retirement—federal pension under the new federal retirement

The recommended changes address all of the problems highlighted by Secretary Rumsfeld. The salient features of the recommended system would allow officers to spend more time in each assignment and still gain the breadth of experience needed by today's military leaders, resulting in longer careers and a smaller, more selective senior officer career force. The breadth of assignment would include more joint assignments without losing expertise in their parent service.

The recommended changes place new emphasis on experience and performance. The guiding principals of "youth and vigor" are not ignored, but experience and performance are elevated to a higher level of importance reflecting both the realities of the human condition at the beginning of the 21<sup>st</sup> century and the needs of a complex military in the post industrial information age. This is a system that does not insist that "one-size-fits-all" both in terms of the rate of selection and the career point at which the selection is made. Both would be free to vary to meet the needs of the services.

Extending the career of senior enlisted personnel should progress along the lines suggested above. The specifics, however, of career selection and retirement for more junior enlisted members will have to be worked out for each individual occupation. Like the officers, "one size *does not* fit all." Some enlisted occupations must stress clearly the principles of youth and vigor, so others will benefit from increases in experience and performance.

The clear benefit of the proposed change is the increased average years of service and experience for the career force and senior enlisted personnel. Given the opportunity to do a job again, officers will be in a better position to learn their craft and then apply it. For example, under such a system, acquisition executives could learn project management while managing small systems, and then apply what they learned to a second, presumably larger and more complex, system assignment.

To fully implement the new personnel system for the 21<sup>st</sup> century will require not only changes in DOPMA (the Defense Officer Personnel Management Act (of 1980)) and the rules under which the enlisted force is managed but changes to the entire compensation/retirement system. To gain the full benefits of reforms addressed here and to address the concerns highlighted by Secretary Rumsfeld, changes also need to be made in the way the DoD manages both officers and enlisted personnel. The longer these changes are delayed, the longer it will take for the DoD to make full use of what many believe are its most valued resources, its human resources.

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system as starting at 62. Today, a service member who retires from a reserve component starts receiving a pension at age 62.





### III. RESERVE COMPONENT

#### *BACKGROUND*

The role of the Reserve Components in the total force has changed radically since Secretary of Defense Melvin Laird first challenged the military services to integrate their active and reserve forces in 1970. Historically, the Reserve Components were seen as an augmenting cadre of manpower to be “called up” for the “Big One” such as the Soviets coming through the Fulda Gap, but they would otherwise remain in a training status. Since the end of the Cold War and Desert Shield/Desert Storm (FY86-FY89) the Reserve Components have become an operational augmentee rather than a strategic force in waiting.

Reserve Component personnel operate within two basic categories, [1] the Selected Reserve (SELRES)—currently consisting of 829,000 personnel (including U.S. Coast Guard) and [2] the Individual Ready Reserve (IRR). The SELRES perform “drills” on a regular basis and perform “training duty” at least two weeks each year. The remaining 284,000 members of the Reserve Component are affiliated with the IRR and, while subject to mobilization under certain circumstances, do not participate in regular training activities. The ratio of SELRES to IRR varies widely by service component. For example, the Army National Guard is almost exclusively composed of SELRES (330,869), and only 1,810 serve in the IRR. By contrast, the Army Reserve has 190,248 SELRES personnel and 113,741 in the IRR. The Air National Guard maintains 106,246 SELRES and no IRR personnel whereas the Air Force Reserve has a SELRES cadre of 76,026 and an IRR of 40,600. The Marine Corps Reserve SELRES force of 40,364 is outnumbered by its 59,500 IRR members while the Navy Reserve has 77,127 SELRES and 63,706 in the IRR. The Coast Guard Reserve completes the allocation with 8,136 in the SELRES and 4,659 in the IRR.

During the years leading up to Desert Shield/Desert Storm, reserve component contributions to “direct support” of the Active force, measured in “duty days,” were relatively constant at 0.9 million per year (the “baseline” years). The reserve call-ups for Desert Shield/Desert Storm produced 44.2 million duty days in FY91. Following Desert Shield/Storm the Services began to utilize the reserve force in numbers much larger than the baseline years. Reserve Component contributions from FY92 through FY01, in operations like Haiti, Bosnia, Southwest Asia, and Kosovo, annually utilized reservists at a rate ranging from 10 million to 13.5 million duty days.

The rate of utilization changed dramatically following the September 11, 2001 terrorist attacks and has not abated. Indeed, reserve component mobilizations in support of Noble Eagle, Enduring Freedom (OEF), and Iraqi Freedom (OIF) operations were 42 million days in FY02, 62.8 million days in FY03, and 64.5 million in FY04. In July 2005, 133,486 Guard and Reserve personnel were mobilized. Since the beginning of these operations through July 2005, 502,725 personnel have been mobilized. While approximately 9,500 individuals were mobilized from the IRR, the preponderance of mobilized personnel came from the 829,000 members of the SELRES. For example, through July 2005, 189,740 members of the Army National Guard’s 330,869 SELRES cadre and 106,602 of the Army Reserve’s 190,248 SELRES cadre have been mobilized. Marine Corps Reserve mobilizations have seen 32,610 members of its 40,364 SELRES organization called to active duty along with 4,300 members of its IRR. The high rate of utilization has created new challenges that have only partially been addressed, e.g., the availability of the National Guard for traditional Title 32 (state) missions as well as expanded missions and responsibilities for homeland defense still needs to be resolved. In the face of unprecedented use of

the reserves it has become considerably more difficult to recruit new non-prior service and prior service personnel. However, retention in the Reserve Components has held up and, in fact, is higher than before 9/11.

## *RECOMMENDATIONS*

It is generally understood that one of the significant problems encountered with current higher utilization of the Reserve Components is a lack of predictability. Guardsmen and Reservists have made it clear that the inability to predict when, how long, and how often they will be called to serve is a significant factor in decisions to continue to serve. Moreover, it is a significant issue with employers. The U.S. Chamber of Commerce in February of 2005 declared that, “enhancing predictability is an essential part of the military transformation process.”

Predictability comes in several forms. Many Guardsman and Reservists have complained about the mobilization process and its lack of predictability. In September 2003 Secretary Donald Rumsfeld acknowledged their concerns when he indicated that “you’ve got to give them as much certainty as possible.” A 2004 report from the Assistant Secretary of Defense (Reserve Affairs) report noted the Services have taken “steps along the way to replacing a linear process with a collaborative, simultaneous, and balanced mobilization process that is responsive to the nation’s needs for reserve forces on active duty.”

Predictability can also be enhanced by ensuring that the Reserve Components are sized so that call-ups do not occur more frequently than force designers expect. The stated mobilization criteria, announced by Secretary Rumsfeld, for one year of active duty out of every six years needs to remain foremost in the minds of those who design, manage and mobilize the Total Force. Moreover, building a total force with pockets of “high demand/low density” units must be avoided. Force planners must strive for balance to ensure that the full spectrum of skills and units are in both active and reserve forces. For example, when planning for the participation of reserve force in the “rotational presence overseas,” mission force planners need to identify those units and personnel to be activated with respect to the one-in-six policy and then provide ample notice to affected individuals. While force planning is not an exact science, and there are many uncontrollable factors that impact the need for reserve forces to be called-up, the Under Secretary of Defense for Personnel and Readiness (USD (P&R)) should ensure that there are sufficient reserve forces so that only in the most unusual situations would the predictability of reserve service be violated.

The panel notes one additional effect from improved predictability. Improved predictability will ensure that civilian employers are kept informed as announced schedules change as the result of continuing requirements. The Department is currently engaged in the development of a Civilian Employment Information (CEI) database that will contain the identification of each civilian employer of reserve component personnel. USD (P&R) should provide an effective mechanism and process to keep employers of reserve members on active duty informed on changes in commitments. On a more long term basis, the Department should consider ways in which it can more effectively communicate with the private sector, particularly with employers identified as employing reserve component members, on issues relating to future utilization of the reserve component and assess ramifications to employers. Civilian employers need to have reliable information available so that they may effectively manage their civilian work force and make necessary plans to accommodate the absence of mobilized employees.

The panel notes and endorses the efforts of the July 2003 decision by the Secretary of Defense to rebalance Active and Reserve forces as stated in the policy memorandum, *Rebalancing Forces* to:

“promote judicious and prudent use” of Reserve personnel. According to a January 2004 report issued by the Deputy Assistant Secretary of Defense for Reserve Affairs (Readiness, Training & Manpower), “continued use of the Reserve components at current levels may have a negative impact on the stability of the Reserve force...Thus, force rebalancing – or more specifically, changing the mix of Active and Reserve forces – is necessary in some areas, but in other areas innovative management actions may be sufficient to reduce stress.”

Rebalancing is a multi-year program to modify the force mix and is predicated on existing requirements of the force. USD (P&R) and the Services should continue to develop a process that ensures flexibility and timeliness to constructing a force mix against a changing or unanticipated threat. Rebalancing should be viewed as a dynamic process designed to mitigate stress on the Total Force.

As noted, the post-World War II paradigm of reserve forces—made up of personnel assigned to combat and combat service support units for the Army and equivalent type units for the other services—worked well during the Cold War. Today, however, a new paradigm is needed that recognizes the more frequent need for reserve component personnel to augment the active force with forces needed for prolonged periods of time, often for years, over the full spectrum of military operations. Extended duty in Sinai, Bosnia, Kosovo, and OEF/OIF/HOA require a more flexible approach than just the deployment of units. Using and encouraging individuals to volunteer to fill needed positions ensures that reserve service can be harmonized with both the needs of the active military and responsibilities to family and civilian employers. Traditional individual reserve categories such as the Individual Ready Reserve can also be used to meet mobilization needs. However, since the overwhelming majority of reserve personnel are assigned to units, limiting volunteers to only reserve personnel not affiliated with units is not practical. If a member of a reserve unit wants to volunteer for additional active duty service it makes no sense to prevent him or her from doing so, particularly if someone else might have to be involuntarily ordered to active duty.

Finally, the panel notes that the members of the Reserve Components are the military’s nexus and most influential representatives to the U.S. population. While they may serve less than full-time, they have a full-time commitment to America and its military. The current demands placed upon reservists far exceed expectations many had when they first joined. Nevertheless, they have responded magnificently with the vast majority continuing to serve far beyond their original commitment. The efforts outlined here are designed to make sure that the DoD uses them judiciously and fully respects both their commitment to service and the fact that they have other commitments to their families, communities, and employers. If the Department looks after their well-being, reservists surely will continue to take their place beside their active duty colleagues, and the Total Force will continue to perform in the outstanding way the Nation has come to expect.



## IV. THE SERVICE CONTRACTOR FORCE

### *BACKGROUND*

Throughout its existence, the U.S. military has made extensive use of contractors, both in the field and at home. Suttlers, contract surgeons, teamsters, and suppliers' technical representatives have all accompanied U.S. forces into the field in support of military operations. Nevertheless, many support activities historically were performed by government personnel, especially in 20<sup>th</sup> century forces where, under conscription, military manpower was not conserved and used in the most efficient manner.

Military or civilian personnel are no longer necessarily economical solutions to perform support functions. The changes to an all volunteer force and the ways of modern war have altered the roles, and government personnel are placing increased reliance on contractors. Whereas contract personnel once served strictly supporting roles, often "behind the lines" or in garrisons, they are now integral parts of military operations, often in situations where there is no identifiable line of battle. Food service, transportation, security, communications, and a host of other functions right up to the point of conflict are now provided by contractors. The private service sector has become a little noticed, but essential, arm of the all-volunteer force—contractors are the fourth element of the 21<sup>st</sup> century U.S. military, along with the Active and Reserve uniformed forces and civilian personnel.

Historically there are strong arguments behind the shift from government personnel to contractors to perform military support functions. They boil down to cost and flexibility. Some jobs exist in which contractors are less expensive than government employees, uniformed or civilian, just as jobs exist in which contractors are more costly. Additionally, the contract force is flexible; it can expand and contract without career costs, training, and commitments associated with U.S. government employment. The market often has available and could quickly provide skills that can take years for the military to train. When it would take too long to assemble a volunteer force to carry out actions in support of national policy, the contractor force provides one option for rapid buildup in some skill areas. Additionally, contractors are also a way around civil service manpower allocations.

The change to an all-volunteer force has placed limits on the number of government people the U.S. is willing to deploy to theater. As a result, the use of contractors as a fraction of the deployed force has grown substantially. Today's force in OIF has seven times the number of contractors deployed in Desert Storm and the number continues to increase. Expanded use of contractors, particularly in harm's way, raises many important new issues: What is the theater commander's responsibility for service contractors? Are commanders trained to manage forces that have a large fraction of contractors? How does he know where and how many are in his AOR? To what extent can he rely on them to follow orders? What is their legal status in theater – are they subject to the UCMJ, local law or U.S. law? What is their status under the Geneva Convention? What is the role of organized labor in theater? Are contracting corporations responsible for actions of their employees abroad, and are their officers and directors responsible for sending employees into harm's way? Can the private sector deliver sufficient contractors to meet military future needs in light of today's strict corporate governance environment?

Additional issues include the likelihood of "mission creep." Some functions are deemed to be inherently governmental, to be performed only by government personnel. Among these duties are policy determination, making acquisition decisions, and supervising government personnel. Functions for which

contractor support is suitable include: assisting civilian personnel, providing special technical skills, and providing security. As contractors become increasingly integrated into the U.S. military force, however, the lines between governmental and contractor functions blur. Members of this Panel have experienced instances of contractors carrying out the inherently governmental functions in their previous civil service careers. For instance, although security protection of facilities and people is deemed to be appropriate for contractors, offensive operations are not. Yet in OIF, security contractors, seeking to reach out and deter potential threats before they attack, are requesting permission to use heavy weapons and attack helicopters to assure performance of their missions.

Historically, service contractors have been considered an acquisition responsibility. As contractor personnel functions overlap traditional military functions, however contractor impact on military and civilian personnel becomes an important human resources consideration. Stories circulate that critical skills people in Iraq have been enticed to sign on with contractors rather than re-enlist. Contractor personnel working alongside government people often have very different pay and benefits.

Expanded use of contractors has both good and bad consequences, many unintended. As more functions, especially those in theater, are purchased from the private sector, more effects become apparent. As the U.S. military moves toward expanded roles for its contractor force, more of the consequences should be better understood.

The original motivations – cost and flexibility – need to be well understood. Conflicting estimates of government versus private sector costs cloud discussions of the advantages of out-sourcing (this is particularly acute in certain military skills where the government had provided the training in the first place). Recent experience with competition between the military and contractors for people with critical skills has not been studied. The degree to which inherently governmental functions are improperly carried out by non-governmental actors is not known. Conditions under which the private sector will or won't step up to provide services to the military are unclear (in the 1890s, transportation contractors refused to participate in the Spanish-American War resulting in the need to re-establish the Army's Transportation Corps). The limitations of what duties a service contractor may or may not provide and the enticement of profit as the private sector's motivation are not clear.

## *RECOMMENDATIONS*

The panel notes the importance of understanding and defining appropriate use of service contractors. The contractor force has needs for transformation just as do the active and reserve uniformed forces and DoD civilian human resources. Planning for this transformation should entail both acquisition and human resource professionals tasked to expand DoD's understanding of the opportunities and limitations of private sector service contractors in the 21<sup>st</sup> century military and commercial environment, including both intended and unintended consequences.

The Undersecretary for Personnel and Readiness with the assistance of the Undersecretary of Acquisition, Technology and Logistics (USD(ATL)) should carry out a joint study of the broad issues underlying service outsourcing in DoD, both in combat and non-combat environments, to determine the most effective use of both government and contractor personnel.

The panel further recognizes the need to train service contractors as such individuals fight alongside the U.S. military. The increasing incorporation of contractors into an integrated force is a transformational systems problem requiring development of how hybrid government/contractor forces can best work synergistically. Commanders, already well versed in military leadership, should be trained in the command/management of forces containing contractors. Representative contractors should also participate appropriately in training exercises to establish roles and responsibilities. Appropriate contracting vehicles for frequent scenarios should be developed and made ready for timely execution. It is recommended that the Secretary of Defense issue a directive to the services which will provide for the necessary inclusion of contractors in training exercises.





## V. THE NATIONAL SECURITY PERSONNEL SYSTEM

### BACKGROUND

The National Defense Authorization Act (NDAA) for FY04, enacted November 24, 2003, provided the Department with the authority to establish the National Security Personnel System (NSPS) for its civilian employees. At the signing ceremony, the President made the following remarks regarding NSPS:

"Nearly 700,000 civilian Defense workers have been laboring under a cumbersome, inefficient system designed for another century. The bill I sign today reforms this system. It gives DoD managers the flexibility to place civilian workers where they are most needed, without needless delay. It speeds up the hiring process, so that new employees will not have to face a wait of many months before beginning their service to our country. It introduces pay-for-performance bonuses and streamlines the promotion process, making a career at the Department of Defense more attractive to talented workers.

These landmark reforms, the most ambitious of their kind in a quarter-century, are similar in scope and purpose to those enacted for the Department of Homeland Security.

To win the war on terror, America must fully utilize the skills and talents of everyone who serves our country, and this bill will help us achieve that goal."

NSPS allows the Department to create new human resources (HR) rules different from those in Title 5 United States Code that apply to the majority of Federal civil service employees. The NDAA 04 established Chapter 99 in Title 5 with the rules under which NSPS must operate. Specifically, NSPS may modify Chapters of Title 5 as they relate to:

- Hiring
- Pay
- Performance Management
- Discipline and Removal
- Appeals
- Reduction in Force
- Labor Relations

As the Department creates this new HR system, the language in the NDAA clearly specifies that all employee protections and veterans preference provisions remain.

The Department has been building the framework of this new HR system for almost 2 years now though only the rudimentary shell of the system is evident to DoD managers and employees. The majority of the time has been spent negotiating with the U.S. Office of Personnel Management (OPM) representatives on the content of the system and with the unions who represent DoD bargaining unit employees on the level of union involvement and general regulations that were published in the Federal Register on February 14, 2005. The Department began the statutory required "meet and confer" period

with the unions in April 2005 and continued the discussions until the end of June 2005. There was limited resolution to union and management differences. Independent meetings between union officials and top departmental officials have continued outside the formal meeting structure since June 2005.

The unions have campaigned heavily against the proposed changes and have been very vocal in their opposition to the direction in which the Department is heading. In February 2005, the union coalition filed its first lawsuit to block the implementation of NSPS. In a proposal published on June 15, 2005, the union coalition provided their plan for change that they recommend the Department follow and commented that they did not believe the Department's meetings with them had produced any positive outcomes. At the press conference held to unveil the June 15 release, the American Federation of Government Employee (AFGE) officials said that they plan more legal action to block the new system as soon as final regulations are sent to Congress. The Department has indicated that the final regulations will be published some time in the fall of 2005 with potential partial implementation in the early spring 2006 and full implementation not occurring until 2008.

The panel is pleased, that after many years of reporting on the need to change the civil service system in DoD, that authority resides with the Secretary of Defense to make the necessary changes. However, the panel remains concerned about the length of time it has taken to move forward in implementing the new rules. The panel is also concerned that in the delay and negotiation process with OPM and the unions, significant authorities granted in this groundbreaking legislation will be lost, leaving the Department with less change than was sought and received.

## *RECOMMENDATIONS*

The panel urges the Secretary of Defense to review the content of the new rules and regulations to ensure that key flexibilities have not been dropped or changed which may severely modify the original intent of having a flexible and adaptive civilian workforce to complement the adapting and changing military mission of the Department and then publish the new rules and begin implementation.

The panel is also concerned with whether or not the envisioned changes will occur with implementation if Defense civilian HR offices do not change their operating policies. Discussions with senior officials are replete with examples of HR offices providing sub-par servicing despite having the authority and responsibility to provide effective service to their managers. When regional personnel offices build their plans for implementation of NSPS, they need to ensure that any self-inflicted barriers to efficiency are removed or the new system may be as sluggish and unresponsive as the old Title 5 system.

The Department should emphasize the metrics associated with the time it takes to perform civilian HR functions in its regional HR offices. DoD has established and promulgated metrics throughout the Department. The results of the data gathered from the regional HR offices should be continuously evaluated to provide feedback on the success of program goals.

While it is not under the auspices of implementation of NSPS, the panel must note the continued dissatisfaction of Defense managers with the personnel security investigation and adjudication impact on the time it takes to fill a position in the Department. The delays in receiving security clearances for newly hired employees negate any changes brought about by faster hiring systems and authorities. If it continues to take six months to two years to obtain a security clearance for a new hire, NSPS does not change the issue that management is left with a position unfilled and work not accomplished regardless of the administrative process being blamed. NSPS cannot be totally effective without complementary changes to the personnel security process.

Finally, the panel would like to express their belief that the NSPS is a major step forward that the Department has taken to improve the effective management of its civilian workforce. By ensuring that emphasis is placed on the right areas and implementation begins sooner rather than later, Defense managers will have a better system to enable the hire and retention of a quality civilian workforce that is an integral part of the Total Force.



## VI. THE DoD TRAINING TRANSFORMATION CHALLENGE

### BACKGROUND

People are DoD's most important resource. The ability to train DoD personnel is key to military success and many argue that it differentiates U.S. military forces from those of its adversaries. It is widely agreed that this ability to train is critical to sustaining and improving DoD personnel.

In April 2003, the Secretary of Defense issued the Transformation Planning Guidance (TPG). The TPG directed that "we must transform not only the capabilities at our disposal, but also the way we think, the way we train, the way we exercise, and the way we fight." To transform how it thinks and trains the Department must "transform the way it thinks about training" if it is to reach its goal of truly being able to "train as it intends to fight."

In that regard, legacy views of DoD "training" have broadened to encompass training, education, and performance support activities. This new way of thinking is made possible by leveraging learning and information technologies readily available today in the government and private sectors. Many of this report's references to training and training-related systems also apply to education and to performance support.

Complementing the Transformation Planning Guidance, several policy documents establish the foundation for transforming DoD training. For example, the 2001 Quadrennial Defense Review (QDR) recognized transformed training as the key enabler to achieving the operational goals of the overarching Transformation of the Department of Defense. The QDR report also highlighted the need to reverse the erosion of DoD's training range infrastructure and to ensure that ranges are sustainable, capable, and available.

The FY03-07 Defense Planning Guidance directed the USD(P&R) to work with the Services, Chairman of the Joint Chiefs of Staff, Combatant Commander of the U.S. Joint Forces Command, and Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to develop a plan for transforming DoD training. It mandated that the plan ensure the following: training ranges and devices are modernized and sustainable; interoperability training is measured and reported; networked training capabilities are designed into operational systems and requirements; and distributed learning technologies are used to reengineer training and job performance support capabilities.

The resulting Strategic Plan for Transforming DoD Training (March 2002) (or T2 Strategic Plan) developed a vision and identified high-level goals and broad steps to "transform DoD training to meet the needs of the 21<sup>st</sup> century military."

The Strategic Plan for Transforming DoD Training established DoD's Vision for Training Transformation (T2):

"to provide dynamic, capabilities-based training for the Department of Defense in support of the national security requirements across the full spectrum of service, joint, interagency, intergovernmental, and multinational operations."

In addition, the T2 Strategic Plan reinforced or introduced several key dimensions. First, it argued that training should be focused on meeting the mission requirements of the Combatant Commands (COCOMS), as the Combatant Commander is the ultimate customer. Second, the intent is to be more output-focused in terms of the training needed to support the Combatant Commander's requirements, missions, and capabilities while preserving the ability of Services to train on their core competencies. It also highlighted the broader need for training to support emerging interagency, intergovernmental, and multinational operations. Finally, it defined "training" to include "training, education, and performance aiding."

In June 2002, the Deputy Secretary of Defense directed "actions to implement the training-transformation recommendations identified in the Strategic Plan." Three primary strategic goals cited in his directive memorandum laid the foundation for his challenge – to develop and commence execution of a Department of Defense Training Transformation Implementation Plan. The strategic goals included:

- Joint Focus – Provide comprehensive and systematic "Joint" training focused on the operational requirements of the COCOMS and linked to readiness assessment
- Integrated Technology-Enabled Training Environment – Develop a robust, networked, live, virtual, and constructive training and mission rehearsal environment that enables DoD to build unparalleled military capabilities that are knowledge-superior, adaptable and lethal, and predicated upon Service, interoperability, and training requirements of the combatant commanders.
- Supporting Processes – Revise acquisition and other supporting processes to identify interfaces between training systems and acquisition, logistics, personnel, military education, and command and control processes, and ensure that these processes and systems are integrated.

The Deputy Secretary of Defense noted that "Since transforming training is critical to building a transformed military, we must ensure that these activities are linked to other transformation efforts, and that we provide the necessary incentives and oversight."

The DoD's response was relatively rapid and uniquely collaborative. Much of this is indicated by the comprehensive and forward-looking nature of the resulting Training Transformation Implementation Plan (T2 IPlan).

In May 2003 the USD(P&R) published the Training Transformation Implementation Plan (T2 IPlan). It responded to the tenets of the Strategic Plan for Transforming DoD Training, and it posited that Training Transformation would accomplish five primary objectives. First, the T2 IPlan would strengthen joint operations by preparing forces for new warfighting concepts. Second, it would continuously improve joint force readiness by aligning joint education and training capabilities as well as resources with the needs of COCOMS. Third, the T2 IPlan would develop individuals and organizations that "intuitively think joint," and [4] develop individuals and organizations that improvise and adapt to emerging crises. Finally [5] the T2 IPlan would achieve unity of effort from a diversity of means.

The T2 IPlan established three capabilities (managed by Joint Management Offices) that form the foundation for Training Transformation:

- Joint Knowledge Development and Distribution Capability (JKDDC). Initially managed by the Joint Staff J-7, a decision has been made to realign the JKDDC under USJFCOM J-7 and to move its management operations to the Norfolk, Virginia area. The JKDDC mission is to ensure "joint

training” is developed and distributed to individuals using a dynamic, global network that provides immediate access to joint education and training resources.

- Joint National Training Capability (JNTC). Managed by USJFCOM J-7, the JNTC mission is to provide command staffs and units with an integrated live, virtual, and constructive training environment that includes joint context and allows global training and mission rehearsal to meet specific operational needs.
- Joint Assessment and Enabling Capability (JAEC). Managed by the OSD Director for Readiness and Training Policies and Programs in the Office of the DUSD (Readiness). JAEC assesses how transformational initiatives affect the level of joint force readiness to meet validated combatant commander requirements. It also provides support tools and processes to enable and enhance the JKDDC and JNTC.

The T2 IPlan addressed several other T2 initiatives, such as: integrating Joint Lessons Learned into joint education and training; tracking joint education, training, and experience of DoD personnel; refocusing the Advanced Distributed Learning (ADL) initiative to enable joint distributed learning; and supporting training and testing range modernization and sustainability programs.

While the USD(P&R) has overall responsibility for Training Transformation, the T2 IPlan established a three-pronged organizational structure to oversee and manage DoD’s Training Transformation initiative to include: The Training Transformation Executive Steering Group (ESG); The Training Transformation Senior Advisory Group (SAG); and The Training Transformation Joint Integrated Process Team (JIPT).



Figure 1 below illustrates the structure and composition of the three T2 oversight groups.

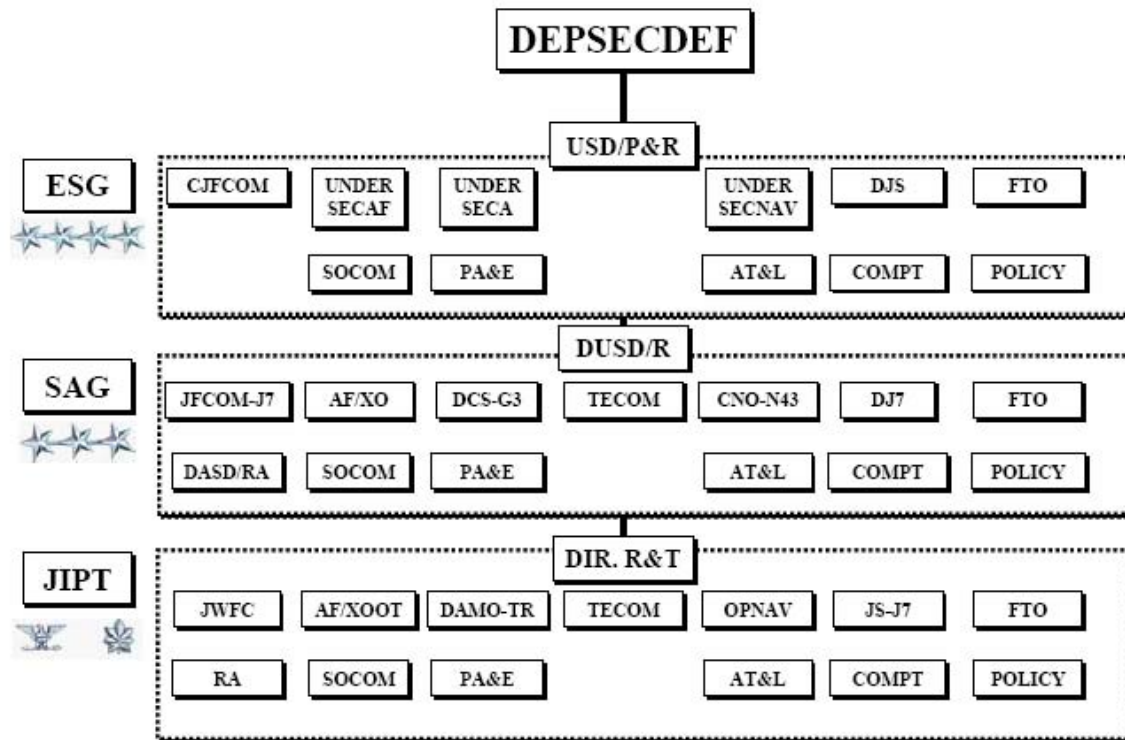


**Figure 1. Training Transformation Oversight**

This “T2 organization structure” has been broadly successful in coordinating and communicating across the DoD’s training communities of interest.

In short, the T2 IPlan provides a roadmap with details and milestones for outlining how and when T2 actions are accomplished, and it specifies organizational responsibilities for those actions. In addition to the T2 IPlan, there are a significant number of related initiatives and actions that support and are critical to Training Transformation. Examples of such key initiatives can be found in a listing in Appendix C.

The panel notes that the Department has made significant progress in transforming the way it trains, especially in laying the policy and guidance foundation for building a transformed training environment. However, recent GAO assessments expressed concern over the DoD’s efforts to improve its ranges and to transform joint training. There are a number of specific and more general concerns that must be addressed if successful progress is to continue.

The GAO Report, “Military Training – Better Planning and Funding Priority Needed to Improve Conditions of Military Training Ranges” (June 2005), noted that the Department had taken

“some actions designed to improve the conditions of its training ranges” but “progress has been limited.” This was “due in part to the lack of a comprehensive approach to improving [the ranges] and ensuring that these ranges provide the proper setting for effectively preparing its forces for warfare.”

In short, the direction of corrective programs is generally in the right direction, but the actions are incomplete (focusing too narrowly on encroachment), lack consistency or fail to incorporate all relevant officials.

Another concern is the need to modernize the ranges to ensure their relevancy. For example, the training ranges need to be updated to meet the emerging demands posed by the challenges of irregular warfare. Furthermore, as the Department makes such changes, it should ensure consistency and interoperability across the Service and Joint communities.

The GAO Report, “MILITARY TRAINING – Actions Needed to Enhance DoD’s Program to Transform Joint Training” (June 2005), was generally supportive of DoD’s efforts to transform joint training. The GAO did, however, cite two significant challenges. First, the report notes DoD’s less-than-full success in establishing effective partnerships with program stakeholders via comprehensive communication and coordination to gain their full participation and buy-in to achieve training transformation goals. Second, it states that DoD risks developing joint training requirements that the COCOMS and Services may not fully support.

The T2 Strategic Plan and the T2 IPlan were groundbreaking guiding documents that motivated and shaped wide-ranging programs to transform DoD’s training environment. Some training managers comment that they are starting to see a “demand pull” environment for transformed training that can respond to warfighters’ needs. This is evidenced by inputs and shared lessons learned from soldiers, sailors, airmen and Marines returning from the Middle East and Southwest Asia which are being used to inform U.S. training processes.

Nonetheless, for Training Transformation to have a significant probability of long-term success the momentum must be sustained and the Department must take advantage of the capabilities T2 programs have to offer. Declaring success would be premature when concerns remain about the Department’s ability to take this initial success to the next level.

Furthermore, today there are indications that only a few people arriving at their joint assignments have the requisite training to be proficient in their jobs. The Department should monitor this and measure and report efforts to improve that statistic.

As indicated in response to the T2 challenge described above, great advances have been made across the joint community and in the Navy. That progress, however, has largely been confined to those narrowly defined “stovepipes.”

An overarching concern is that processes and structures supporting “Training Transformation”—such as the T2 ESG-SAG-JIPT structure—may not be firmly institutionalized for the long term, in spite of the notion that transformation is a continuing process.

## RECOMMENDATIONS

The panel recognizes that effective and efficient training is critical to sustaining and improving DoD personnel. Whereas the DoD has made significant progress in transforming the way it trains, the Department should consider the following recommendations, most of which involve continuing the progress already commenced under the auspices of Training Transformation.

The panel recommends extending Service-based training transformation advancements to joint activities. DoD must continue to build linkages between training stakeholders and to provide the architectures and policies they need to build a collaborative training environment where training insights, approaches, content, and courseware can be shared and reused – technologically and organizationally. While it is important to do this across the Department of Defense as a first priority, DoD must also keep in mind the expanded definition of “joint” that includes the interagency, intergovernmental, and international environments.

Furthermore, the panel suggests the construction of a multi-dimensional training environment (including live training, simulations, and simulators) through the Joint National Training Capability (JNTC). Today’s technologies blur the lines between training and operational reality. DoD must continue to strive toward building a live, virtual, constructive mission-rehearsal environment that allows forces to conduct as much training as possible in an operational context.

The panel also urges the Department to integrate operational “lessons learned” into education and training. Rapid integration of knowledge from operational lessons learned can be a true differentiator in our warfighting capabilities. DoD must ensure that it develops and institutionalizes the processes to make that happen.

In addition, the Department should develop a robust range plan to ensure that the balance of real and simulated capabilities supports future realistic testing and training needs. DoD training (and testing) ranges are national assets that must be sustained and modernized to ensure forces and equipment can meet the challenges they face. DoD must build the capabilities that allow it to determine judiciously what must be trained or tested on the ranges (as compared with what can be done with alternative means, such as simulation).

Finally, the panel recommends that the Department institutionalize an organization (real or virtual), such as the T2 ESG-SAG-JIPT structure, that can act as a single DoD focal point with sufficient authority and responsibility to oversee, coordinate, communicate, and integrate “training” activities across the Department of Defense. The leader of that organization (currently the USD(P&R)) could play a role similar to that of a Chief Learning Officer who would be charged with aligning DoD training with the “business model” of the Department; that is, to develop people and improve individual and organizational performance.

## VII. THE NEED FOR LANGUAGE AND CULTURAL STUDIES

### BACKGROUND

The Human Resource Transformation issue relating to language and culture results from the Strategic Planning Guidance for FY06-11 which directs the Under Secretary for Personnel and Readiness to develop and provide to the Deputy Secretary of Defense a comprehensive roadmap for achieving the full range of language capabilities necessary to support the 2004 Defense Strategy.

The nature of current threats to U.S. national security is global in character and demands regional expertise across the full range of international venues. Potential threats require language facility and cultural expertise for deterrence as well as conflict and reconstruction phases to respond to international actors from across the globe. The coalition nature of this warfare environment demands such skills to interact with allies. The need for this facility has been evident from our recent and current experiences in Afghanistan and Iraq. Particularly in Iraq, the U.S. military was unprepared to either provide or develop necessary language and cultural skills that could have assisted the prosecution of the combat, and stability and reconstruction, phases.

The Defense Science Board 2004 Summer Study on Transition To and From Hostilities stated:

“Knowledge of culture and language . . . are critical for success in achieving political and military objectives.”

“Language skills are a key enabler of country and area knowledge. Today, DOD lacks sufficient personnel with the languages and skills that are required for countries ripe and important.”

In the FY05 National Defense Authorization Act (NDAA), Congress made the following comment in the Statement of the Managers accompanying the law:

“The conferees agree that strengthening the foreign language workforce of the Department is a critical step in winning the global war on terrorism and improving the national security of the United States.”

In response to the FY05 National Defense Authorization Act directions, the Under Secretary of Defense for Personnel and Readiness (USD (P&R)) outlined an aggressive program in the Defense Language Transformation Roadmap (February 15, 2005). This Roadmap resulted from a series of studies that looked at current language training capabilities, the U.S. management of current inventory of foreign area officers, and the current processes for establishing the requirement for language and cultural expertise.

The studies and associated analysis led to a series of findings of the following deficiencies:

- No effective foreign language oversight process;
- No comprehensive and integrated strategy for language and regional expertise;
- No zero-based review of requirements for language and cultural expertise;
- No common and systematically applied process for requirements determination; and
- No mechanism to assess DoD or Combatant Command language readiness.

Based on these findings, the Defense Language Transformation Roadmap outlined four main goals. First, to create foundational language and regional area expertise, and second, to create the capacity to surge. Third, it cited the need to establish a cadre of language professionals possessing 3/3/3 (essentially read/write/understand with the three levels characterized as General Professional Proficiency among five levels) level abilities as well as address language-enabled requirements below 3/3/3. Finally [4] the Roadmap outlined the goal to establish a process to track the accession, separations, and promotion rates of military personnel with language skills and Foreign Area Officers. The four goals each encompass a number of required actions for successful implementation:

- Create foundational language and regional area expertise—The goal to create foundational language and cultural expertise in the officer, civilian, and enlisted ranks for both Active and Reserve Components was outlined in the Roadmap with 20 required actions that included: establishing a Language Office in USD (P&R); ensuring doctrine, policies and planning guidance reflect the need for language requirements in operational, contingency, and stabilization planning; and developing a plan to engage an interagency effort to maximize resources. The actions outlined are extensive and detailed such as establishing a requirement that junior officers complete language training and have one-year assignments with a foreign military or national constabulary/para-military force, and make foreign language ability a criterion for general/flag officers.
- Create the capacity to surge—The goal to create the capacity to surge in these capabilities had 13 accompanying required actions involving improved contract language support by centralizing and standardization, tracking retirees and separatees with necessary skills for recall or voluntary return, supporting a pilot program for a Civilian Linguist Reserve Corps, and establishing a coherent, prioritized, and coordinated DoD multi-language technology research, development, and acquisition policy and program.

- Establish a cadre of language professionals possessing 3/3/3, and address language requirements below the 3/3/3 level—Six required actions were set out in the roadmap to establish these levels of competency in language facility. Among these actions were to identify tasks and missions that will require 3/3/3 and determine the minimum number of personnel that will be needed to provide the language services, set a DoD goal of proficiency level 3/3/3 for language professionals, and implement training and career management plans to achieve and sustain this level, and maintain a cadre of service members with language capabilities for tasks requiring less than 3/3/3 proficiency and the tasks that can be met with this level of competency.
- Establish a process to track the accession, separations, and promotion rates of military personnel with language skills and Foreign Area Officers – The four required actions to implement a better management tracking and development system for those with language skills, particularly Foreign Area Officers, encompass publishing a revised DoD Directive to oversee the Services’ FAO programs, establish metrics to monitor FAO accession, retention and promotion rates, to develop and sustain a personnel information system that maintains accurate data on all DoD personnel skilled in foreign languages and regional area expertise.

The USD (P&R) has put together an ambitious plan to react to the now widely agreed need to have the requisite language and cultural expertise necessary to support military operations of all types across an international environment. Whereas the need is profound, the Services have not yet accepted this requirement, nor the various steps outlined by the Strategic Roadmap.

## RECOMMENDATIONS

The panel would like to note that the USD (P&R) has commenced an aggressive program although it needs improved focus and implementation in order to accomplish what is required. First, there are too many actions being pursued – the strategic plan developed to meet this need must be focused on some key first steps in order to be successful. The current approach appears to be a “shotgun response” to the requirement rather than focused on commencing a rather significant effort to develop such skills. Specific actions that will develop momentum for this major new requirement need to be identified. Putting a requirement for language and cultural expertise in officer promotion precepts in an appropriate manner is an example of what would be a significant step. This cannot be a uniform requirement initially or possibly ever, although in some instances is appropriate to guide promotions.

Second, the plan emphasizes the accretion of language skills, which are important but not as significant as developing the necessary cultural expertise that will be necessary to achieve the panel’s stated goals. The panel believes that cultural facility is important for deterrence, combat, and stability and reconstruction efforts.

Third, revitalization of the existing Foreign Area Officer program, now in existence and producing high quality officers with the requisite skills, is a near-term step that can have significant impact. The panel feels this program needs to have continuing emphasis at senior levels throughout the military departments in order for it to ensure its institutional success.

Finally, the panel notes that requirements in language and cultural expertise are not well-defined. It is imperative that the Department analyze which language skills and cultural understandings are of particular importance for current and future missions, thus ensuring that the system produces the right number of people with the necessary expertise and abilities. The Services and the COCOMS need to

participate in a process to better define these requirements and maintain its validity in a dynamic strategic environment.

## SUMMARY OF TASK FORCE RECOMMENDATIONS

### II. NEW OFFICER AND ENLISTED HR SYSTEM:

#### **Recommend that the Services:**

- Develop a competitive up-or-out system in the junior grades with relatively high promotion rates, and stringent selection into a career force thereafter.
- Ensure that the promotion point for the career force depend on the needs of the various occupations and varies across Services, and even within each Service.
- Select each year numbers for the career force that equal the “steady state” number of expected losses from the career force.
- Implement longer tenure and higher remuneration for those selected and who join the career force.
- Restructure compensation packages.
- Allow officers to spend more time in each assignment to gain the breadth of experience needed by today’s military leaders, to result in longer careers and a smaller, more selective senior officer career force.
- Emphasize experience and performance by extending the career of senior enlisted personnel.
- Ensure that while some enlisted occupations must stress the principles of youth and vigor, so others will benefit from increases in experience and performance.

### III. RESERVE COMPONENT:

#### **Recommend that:**

##### **USD (P&R)**

- Ensure that there are sufficient reserve forces so that the predictability of reserve service is violated only in the most unusual situations.
- Continue to develop a process that ensures flexibility and timeliness to constructing a force mix against a changing or unanticipated threat. Rebalancing should be viewed as a dynamic process designed to mitigate stress on the Total Force.

##### **OSD**

- Consider ways in which it can more effectively communicate with the private sector, particularly with employers identified as employing reserve component members, on issues relating to future utilization of the reserve component. OSD should also assess ramifications to employers.

##### **SERVICES**

- Enhance predictability for length and frequency of tours of duty.



- Ensure that the Reserve Components are sized so that call-ups do not occur more frequently than force designers expect.
- Avoid building a Total Force with pockets of “high demand/low density” units.
- Ensure that force planners strive for balance to ensure that the full spectrum of skills and units are in both active and reserve forces.
- Oversee mission force planners for “rotational presence overseas,” identify units and personnel to be activated with respect to the one-in-six policy, and then provide ample notice to affected individuals.
- Must not prevent a member of a reserve unit from volunteering for additional active duty service.

#### **IV. THE SERVICE CONTRACTOR FORCE:**

##### **Recommend that:**

##### **USD (P&R)**

- With the assistance of the Undersecretary of Acquisition, Technology and Logistics (USD(ATL)) carry out a joint study of the broad issues underlying service outsourcing in DoD, both in combat and non-combat environments, to determine the most effective use of both government and contractor personnel.
- Ensure that Commanders are trained in the command/management of forces containing contractors.
- Require that representative contractors participate appropriately in training exercises to establish roles and responsibilities. Furthermore, USD (P&R) should see that appropriate contracting vehicles for frequent scenarios should be developed and made ready for timely execution.

##### **OSD**

- Issue a directive to the Services that will provide for the necessary inclusion of contractors in training exercises.

#### **V. THE NATIONAL SECURITY PERSONNEL SYSTEM:**

##### **Recommend that:**

##### **USD (P&R)**

- Ensure that the personnel security process be changed in unison with the NSPS in order for NSPS to be totally effective.

##### **OSD:**

- Review the content of the new rules and regulations to ensure that key flexibilities have not been dropped or changed, which may severely modify the original intent of having a flexible and adaptive civilian workforce to complement the adapting and changing military mission of the Department. OSD should then publish the new rules and begin implementation.

- Require that regional personnel offices that are building their plans for implementation of NSPS, ensure that any self-inflicted barriers to efficiency are removed or the new system may be as sluggish and unresponsive as the old Title 5 system.
- Emphasize the metrics associated with the time it takes to perform civilian HR functions in its regional HR offices. The results of the data gathered from the regional HR offices should be continuously evaluated to provide feedback on the success of program goals.

## **VI. THE DoD TRAINING TRANSFORMATION CHALLENGE:**

### **Recommend that:**

#### **USD (P&R)**

- Continue to build linkages between training stakeholders and to provide the architectures and policies they need to build a collaborative training environment where training insights, approaches, content, and courseware can be shared and reused – technologically and organizationally. In addition, the Department must keep in mind the expanded definition of “joint” that includes the interagency, intergovernmental, and international environments.
- Oversee the development of a robust range plan to ensure that the balance of real and simulated capabilities supports future realistic testing and training needs.

#### **OSD**

- Require the Services extend to Service-based training transformation advancements to joint activities.
- Oversee the construction of a multi-dimensional training environment (including live training, simulations, and simulators) through the Joint National Training Capability (JNTC).
- DoD training (and testing) ranges must be sustained and modernized to enable forces and equipment to meet the challenges they face.
- Oversight to the institution of an organization (real or virtual), such as the T2 ESG-SAG-JIPT structure, that can act as a single DoD focal point with sufficient authority and responsibility to oversee, coordinate, communicate, and integrate “training” activities across the Department of Defense.

#### **SERVICES**

- Integrate operational “lessons learned” into education and training.

## **VII. THE NEED FOR LANGUAGE AND CULTURAL STUDIES:**

### **Recommend that:**

#### **USD (P&R)**

- Identify specific actions within the Defense Language Transformation Roadmap to develop momentum for this major new requirement. USD (P&R) should then fully pursue the chosen action items.

- Oversee the revitalization of the existing Foreign Area Officer program and emphasize this program at senior levels throughout the military departments in order to ensure its institutional success.

#### **OSD**

- Emphasize cultural facility within the Services; it is important for deterrence, combat, and stability and reconstruction efforts.
- Analyze which specific language skills and cultural understandings are of particular importance to current and future missions. The Services and the Combatant Commands (COCOMS) need to participate in a process to better define these requirements and maintain the process's validity in a dynamic strategic environment.

#### **SERVICES**

- Implement a requirement for language and cultural expertise in officer promotion precepts in an appropriate manner. While this cannot be a uniform requirement initially or possibly ever, in some instances it is appropriate to guide promotions.

## **APPENDIX A: PANEL MEMBERSHIP**

### **CHAIRPERSON(S)**

Dr. John Foster, Jr. *Northrop Grumman*

Dr. William Howard, *Private Consultant*

### **MEMBERS**

Mr. Charles Cragin, *System Planning Corporation*

Ms. Ginger Groeber, *Cimitar Consulting*

Mr. Christopher Jehn, *Cray Inc.*

Mr. Michael Parmentier, *Booz Allen Hamilton*

Dr. Bernard Rostker, *The RAND Corporation*

Dr. Michael Vlahos, *John Hopkins University*

Mr. G. Kim Wincup, *SAIC*

### **GOVERNMENT ADVISORS**

Mr. Reginald Brown, *OUSD (P&R)*

Dr. David Chu, *OUSD (P&R)*

Ms. Jeanne Fites, *OUSD (P&R)*

CSM Laurence Holland, *OUSD (P&R)*

Dr. Janice Laurence, *OUSD (P&R)*

Ms. Ann Lee, *OUSD (P&R)*

### **DSB SECRETARIAT**

LtCol David Robertson, USAF, *Defense Science Board*

### **SUPPORT**

Ms. Cassandra Jastrow, *SAIC*

## **APPENDIX B: BRIEFINGS RECEIVED**

### **March 23, 2005**

Mr. Michael Rhodes  
Mr. Charlie Abell  
Dr. Paul Mayberry  
Mr. William Carr  
Mrs. Gail McGinn  
Ms. Ellen Tunstall

*USMC, Manpower and Reserve Affairs*  
*OSD P&R*  
*OUSD P&R*  
*OUSD P&R*  
*OSD (Plans)/P&R*  
*ODUSD P&R*

### **March 25, 2005**

Mr. Roger Blanchard

*USAF Personnel*

### **April 11, 2005**

Dr. David Chu  
Mr. Roy Wallace

*OUSD P&R*  
*HQDA G-1*

### **April 13, 2005**

Dr. John Winkler  
Mrs. Gail McGinn  
Mr. Harry Thie

*OSD, Reserve Affairs, Manpower & Personnel*  
*OSD (Plans)/P&R*  
*The RAND Corp.*

### **May 10, 2005**

Adm (Ret) Arthur Cebrowski  
MG Thomas S. Jones

*OSD (Ret)*  
*USMC*

### **June 1, 2005**

VADM Gerry Hoewing

*USN-DCNO (M&P)*

### **July 13, 2005**

Dr. Curt Gilroy

*OUSD- P&R*

## APPENDIX C: TRAINING TRANSFORMATION SUPPORTING INITIATIVES

*In addition to the T2 IPlan, as discussed in Chapter 6 of this section, there are a significant number of related initiatives and actions that support and are critical to Training Transformation. Examples of such key initiatives include:*

- Management Initiative Decision 906, “Training Transformation (T2).” MID 906 provided and realigned funding to establish the resource baseline for Training Transformation, roughly +\$139M, +\$143M, and +\$186M for FY 2003-05.
- Training Capabilities Analysis of Alternatives (TC AoA). This was an OSD/USJFCOM-led effort to, among other things, determine and develop innovative training approaches to meet COCOM needs for highly tailorable capabilities to train individuals and staffs for Joint and Functional Force Headquarters. The TC AoA’s principal focus was on replacing the capabilities that would have been provided by the cancelled Joint Simulation System (JSIMS).
- DoDD 1322.18 “Military Training,” September 3, 2004. This updated directive refocused DoD training on joint capabilities to meet combatant commander needs. It specified that the Joint Training System (JTS) would be used to manage training throughout the Department, and required an automated Joint Training Information Management System (JTIMS) be available for use by DoD components to support the JTS. Further, it required operational lessons learned to be incorporated formally through the JTS, and that a joint architecture and common standards be developed to integrate live, virtual, and constructive training to create training that resembles actual conditions.
- Draft DoDI 1322.XX, “Development, Management, and Delivery of Distributed Learning,” date TBD. This draft DoD Instruction is in final coordination. It will require DoD-developed or acquired distributed learning content and systems to conform to specific architectures and guidelines to ensure accessibility, durability, reusability, maintainability, and interoperability of technology-enabled content. Pre-Milestone B acquisition programs must comply with this instruction.
- Joint Training System (JTS). The JTS is a four-phased methodology (Requirements, Plans, Execution, Assessment) that aligns training strategy with the assigned mission designed to produce ready individuals, units, and staffs. The JTS is designed to integrate training and exercise requirements at the strategic, operational, and tactical levels. The system deals with staff, resources, priorities, and requirements determination, education, and training.
- Accreditation and Certification. The JNTC, which will serve over 30 training sites across the country by the end of FY 2005, is using two new tools. One is “accreditation” of Service programs to ensure they have the appropriate joint context. The other is “certification” of Service training sites and systems to identify potential Joint investment opportunities.
- Joint Training Functional Concept (JTFC). The JTFC is one of a number of joint concepts that directly support the Joint Training (JT) Functional Capabilities Board (FCB) chartered by the Joint Staff’s Joint Requirements Oversight Council (JROC) in September of 2004. Joint

Concepts serve as guidelines for FCBs to use in assessing joint program initiatives 8-20 years in the future. FCB assessments are part of the Joint Capabilities Integration and Development System (JCIDS) and are used by the JROC to support its decisions about current and future joint force materiel and non-materiel initiatives, programs and projects. The JTFC provides a framework to assess joint training initiatives, as well as to facilitate identification of required enabling technologies, to stimulate the leveraging of existing science and technology investments and to drive experimentation, all with the objective of improving training's "operational art."

- CAPSTONE, KEYSTONE, and PINNACLE. These Joint Professional Military Education (JPME) courses target senior enlisted and general/flag officers, portions of which are conducted at USJFCOM's Joint War Fighting Center (JWFC). CAPSTONE is designed for newly selected general and flag officers; KEYSTONE is designed for command senior enlisted leaders (CSELs). Each has a focused Joint Operations Module (JOM). Notably, PINNACLE is the first-ever course designed for prospective two- and three-star-level Joint Task Force commanders, and it builds upon the CAPSTONE course.
- Sustainable Ranges Initiative. This DoD-wide initiative pursues a comprehensive solution to encroachment (activities that prevent unfettered use of DoD ranges). It includes the policy, organization, and leadership, programming, outreach, legislative clarification, and suite of internal changes to foster range sustainability. This marks the first time the DoD has centrally addressed, as a readiness issue, the full spectrum of threats to DoD training and test ranges under a single umbrella.
- Military Service Training Programs. Each of the military Services is updating and improving its training to some degree, but many of these changes are not linked to the overall T2 effort. A noteworthy outstanding example is the Navy's Revolution in Training—a "training transformation" effort to build an Integrated Learning Environment (ILE) within the context of Sea Warrior. The Navy's ILE would integrate readiness and equipment requirements with its personnel system's ability to provide individuals trained to satisfy those requirements. One unique capability of this system will be the ability to tailor education and training to specific needs required for an individual to perform a task. Because the Navy's approach is founded on learning, information technology standards, approved DoD architectures, the systems that support it could easily be adopted or adapted for use by the other Services and the Joint community.

**APPENDIX D: ACRONYM LIST**

|            |                                                                       |
|------------|-----------------------------------------------------------------------|
| ADL        | Advanced Distributed Learning                                         |
| AFGE       | American Federation of Government Employees                           |
| CEI        | Civilian Employment Information                                       |
| COCOMS     | Combatant Commands                                                    |
| DoD        | Department of Defense                                                 |
| DOPMA      | Defense Officer Personnel Management Act (of 1980)                    |
| DUSD       | Deputy Under Secretary of Defense                                     |
| ESG        | Training Transformation Executive Steering Group                      |
| FAO        | Foreign Area Officer                                                  |
| GAO        | Government Accountability Office                                      |
| HOA        | Horn of Africa                                                        |
| HR         | Human Resources                                                       |
| IRR        | Individual Ready Reserves                                             |
| JAEC       | Joint Assessment and Enabling Capability                              |
| JIPT       | Training Transformation Joint Integrated Process Team                 |
| JKDDC      | Joint Knowledge Development and Distribution Capability               |
| JNTC       | Joint National Training Capability                                    |
| NDAA       | The National Defense Authorization Act                                |
| NSPS       | National Security Personnel System                                    |
| OEF        | Operation Enduring Freedom                                            |
| OIF        | Operation Iraqi Freedom                                               |
| OPM        | Office of Personnel Management                                        |
| OSD        | Office of the Secretary of Defense                                    |
| QDR        | Quadrennial Defense Review                                            |
| SAG        | Training Transformation Senior Advisory Group                         |
| SELRES     | Selected Reserve                                                      |
| TPG        | Transformation Planning Guidance                                      |
| T2         | Training Transformation                                               |
| T2 IPlan   | Training Transformation Implementation Plan                           |
| USD (AT&L) | Under Secretary of Defense for Acquisition, Technology, and Logistics |
| USD (P&R)  | Under Secretary of Defense for Personnel and Readiness                |
| USJFCOM    | United States Joint Forces Command                                    |