



**Calhoun: The NPS Institutional Archive**  
**DSpace Repository**

---

Theses and Dissertations

1. Thesis and Dissertation Collection, all items

---

2007-12

# Defense globalization: impacts on the United States Defense Acquisition System

Bales, Jason W.; Feranec, Nicholas G.

Monterey, California. Naval Postgraduate School

---

<http://hdl.handle.net/10945/10183>

---

*Downloaded from NPS Archive: Calhoun*



Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

**Dudley Knox Library / Naval Postgraduate School**  
**411 Dyer Road / 1 University Circle**  
**Monterey, California USA 93943**

<http://www.nps.edu/library>



# NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

---

## MBA PROFESSIONAL REPORT

---

**Defense Globalization:  
Impacts on the United States Defense Acquisition System**

---

**By: Jason W. Bales,  
Nicholas G. Feranec  
December 2007**

**Advisors: Lawrence R. Jones  
John Dillard**

*Approved for public release; distribution is unlimited.*

THIS PAGE INTENTIONALLY LEFT BLANK

<b>REPORT DOCUMENTATION PAGE</b>			<i>Form Approved OMB No. 0704-0188</i>
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
<b>1. AGENCY USE ONLY (Leave blank)</b>	<b>2. REPORT DATE</b> December 2007	<b>3. REPORT TYPE AND DATES COVERED</b> MBA Professional Report	
<b>4. TITLE AND SUBTITLE</b> Defense Globalization: Impacts on the United States Defense Acquisition System		<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Jason W. Bales and Nicholas G. Feranec		<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Naval Postgraduate School Monterey, CA 93943-5000		<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> N/A		<b>11. SUPPLEMENTARY NOTES</b> The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.	
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited.		<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (maximum 200 words)</b> The objective of this MBA project is to examine the extent to which the Department of Defense has positioned itself to maximize the use of the global defense market. This report explores the recent history of commercialization and globalization initiatives and legislation; details several examples of foreign technology that have significantly improved the U.S. military's warfighting capability; and analyzes the significant benefits and challenges facing the DoD in moving towards a truly global defense industry. The report concludes with a summary of the findings and further establishes a path for the cultural change that is necessary for the DoD to operate in a global defense industry.			
<b>14. SUBJECT TERMS</b> International, Defense Globalization, Commercialization, Global Economy, Coalition, Foreign Sourcing, Foreign Comparative Test, Defense Acquisition			<b>15. NUMBER OF PAGES</b> 77
			<b>16. PRICE CODE</b>
<b>17. SECURITY CLASSIFICATION OF REPORT</b> Unclassified	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> Unclassified	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> Unclassified	<b>20. LIMITATION OF ABSTRACT</b> UU

THIS PAGE INTENTIONALLY LEFT BLANK

**Approved for public release; distribution is unlimited**

**DEFENSE GLOBALIZATION:  
IMPACTS ON THE UNITED STATES DEFENSE ACQUISITION SYSTEM**

Jason W. Bales, Captain, United States Air Force  
Nicholas G. Feranec, Captain, United States Air Force

Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL  
December 2007**

Authors:

\_\_\_\_\_  
Jason W. Bales

\_\_\_\_\_  
Nicholas G. Feranec

Approved by:

\_\_\_\_\_  
Lawrence R. Jones, Ph.D., Lead Advisor

\_\_\_\_\_  
John Dillard, Support Advisor

\_\_\_\_\_  
Robert N. Beck, Dean  
Graduate School of Business and Public Policy

THIS PAGE INTENTIONALLY LEFT BLANK

# **DEFENSE GLOBALIZATION: IMPACTS ON THE UNITED STATES DEFENSE ACQUISITION SYSTEM**

## **ABSTRACT**

The objective of this MBA project is to examine the extent to which the Department of Defense has positioned itself to maximize the use of the global defense market. This report explores the recent history of commercialization and globalization initiatives and legislation; details several examples of foreign technology that have significantly improved the U.S. military's warfighting capability; and analyzes the significant benefits and challenges facing the DoD in moving towards a truly global defense industry. The report concludes with a summary of the findings and further establishes a path for the cultural change that is necessary for the DoD to operate in a global defense industry.



THIS PAGE INTENTIONALLY LEFT BLANK

# TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
I. INTRODUCTION.....	3
A. BACKGROUND .....	3
B. PURPOSE .....	3
C. RESEARCH QUESTIONS .....	4
D. SCOPE AND RESEARCH METHOD .....	4
E. ORGANIZATION OF STUDY .....	5
II. LITERATURE REVIEW AND BACKGROUND .....	7
A. INTRODUCTION.....	7
B. ACQUISITION REFORM INITIATIVES: COMMERCIALIZATION .....	7
1. Grace Commission .....	8
2. Packard Commission.....	8
3. Federal Acquisition Streamlining Act of 1994 .....	9
4. Clinger-Cohen Act of 1996.....	9
5. Raines Rules .....	9
6. DoD 5000 Series.....	10
C. ACQUISITION REFORM INITIATIVES: GLOBALIZATION.....	11
1. U.S. Statutes and Policies Promoting International Cooperation .....	11
a. <i>Title 10 United State Code: Armed Forces</i> .....	11
b. <i>Defense Federal Acquisition Regulation Supplement                 Clause 225</i> .....	12
c. <i>Title 22 United State Code: Foreign Relations and                 Intercourse</i> .....	13
d. <i>DoD Directive 5000.1 and 5000.2</i> .....	13
e. <i>Defense Acquisition Guidebook</i> .....	14
2. Department of Defense Programs Enabling International Procurement .....	15
a. <i>Foreign Comparative Test Program</i> .....	15
b. <i>International Cooperation</i> .....	16
3. U.S. Statutes Restricting International Procurement.....	19
a. <i>Buy American Act</i> .....	19
b. <i>Berry Amendment</i> .....	20
c. <i>International Obligations</i> .....	20
D. CHAPTER SUMMARY.....	21
III. EXAMPLES OF DEPARTMENT OF DEFENSE PROCUREMENTS FROM NON-U.S. CONTRACTORS.....	23
A. EXAMPLES OF SUCCESSFUL FOREIGN COMPARATIVE TEST PROGRAMS: FOX NBC RECONNAISSANCE VEHICLE AND MINE-PROTECTED CLEARANCE VEHICLE.....	23

1.	Fox NBC Reconnaissance Vehicle .....	23
a.	<i>Background</i> .....	23
b.	<i>Program Details</i> .....	24
c.	<i>Benefits of Foreign Procurement</i> .....	25
2.	Mine Protected Clearance Vehicle .....	26
a.	<i>Background</i> .....	26
b.	<i>Program Details</i> .....	26
c.	<i>Benefits of Foreign Procurement</i> .....	27
B.	INTERNATIONAL COOPERATION IN DOD ACQUISITIONS: THE BRITISH AEROSPACE (HAWKER)/ BOEING (MCDONNELL DOUGLAS) HARRIER.....	28
1.	Background .....	28
2.	Program Details .....	29
3.	Benefits of International Cooperation .....	30
C.	EXAMPLES OF DOMESTIC DEFENSE CONTRACTORS USING FOREIGN SUBCONTRACTORS: F-35 JOINT STRIKE FIGHTER AND USAF AERIAL REFUELING TANKER AIRCRAFT.....	31
1.	F-35 Joint Strike Fighter .....	31
a.	<i>Background</i> .....	31
b.	<i>Program Details</i> .....	32
c.	<i>Benefits of International Acquisition Strategy</i> .....	33
2.	KC-30 Aerial Refueling Tanker Proposal .....	34
a.	<i>Background</i> .....	34
b.	<i>Program Details</i> .....	34
c.	<i>Anticipated Benefits of Northrop Grumman/EADS Contract</i> .....	35
D.	CHAPTER SUMMARY.....	36
IV.	BENEFITS AND CHALLENGES OF DEFENSE GLOBALIZATION.....	37
A.	BENEFITS OF DEFENSE GLOBALIZATION .....	37
1.	Capitalizing on the Expertise and Experience of Allied Nations...37	
2.	Shared Research and Development Costs among Allied Nations .....	39
3.	Interoperability among Coalition Forces.....	41
4.	Strong Diplomatic Relationships among Allied Nations .....	41
5.	Increased Competition.....	43
6.	Global Economic Impact.....	44
B.	CHALLENGES OF DEFENSE GLOBALIZATION .....	45
1.	Buy America Mindset and Associated Political Pressures.....	45
2.	Lack of Knowledge among Leaders and the Acquisition Community .....	47
3.	Security Implications: Technology Transfer, Information Sharing and Availability of Spare Parts.....	48
4.	Impact to U.S. Trade Deficit .....	50
C.	CHAPTER SUMMARY.....	51
V.	CONCLUSIONS .....	53

A.	RESEARCH QUESTIONS.....	53
B.	FINAL THOUGHTS .....	54
	LIST OF REFERENCES.....	57
	INITIAL DISTRIBUTION LIST .....	63

THIS PAGE INTENTIONALLY LEFT BLANK

## LIST OF FIGURES

Figure 1.	XM93 Fox NBC Reconnaissance Vehicle.....	25
Figure 2.	Buffalo Mine-Protected Clearance Vehicle .....	27
Figure 3.	AV-8B+ Harrier II .....	30
Figure 4.	F-35 Joint Strike Fighter .....	32
Figure 5.	Airbus 330 Multi-role Tanker Concept.....	35

THIS PAGE INTENTIONALLY LEFT BLANK

## **EXECUTIVE SUMMARY**

The Department of Defense (DoD) has long been criticized for its costly and lethargic process of acquiring major defense systems. As a result, many acquisition reform initiatives have been introduced over the past twenty-plus years with goals of streamlining the process, and ultimately correcting the problems with the DoD acquisition process. While these reform initiatives have occasionally proven successful for specific problems, no reform initiative to date has produced dramatic and sweeping affects to put an end to the criticism.

Additionally, the DoD is currently involved with conflicts on various fronts but is primarily engaged with several allied nations in the Global War on Terror, also referred to as “The Long War.” Having been engaged in this global coalition effort for the past five years should be enough of a hint that the future of warfighting is an international effort. The corporate (private) sector has also become more global with capable prime and subcontractors around the world. Supply and demand is no longer just felt in the local or even national marketplace; it is felt worldwide. By limiting foreign sourcing, the DoD is not taking full advantage of the global market in its weapon system procurements.

The objective of this MBA project is to examine the extent to which the Department of Defense has positioned itself to maximize the use of the global defense market. This report explores the recent history of commercialization and globalization initiatives and legislation; details several examples of foreign technology that have significantly improved the U.S. military’s warfighting capability; and analyzes the significant benefits and challenges facing the DoD in moving towards a truly global defense industry. The report concludes with a summary of the findings and further establishes a path for the cultural change that is necessary for the DoD to operate in a global defense industry.

The researchers have found the defense industry to be lagging their commercial counterparts in international initiatives, primarily due to the U.S. government’s long-standing protectionist mindset and statutes. One of the major advantages of a global



defense market is more full and open competition due to foreign sources. Taking advantage of global competition could also result in benefits to the U.S. military such as better technological innovation, reduction of cycle times, and significant reduction of costs.

# **I. INTRODUCTION**

## **A. BACKGROUND**

The Department of Defense (DoD) has long been criticized for its costly and lethargic process of acquiring major defense systems. As a result, many acquisition reform initiatives have been introduced over the past twenty-plus years with goals of streamlining the process, and ultimately correcting the problems with the DoD acquisition process. While these reform initiatives have occasionally proven successful for specific problems, no reform initiative to date has produced dramatic and sweeping affects to put an end to the criticism.

Additionally, the DoD is currently involved with conflicts on various fronts but is primarily engaged with several allied nations in the Global War on Terror, also referred to as “The Long War.” Having been engaged in this global coalition effort for the past five years should be enough of a hint that the future of warfighting is an international effort. The corporate (private) sector has also become more global with capable prime and subcontractors around the world. Supply and demand is no longer just felt in the local or even national marketplace; it is felt worldwide. By limiting international competition, the DoD is not taking full advantage of the global market in its weapon system procurements.

## **B. PURPOSE**

The purpose of this research is to evaluate the benefits and challenges of globalizing the DoD acquisition process. The primary focus is on past international system procurements from various international companies and organizations – both why and how the international procurement was accomplished. This research identifies potential ways the DoD can further implement the concept of international competition into the acquisition process. Finally, this research draws conclusions based on past acquisition reform initiatives, past international procurements, and the proposed benefits and challenges of international competition.

## **C. RESEARCH QUESTIONS**

The following primary research questions are addressed in this professional report:

- To what extent is the DoD currently procuring from non-U.S. contractors?
- What are the benefits of competition from non-U.S. contractors?
- What are the potential challenges of allowing competition from non-U.S. contractors?

Subsidiary/secondary research questions are:

- To what extent are U.S. contractors utilizing international suppliers and subcontractors?
- To what extent is the DoD planning to incorporate competition from non-U.S. contractors into the acquisition process?

## **D. SCOPE AND RESEARCH METHOD**

This technical report briefly examines acquisition reform initiatives that have led the DoD to commercialization, beginning with the Grace Commission in 1980 through the current DoD 5000 Series. Additionally, this report examines the policies and guidelines currently available to allow the acquisition community to procure weapon systems from non-U.S. contractors, including the Foreign Comparative Test program and international cooperative agreements. The report also examines restrictions that limit the DoD from further using international contractors in major weapons system procurements, such as the Buy American Act and Berry Amendment.

Literature research serves as background for the main body of the report, which is to examine examples of the DoD procuring weapons systems from non-U.S. contractors in today's acquisition environment. The report further draws upon these examples to garner the lessons learned and to cite specific benefits and challenges of these international procurements. The literature research includes a review of professional, academic and Government journal articles, Federal and DoD regulations and policies, student research reports focused on acquisition reform, and RAND Corporation, Government Accounting Office (GAO), and Congressional Budget Office (CBO) reports. These documents were obtained from publicly available library and internet resources.

This report focuses on a limited number of procurements to international prime or sub contractors, primarily those procurements that provided significant improvements in the DoD's warfighting capability. The examples chosen represent both the successes and challenges of international procurements, the information for all of which are publicly accessible. The examples chosen allow for conclusions to be drawn based on the method of procurement, perceived benefits and challenges to the procurement, the manner in which the current acquisition policy allowed for the procurement, and ways the current policy can be amended to take advantage of more extensive international competition. Further, this report focuses on U.S. procurements and therefore will not explore the existing Foreign Military Sales or Direct Commercial Sales from the U.S. to foreign governments.

#### **E. ORGANIZATION OF STUDY**

This report is divided into the following five chapters:

Chapter I, Introduction, provides a basic overview of this project report, including the purpose of the report, the research questions to be answered in this report, and the scope and research method to be utilized.

Chapter II, Literature Review and Background, provides a brief review of acquisition reform initiatives with regards to commercialization and globalization from 1980 to the present, as well as a brief overview of laws governing international procurements including the Buy American Act.

Chapter III, Examples of Department of Defense Procurement from Non-U.S. Contractors, provides a brief overview of five major defense procurements from international contractors. This review describes the method of procurement, as well as how the international contractor was chosen, and any benefits that were realized as a result of this international procurement.

Chapter IV, Benefits and Challenges of Defense Globalization, provides an in-depth review of the realized benefits from the examples described in Chapter III. Similarly, this chapter describes several challenges that exist in allowing international competition.

Chapter V, Conclusions, provides a summary of the findings and a path to further incorporate international competition into the DoD acquisition process.

## **II. LITERATURE REVIEW AND BACKGROUND**

### **A. INTRODUCTION**

The purpose of this chapter is to provide a review of acquisition reform initiatives that have moved the DoD towards commercialization, beginning with the Grace Commission of 1982 and ending with the most recent DoD 5000 Series acquisition guidance. This chapter also provides a review of initiatives and programs that currently allow DoD to take advantage of the global market, including the Foreign Comparative Test program and cooperation efforts among allies. The chapter includes a discussion on statutes that impact the globalization of DoD acquisitions, including the Buy American Act and other similar laws and policies.

### **B. ACQUISITION REFORM INITIATIVES: COMMERCIALIZATION**

Acquisition reform initiatives can be traced back many years, at least to the 1940's. Many reform initiatives from that period, however, were in response to isolated incidents of fraud, waste, and abuse of the federal budget. Reform initiatives of the recent past, which we will call the "modern" era, have been targeted at streamlining the acquisition process by addressing extremely long acquisition cycle times and enormous and increasing acquisition costs.

One buzzword that continues to surface in and among the reform initiatives during the modern era is "commercialization." For the purpose of this report, commercialization simply means value; getting the most efficacy for the defense dollar. As Harry Stonecipher (1999), former president and chief operating officer of The Boeing Company put it, "Commercial practices seek to create marketplace-like disciplines and behaviors in the absence of a naturally-occurring market." Stonecipher further asserted:

As a general rule, commercial practices are at the opposite end of the spectrum from the most exacting forms of government contracting and oversight. Commercial practices accentuate flexibility and trust... (p. 31)

## **1. Grace Commission**

The “modern” era of acquisition reform can most easily be traced back to the Reagan administration and the Grace Commission. During his successful presidential campaign in 1980, President Reagan ensured voters that he would cut the federal budget by 2% simply by eliminating “waste, extravagance, abuse, and outright fraud.” (Bair, 1994, p. 16) As a result in 1982, President Reagan charged J. Peter Grace with heading up the President’s Private Sector Survey on Cost Control, better known as the Grace Commission. After extensive review of policies and procedures, the commission made two recommendations in the way of commercialization of the acquisition process: (1) to increase use of standardized parts in military weapons systems and reduce the use of military specifications in favor of commercial specifications, and (2) to award contracts based on commercial criteria (meaning product quality and cost instead of cost alone). (Bair, 1994) Although these recommendations were not profound, they were the first of many initiatives to push commercialization into the DoD acquisition process.

## **2. Packard Commission**

Four years later, in response to highly-innovative programs grossly behind schedule, over budget, and the perceived public mistrust of defense management, President Reagan assigned David Packard with establishing the Blue Ribbon Commission on Defense Management, more commonly called the Packard Commission. Again, after lengthy review of acquisition policy, Packard and his team recommended, among other things, that “Federal law and DoD regulations should provide for substantially increased use of commercial-style competition, relying on inherent market forces instead of governmental intervention.” (*Quest for Excellence*, 1986, p. xxvi) By “commercial-style competition,” Packard and his team were pushing the DoD into the current source selection process that takes into account performance and cost criteria to ensure the DoD awards contracts for the best value. This initiative was an even stronger push of commercialization into the DoD acquisition process than the preceding Grace Commission.

### **3. Federal Acquisition Streamlining Act of 1994**

The Federal Acquisition Streamlining Act (FASA) was signed into public law by President Clinton in October of 1994. As the name implies, this act was aimed at simplifying and streamlining the DoD acquisition process. FASA was, to date, the strongest push of acquisition reform towards commercialization. Two of the most significant initiatives were emphasizing the acquisition of commercial and/or non-developmental items (NDI) and the use of simplified acquisition procedures for small purchases under a certain threshold. Further, commercial products and NDI were defined in the Federal Acquisition Regulation, and were required as a part of the market research process. (U.S. SBA website, [www.sba.gov](http://www.sba.gov))

### **4. Clinger-Cohen Act of 1996**

In 1996, President Clinton signed the Information Technology Management Reform Act. This act, combined with the Federal Acquisition Reform Act, became more commonly known as the Clinger-Cohen Act. U.S. Representative William Clinger and Senator William Cohen co-authored this act which, again among other initiatives, required the U.S. Federal Government have “increased reliance on private-sector sources for commercial products and services” (Public Law 104-106, Sec. 357) and the revocation or “inapplicability of certain procurement laws for commercially available off-the-shelf items.” (P.L. 104-106, Sec. 4203) The law also called for best commercial practices of inventory management to help streamline the back-end of the acquisition process at depot and other maintenance facilities. (P.L. 105-261, Sec. 347)

### **5. Raines Rules**

Immediately following the Information Technology Management Reform Act, then-OMB Director Frank Raines wrote a memorandum establishing further guidance for the acquisition of major information systems. While this set of “rules” did not apply to all major DoD acquisitions, it did set a precedent in the way of commercializing federal acquisitions. OMB Memorandum 97-02 (referred to as “Raines Rules”) stated that:



Investments in major information systems proposed for funding in the President's budget should: ...be undertaken by the requesting agency because *no alternative private sector* or governmental source can efficiently support the function; and ...support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and *make maximum use of commercial, off-the-shelf technology*. (OMB, 1996, p. 1)

This memorandum was significant because for the first time, direction was given to all federal agencies that their budget requests for development of information systems would not even be considered if they could not show appropriate private-sector market research and the maximum use of commercial-off-the-shelf (COTS) technology.

## **6. DoD 5000 Series**

The DoD Directive 5000 Series is the DoD's set of established acquisition guidelines. This series of documents was first created under President Nixon in 1971, and has since been revised ten separate times. (*Defense Acquisition History Project* website, [www.army.mil](http://www.army.mil)) However, it was not until the 10<sup>th</sup> version under Deputy Secretary of Defense (DEPSECDEF) Donald Atwood in October of 2000 that the mandate of using commercial products actually appears. Section 4.2.3, *Use of Commercial Products, Services and Technologies*, clearly spelled out the requirement:

...[P]riority consideration shall always be given to the most cost-effective solution ... program managers shall first consider the procurement of commercially-available products ... market research and analysis shall be conducted to determine availability, suitability, operational supportability, interoperability, and ease of integration of existing commercial technologies and products and of non-developmental items... (DoDD 5000.1, 2000, p. 4)

The latest revision of DoDD 5000.1 under DEPSECDEF Paul Wolfowitz, dated May 12, 2003, canceled the October 2000 version and subsequently removed the verbiage as detailed above. The current revision focuses on flexibility of the acquisition process and meeting the needs of the warfighter in the most timely and cost-effective manner. This revision does retain some emphasis on COTS equipment and commercial best practices, but includes this language as enclosures to the main document. Enclosure E1.1.18 requires that the DoD components consider several sources of products,

technologies and services in a preferential order. As expected, the first bullet in that list of preferences states: “The procurement or modification of commercially-available products, services, and technologies, from domestic or international sources...” (DoDD 5000.1, 2003, p. 6)

## **C. ACQUISITION REFORM INITIATIVES: GLOBALIZATION**

We must continue to strengthen our industrial ties with allies, both for economic and national security reasons. Failure to do so gradually could isolate our defense business from what is becoming, like many sectors of the economy, a globalized and highly competitive industry. (Farell, 2004, p. 4)

### **1. U.S. Statutes and Policies Promoting International Cooperation**

Congress has approved numerous laws encouraging cooperation with U.S. allies for the acquisition of defense systems. The majority of these laws are codified under the term “cooperative research and development” under Title 10 United States Code (Armed Forces) and “cooperative production” under Title 22 U.S.C. (Foreign Relations and Intercourse). DoD acquisition guidance in the DoDD 5000.1, 5000.2, and Defense Acquisition Guidebook provide further policy on international cooperation for defense acquisition programs.

#### ***a. Title 10 United State Code: Armed Forces***

(1) Title 10 U.S.C. 2350a: Cooperative Research and Development Agreements. Title 10, subsection 2350a (a) elaborates on the ability to enter into cooperative research and development with one or more friendly countries (either NATO or non-NATO) for the purpose of joint participation in defense procurement. The following two categories of cooperation are allowed under this statute:

- to develop new conventional defense equipment and munitions
- to modify existing military equipment to meet United States military requirements

(2) Title 10 U.S.C. 2350a (e). This goes one step further to actually require the DoD to formally review international cooperative research and development opportunities for *any* new acquisition under the Office of the Under Secretary of Defense

for Acquisition, Technology, and Logistics and report findings to the Defense Acquisition Board. The Defense Acquisition Guidebook interprets this requirement as only applicable for Acquisition Category 1 programs. A limitation of this statute exists in that it can only be used to authorize funds for research and development, not procurement.

(3) Title 10 U.S.C. 2350a (g). The use of side-by-side testing is authorized by Congress in for the purpose of evaluating conventional defense equipment, munitions, and technologies manufactured and developed by other countries and determine if they are capable of meeting U.S. military requirements. This statute allows the DoD to procure foreign produced non-developmental items or those in final development in order to carry out these tests. The concept of Foreign Comparative Test (FCT) will be discussed later in this report.

(4) Title 10 U.S.C. 2457 Standardization of Equipment with North Atlantic Treaty Organization Members. This statute was established by the 1976 Culver-Nunn Amendment for the purpose of enhancing U.S. and NATO standardization and interoperability of weapon system equipment, ammunition, and fuel. Paragraph (e) allows the Secretary of Defense to waive 41 U.S.C. 10a, Buy American Act (to be discussed in section 3a of this chapter), for weapon system acquisitions which would not be in the public interest if procured within the U.S. The term “public interest” is defined in 10 U.S.C. 2533, which provides a very liberal interpretation allowing the SEDDEF a wide range of justifications for foreign procurements (Title 10 U.S.C. 2457, 2006).

***b. Defense Federal Acquisition Regulation Supplement Clause 225***

In DFAR 225, the DoD expands upon Title 10 U.S.C 2457 to include specific countries that qualify for Buy American Act exemption on the basis of being inconsistent with public interest.. DFAR Section 225.872-1 calls out the following twenty countries that have received carte blanche exemption through various memoranda of understanding and international agreements:

Australia, Belgium, Canada, Denmark, Egypt, Germany, France, Greece, Israel, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom of Great Britain and Northern Ireland.

In addition, the following two countries may qualify for Buy American Act exception on a purchase-by-purchase basis (DFAR 225, 2007):

Austria, Finland.

***c. Title 22 United State Code: Foreign Relations and Intercourse***

(1) Title 22 U.S.C. 2767. Authority of President to enter into cooperative projects with friendly foreign countries. This statute allows the President and subsequent delegation authority to the Under Secretary of Defense for Acquisition, Technology, and Logistics to enter into international cooperative efforts/agreements. There is one key difference between this authorization and that in Title 10 Section 2350a. Section 2350a limits cooperative efforts to research and development while Section 2767 allows for cooperative and concurrent production and procurement. (OUSD AT&L/IC, 2006) Efforts within this statute must fall within one of the following categories:

- For one or more of the other participants to share with the United States the costs of research, development, testing, evaluation, or joint production (including follow-on support) of certain defense articles.
- For concurrent production in the United States and in another member country of a jointly developed defense article.
- For procurement by the United States of a defense article or defense service from another member country or for procurement by the United States of munitions from the North Atlantic Treaty Organization or a subsidiary of such organization.

***d. DoD Directive 5000.1 and 5000.2***

(1) DoDD 5000.1 (Enclosure 1.1: Armaments Cooperation). This states Program Managers shall pursue international armaments cooperation to the maximum extent feasible, consistent with sound business practice and with the overall political, economic, technological, and national security goals of the United States. This policy also encourages joint service and coalition interoperability in order to provide and accept data, information, materiel, and services to and from other systems, units, and

forces. Enclosure 1.3 (Competition) further endorses the need to include qualified international sources as a means to maximize competition thus reducing costs while increasing innovation and quality. (DoDD 5000.1, 2003)

(2) DoDD 5000.2. It contains amplifying policies on various international cooperation efforts and procurement for defense acquisitions. Enclosure 5.11 provides defense acquisitions guidance for Foreign Comparative Testing authorized by Title 10 Section 2350a (g). Direction is also provided regarding FCT management and Congressional reporting requirements. In addition, Enclosure 9.4 offers additional definitions and procedures for program management of international cooperation. It states that an international cooperative program is any acquisition system, subsystem, component, or technology program with an acquisition strategy that includes participation by one or more foreign nations, through an international agreement, during any phase of a system's life cycle. The DoDD 5000.2 references the Defense Acquisition Guidebook as the preferred approach for international agreements. (DoDD 5000.2, 2003)

*e. Defense Acquisition Guidebook*

The Defense Acquisition Guidebook provides amplifying guidance to the DoDD 5000 series on the importance of international cooperation in DoD acquisitions. The relevant chapters on international considerations are 11.2 and 2.3.16.2. The key objectives of international cooperative programs are stated as reduction of weapons system acquisition costs through cooperative development, production, and support; and to enhance interoperability with coalition partners. Chapter 11.2.1.1 references U.S.C. Title 10 2250a (e) as the requiring statute for an analysis of potential opportunities for international cooperation for all Acquisition Category I programs. Though as quoted earlier, the Title 10 verbiage has no ACAT level reference and actually states the requirement is applicable to any acquisition under OUSD AT&L. The Guidebook goes on to emphasize the need for early and continuous international consideration throughout each acquisition phase. Suggested avenues for international involvement include exploratory discussions, studies, international forums, and international exchanges of

information and personnel. The Guidebook also points out the critical need for proper program protection and security classification for any international cooperative effort. (DAU Defense Acquisition Guidebook, 2004)

## **2. Department of Defense Programs Enabling International Procurement**

### ***a. Foreign Comparative Test Program***

The Foreign Comparative Test (FCT) program was started in 1980 as a DoD-wide initiative to capitalize on international products and emerging technologies. The purpose, as defined by the Office of the Secretary of Defense (OSD) website, is to test and evaluate foreign (international) COTS and NDI products to determine if they meet DoD warfighter requirements. The FCT program is managed by the OSD Comparative Testing Office (CTO). According to the CTO website, FCT has three major focus areas: improved operations, direct warfighter support, and warfighter employment. Within these three focus areas, CTO outlines a number of sub-categories that the FCT program attempts to address, e.g. effectiveness, survivability, logistics, planning, and transportation. ([www.acq.osd.mil/cto](http://www.acq.osd.mil/cto))

In addition, CTO outlines several reasons why foreign cooperation is desired: political, economic, operational, and technological motivations. Within the political realm, the FCT program aims to strengthen the “political fabric” among allied nations and to sustain the ability and willingness to act together when threatened by hostile forces. For the operational area, the FCT program strives to field interoperable systems and maintain a shared logistics footprint. With the economic focus, the FCT program is geared towards reducing life cycle costs through shared resources. Finally, for the technological motivations, the FCT program attempts to find and use the best technologies available and prevent technological surprises on the battlefield, especially among allies. ([www.acq.osd.mil/cto](http://www.acq.osd.mil/cto))

Another main objective of the FCT program is in reducing acquisition cycle time, or the time it takes to field a warfighting system. This objective can be directly tied to the DoDD 5000.1 guidance that promotes flexibility in acquisitions to reduce cycle time and acquisition cost, and increase weapon system performance.

The FCT program supports armaments cooperation with a majority of our allies, including but not limited to Canada, France, Germany, Korea, Japan, South Africa, and Australia. (<http://www.dtic.mil/ndia>) This cooperation results in a teaming environment with U.S. contractors that additionally bolster the diminishing national defense industrial base.

Over the life of the FCT program, 488 of 567 projects have been completed; 266 of which have met or exceeded service requirements. Of those 266 projects, 184 of them have resulted in DoD procurements totaling nearly eight billion dollars. Similarly, the 184 successful procurements have resulted in an estimated savings of seven billion dollars in research, development, test and evaluation funds. ([www.acq.osd.mil/cto](http://www.acq.osd.mil/cto)) While this amount of funding may initially seems enormous, it is less than 2% of the FY07 DoD budget. When stretched across the 26-year existence of the program, the seven billion dollar savings from FCT procurements account for a miniscule fraction of the total defense budget. Nevertheless, this program is a step in the right direction towards globalization of the DoD acquisition process and proves the U.S. defense industry is not the end-all answer to achieving technological superiority on the battlefield.

***b. International Cooperation***

Another avenue by which the DoD has acknowledged the global market is through international cooperation. According to a 1997 RAND Issue Paper, policymakers in the U.S. and abroad have pushed for international weapon-procurement cooperation as a means of “controlling burgeoning development and production costs, and achieving equipment rationalization and standardization.” (Birkler, Lorell and Rich,

1997, p. 1) International cooperation in the defense industry is simply the pooling of defense resources among allied nations to design, develop and procure the latest in high-technology weapons systems.

Three types of international cooperation programs exist: reciprocal trade, cooperative production, and co-development. Reciprocal trade, or “the two-way street”, occurs when each government agrees to purchase weapons developed by contractors in the partner country. This program encourages balanced arms trade. With cooperative production, contractors from two or more of the partner countries produce a weapon that was developed by a contractor in one of the partner countries. The government of the developing country must approve the transfer of sensitive technologies prior to proceeding with production. Finally, co-development is the most genuine form of cooperation, whereby partner countries jointly develop and produce a weapon system. Prior to co-development, partner countries must reconcile requirements and schedules, requiring a greater communication exchange and possibly resulting in more issues than the first two types of cooperation. (Lorell and Lowell, 1995)

While the push for international cooperation has been ongoing for decades, a renewed effort began in 1985 with the Nunn Amendments. On May 22, 1985, Senator Sam Nunn and a bipartisan group of senators introduced an amendment to the FY86 Defense Authorization Act that called for arms cooperation between the U.S. and its NATO allies. According to David Kuckelman (1987), a journalist that followed the amendment from introduction, the collaborative efforts must fall into one of two categories: (1) “to develop new conventional defense equipment and munitions, or (2) to modify existing military equipment to meet U.S. military requirements.” (p. 11) This amendment introduced a major shift of U.S. preference when dealing with NATO arms procurement. For nearly a decade, U.S. policy was based on “competitive research and development among member states, and competitive procurement of end-items.” (Kapstein, 1997, p. 667) The Nunn Amendment adopted the approach of cooperation at the earliest stages of research and development through the procurement and fielding of the system.



Further, the Nunn Amendment offered several incentives to U.S. defense contractors to ensure their participation. According to Ethan Kapstein (1997), director of the Economics and National Security Program in the John M. Olin Institute for Strategic Studies at Harvard University, the amendment first offered R&D funds to cash-starved defense firms that participated; second, it ensured U.S. contractors access to European and other allied markets; and third, with research subsidies, it reduced the initial expenditures required of contractors to start new weapon programs.

For the first two years after the Nunn Amendment was enacted, both U.S. and NATO nations were pouring money and time into nominating and starting these cooperative efforts. However, by 1989 and with the subsequent collapse of the Soviet Union and its global threat, many NATO nations were withdrawing funding. Additionally, many programs were being cancelled, both between U.S. and NATO, as well as between European NATO countries.

Despite the collapse of the Nunn Amendment and its associated initiatives, success stories of international cooperation do exist. Several of these success stories include the F-16 Falcon, the AV-8 Harrier, T-45 training aircraft, and the NATO Airborne Warning and Control System. These programs were successfully developed collaboratively and are still being used and upgraded today. In his 1999 Annual Report to the President and the Congress, Secretary of Defense (SECDEF) William Cohen cited many reasons to continue international arms cooperation, including better battlefield interoperability, leveraging independent national developments, and fostering closer international and military relations. SECDEF Cohen (1999) also offered advice on ensuring the success of these international collaborative efforts:

...[C]ooperative international defense programs should apply the lessons learned from successful commercial alliances. Essentially, DoD is working toward a new international armaments cooperation model ... governments establish the military requirements and business rules, and the industries ... establish the best international teams ... to competitively bid on the work. (<http://www.dod.mil/execsec/adr1999/chap17.html>)

While a great deal of political push has come from the U.S. and many of its allied nations, both to reduce R&D costs and to promote interoperability on the

battlefield, the track record of these programs is far from flawless. As an example, the U.S. and Japan collaborated on a single-engine fighter aircraft (F-2 or FS-X) similar to the U.S. F-16. However, the cooperation project cost nearly three times as much as the independently-developed F-16, or about the same as the twin-engine (and more capable) F-15 aircraft. In addition to enormous cost growth, several cooperative projects have failed to promote interoperability (the Jaguar fighter/attack aircraft developed by England and France) and have even caused political friction among participating governments (the EF-2000 fighter/attack aircraft developed by England, Germany, Spain and Italy). These cases are not isolated either. In fact, Jacques Gansler (1995) of the Center for Research and Education on Strategy and Technology went so far as to assert that joint programs can cost more and take longer than individually developed programs.

### **3. U.S. Statutes Restricting International Procurement**

While the FCT program and international cooperation initiatives are two avenues that allow the DoD to tap into the global market, certain statutes also restrict global expansion of the defense industry. These restrictions can be traced as far back as 1933, and have since been amended many times.

#### ***a. Buy American Act***

The Buy American Act (41 U.S. Code 10a. – 10d) was codified in 1933 and heavily favors domestically-produced goods over foreign. This act requires the federal government to buy domestic materials when acquired for public use. The most recent amendment of this act allows for five exceptions to the act itself:

1. The act does not apply to procurements that would be inconsistent with public interest,
2. Or unreasonable in cost.
3. The act does not apply to procurements of products for use outside the U.S.,
4. Or of products not produced in sufficient quantities and of satisfactory quality.
5. The act does not apply to procurements under \$2,500. (41 U.S.C. 10a., 2000)

***b. Berry Amendment***

The Berry Amendment (10 U.S. Code 2533a) was codified in 1941 and later amended by Congress in 2002. Similar to the Buy American Act, the purpose of this law was to protect the domestic defense industrial base. On the other hand, this law only applies to DoD procurements as opposed to all federal procurements under the Buy American Act. This law requires end items and components to be grown, reprocessed, reused, or produced in the United States. The list of restricted items includes:

1. food,
2. clothing,
3. tents, tarpaulins, or covers,
4. cotton and other natural fiber products,
5. spun silk yarn for cartridge cloth,
6. synthetic fabric or coated synthetic fabric,
7. canvas products,
8. wool (including in manufactured articles),
9. any item of individual equipment containing any of the restricted fibers, fabrics, yarns, or materials,
10. and hand or measuring tools. (10 U.S. Code 2533a, 2002)

Much like the Buy American Act, there are many exceptions to the Berry Amendment. These exceptions are similar in nature to those of the Buy American Act, but also include incidental inclusion of foreign produced components, as long as the value of these incidental items does not exceed ten percent of the cost of the end product. In addition, chemical warfare protective clothing, waste and byproducts of cotton or other fibers used in the production of propellants, and explosives may be purchased from qualifying countries. (DFARS 225.7002, 2006)

***c. International Obligations***

In addition to the above exceptions, Congress has also granted the President authority to waive the Buy American Act and Berry Amendment in implementation of international obligations. Examples of international obligations include free trade agreements among nations. Free trade agreements, like the first one

signed by the U.S. with Israel in 1985, eliminate tariffs on goods, but do not necessarily require a certain amount of trade to be conducted. Many free trade agreements have been enacted since 1985 with nations such as Australia, Chile, Morocco, and Singapore in support of the U.S. Trade Strategy: "...to pursue multiple market-opening initiatives on a global, regional and bilateral basis, establishing models of success that can be used throughout all negotiations." (USTR website, 2007)

Another example of such an obligation is the World Trade Organization (WTO) Agreement on Government Procurement (GPA), which was enacted in 1996. As a multilateral agreement, the GPA is binding only to those member nations that signed it; not to all WTO nations. The purpose of the GPA is to open up government procurement markets to international competition. Unlike many free trade agreements, the GPA sets forth a binding threshold (official dollar amount) for U.S. commitments. The GPA prohibits the use of offsets between contracted parties, and also provides for exceptions as a specific matter of national security. (Tatelman, 2005)

#### **D. CHAPTER SUMMARY**

This chapter provided a brief review of acquisition reform initiatives incrementally driving the DoD acquisition process towards commercialization, both in practice and in product. As early as 1980, the need to streamline the acquisition process became obvious and policymakers began to realize the commercial sector was conducting business in a much more efficient manner. Follow-on reform initiatives required the DoD to consider COTS and NDI products prior to developing a new system not only as a means of reducing development costs and cycle time, but also to achieve desired interoperability and maintainability standards. The latest reform initiatives pushed the acquisition community to embrace flexibility while maintaining simplicity; again, the commercial best practices and COTS products were emphasized and preferred.

This chapter also provided an overview of two programs that allow the DoD to exploit the global market – FCT and international cooperation. To date, the FCT program has proven successful in saving time and money during development, but only

on a very small scale. In any case, the FCT program has shown that allied nations can, do, and will continue to produce exceptional military technologies that are of use to U.S. warfighters.

Similarly, this chapter provided an overview of international arms cooperation. The intentions of this initiative include interoperability among allied weapons systems, reduced R&D costs for partnering nations, and improved political and military relations among allied nations. But without the right intentions and a steadfast commitment by these partners, international cooperation can prove more costly and time-consuming than independent development and production of major weapons systems. This paper will further discuss several success examples from the FCT program and international cooperation ventures in Chapter III.

Finally, this chapter briefly described U.S. statutes that impact international procurements. These obligations include provisions limiting the procurement of foreign goods such as the Buy American Act, but also provisions obligating the U.S. to seek foreign suppliers such as free trade agreements and the World Trade Organization Agreement on Government Procurement.

### **III. EXAMPLES OF DEPARTMENT OF DEFENSE PROCUREMENTS FROM NON-U.S. CONTRACTORS**

The purpose of this chapter is to identify and examine examples of DoD procurements from foreign contractors and the methods used in completing these acquisitions. These examples will be further explored in the following chapter to extract lessons learned and the realized benefits of the foreign procurement initiatives. The chapter is divided into three main sections, which constitute the three major and most often used DoD initiatives to involve foreign contractors in defense acquisitions: Foreign Comparative Test, international cooperation, and U.S. prime contractor with major foreign subcontractor. Within each of these sections, one to two DoD acquisition programs are described including the program background, specific details of the acquisition, and the benefits of each acquisition example.

#### **A. EXAMPLES OF SUCCESSFUL FOREIGN COMPARATIVE TEST PROGRAMS: FOX NBC RECONNAISSANCE VEHICLE AND MINE-PROTECTED CLEARANCE VEHICLE**

This section includes a description of two major FCT programs that filled crucial DoD needs at a significantly reduced cost when compared to a full research and development effort: 1. the Fox Nuclear, Biological and Chemical (NBC) Reconnaissance Vehicle (referred to as simply the Fox or Fox vehicle); and 2. the Mine-Protected Clearance Vehicle. While 184 programs totaling \$7.98 billion have been procured over the last 28 years as a result of successful FCT efforts, these two programs represent two significant improvements in the U.S. military's warfighting capability.

##### **1. Fox NBC Reconnaissance Vehicle**

###### *a. Background*

The U.S. Armed Forces first experienced chemical warfare agents during World War I and numerous casualties occurred as a result of soldiers being unprotected from these agents. Similarly, no chemical agent warning devices existed. By the 1970s, the U.S. fielded its first automatic chemical alarm, the M8. Following this fielding, in

1984, the Army initiated Concept Exploration to assess the possibility of a mobile chemical agent detection system. As a result, a prototype of the M113 Armored Personnel Carrier was developed and the German Fuchs NBC Reconnaissance System was tested against this prototype. This comparison test marked one of the most revered foreign comparative tests, whereby a U.S.-developed prototype was competing against a foreign system. By October 1987, the Army decided to cancel the NBC version of the M113 vehicle and purchase 48 German Fuchs vehicles from the original manufacturer, Henschel Wehrtechnik of Kassel, Germany. The German Fuchs vehicle was seen as a more expedient and cost-effective method of equipping U.S. forces with this capability.

***b. Program Details***

The NBC Reconnaissance Vehicle (NBCRS) Non-Developmental Item Program was officially divided into three phases – Interim System Production, System Improvement, and Block 1 modification. The Interim System Production phase began in March 1990 when the Army purchased 48 German vehicles and contracted General Dynamics Land Systems (GDLS) under a limited production – urgent (LPU) arrangement to “Americanize” the German vehicle. However, just a few months later, Operation DESERT SHIELD began and the expected NBC capability was not yet in the hands of the warfighter. As a show of good faith, the German government provided U.S. forces with 60 slightly-modified Fuchs NBC reconnaissance vehicles that were used throughout DESERT SHIELD and DESERT STORM. The modifications included English labels and software, the U.S. version of a chemical agent detector (M43A1 Chemical Agent Detector), air conditioning, and U.S. radios. This American version became known as the XM93 Fox NBC Reconnaissance Vehicle, shown in Figure 1 below. GDLS completed delivery of its 48 modified Fox vehicles in 1993.



Figure 1. XM93 Fox NBC Reconnaissance Vehicle

The System Improvement phase was a concurrent contract with GDLS to deliver updated prototypes, designated XM93E1, to be further tested by the Army to ensure the new systems would fully meet U.S. operational requirements. The U.S. government identified limitations in the original XM93 American version of the Fox vehicle but realized this German system provided a significant technology leap over existing U.S. capabilities.

The Block 1 Modification phase tailored all 108 original XM93 vehicles (48 purchased by U.S. and 60 donated by German government) into the XM93A1 (NBCRS-Fox Block 1). According to the U.S. Army Fact Files, the requirements document for the XM93A1 was dated in February 1991; it was approved for production in 1995; the system qualified for production in January 1998; and the first unit was equipped in October 1998. It is interesting to note that despite the predecessors to the XM93A1 being used extensively in previous operations, the U.S. Army specifically states that the Fox NBC Reconnaissance Vehicle did not enter Army service until 1998. (U.S. Army Fact Files, 2007)

*c. Benefits of Foreign Procurement*

It is difficult to estimate the number of lives saved by this advanced capability when considering the unknown use of chemical agents against American and coalition forces in the first Gulf War. Varying reports exist as to how many troops were



exposed to chemical agents, but a 1996 New York Times article cites a DoD report that estimated seven chemical agent detections by the third day of Operation DESERT STORM. (Shenon, 1996) According to Dale A. Vesser (2001), Special Assistant for Gulf War Illnesses in the DoD, the Fox vehicle was “the most sophisticated, technically complex piece of chemical detection equipment the United States used in Operations DESERT SHIELD and DESERT STORM.” (p. 3)

Similarly, the slightly modified German system was fielded to the user with remarkable quickness when compared to the typical DoD development program timeline. Operation DESERT STORM began in August of 1990, and within three months, the German government provided the original XM93 “Americanized” Fox vehicle to U.S. forces in Kuwait. As mentioned in the timeline described above for the Block 1 Modification of the Fox vehicle, the Army and GDLS effort to field the full-up NBC Reconnaissance System lasted more than seven years despite the fact that this program was a modification to a non-developmental item.

## **2. Mine Protected Clearance Vehicle**

### ***a. Background***

More recently, the ongoing operations in Iraq uncovered a capability that U.S. Armed Forces did not possess – the capability to protect troops against mines and improvised explosive devices (IEDs). Roadside mines and IEDs are responsible for over 70 percent of all casualties in Iraq according to a National Public Radio (NPR) report from May 18, 2007. (Raz, 2007) As a result, the mine protected vehicle has become the number one priority in DoD acquisitions; particularly, the Mine Resistant Assault Protected (MRAP) vehicle is seen as the solution. The predecessor to today’s U.S. MRAP can be traced to South Africa, and more specifically, to the FCT conducted by the Army in 2000.

### ***b. Program Details***

In 1999, the U.S. Army expressed a requirement for “an integrated landmine discrimination and neutralization capability.” (DefenseLink, 1999,

[http://www.defenselink.mil/news/Jul1999/FCT1999\\_072399.html](http://www.defenselink.mil/news/Jul1999/FCT1999_072399.html)) After receiving approval and FY2000 funding from the FCT program office, the Army evaluated two systems from the Republic of South Africa: the CASSPIR MKII Vehicle manufactured by Denel-Mechem and sold by LNY, Inc.; and the LION II, also manufactured by Denel-Mechem but sold by Technical Solutions Group, a U.S. consortium. Both systems had valuable characteristics but the CASSPIR MKII emerged as the clear favorite. At the urging of the Office of the Secretary of Defense, Denel-Mechem partnered with Force Protection, Inc. in Ladson, South Carolina to develop a six-wheeled Americanized version of the four-wheeled CASSPIR, the Buffalo Mine-Protected Clearance Vehicle (shown in Figure 2 below).



Figure 2. Buffalo Mine-Protected Clearance Vehicle

*c. Benefits of Foreign Procurement*

Today, the Buffalo represents one of the most advanced MRAP designs in use by U.S. forces in Iraq. This advanced vehicle combines years of expertise in mine clearance technology from the South African defense industry with the prowess of the U.S. automotive industry. South Africa emerged as a world leader in mine

clearance technology as a result of the anti-apartheid movement of the early 1990s. The South African government invested millions of dollars into its defense industry for research and development to aid in humanitarian de-mining.

Additionally, the willingness of South African companies to work with and share technology with U.S. firms not only improved the DoD's mine clearance capability, but also bolstered the U.S. defense industrial base. The MRAP technology became non-proprietary shortly after it entered the U.S., and as a result, any U.S. defense contractor can develop its own version of the MRAP vehicle. In fact, a NPR report stated that at least two dozen US companies have developed their own version of the MRAP to compete for the increasing pot of money set aside for this vital system. In May 2007, Congress authorized an additional \$4 billion for MRAP vehicles.

## **B. INTERNATIONAL COOPERATION IN DOD ACQUISITIONS: THE BRITISH AEROSPACE (HAWKER)/ BOEING (MCDONNELL DOUGLAS) HARRIER**

This section includes a description of the major international cooperation effort that significantly improved the DoD's aviation capability. The U.S. used technologies developed abroad to fill a critical gap in the DoD arsenal. This cooperative effort led to the development of the British Aerospace and Boeing (formerly McDonnell Douglas) AV-8 Harrier aircraft, the DoD's first and only production vertical takeoff and landing (VTOL) airframe.<sup>1</sup>

### **1. Background**

The origin of the VTOL (also known as "hover") technology dates back to late in World War II with German engineers designing various concepts on paper only. Several nations followed suit, beginning work on flight-worthy VTOL systems immediately following the war. The most promising technology came from Rolls Royce in Great Britain. (Goebel, 2006) Rolls Royce designed and developed the first "Flying Bedstead"

---

<sup>1</sup> The F-35 Joint Strike Fighter will be delivered with the VTOL capability by 2013.

in 1953 and made several tethered test flights on this apparatus that could hardly be called an “aircraft.” By 1954, the first free flight was performed and several other companies and private parties began to show interest.

In 1956, Michel Wibault, a French aircraft designer, proposed a new VTOL aircraft he called the “Gyroptere.” He took this design to the Mutual Weapons Development Program (MWDP), an American-funded NATO organization. The chief of MWDP was an U.S. Air Force Colonel that liked the idea and passed it on to a NATO advisory group chaired by a prestigious aerospace scientist from the California Institute of Technology, Theodore von Karman. (Goebel 2006) After several other external reviews, NATO passed the idea on to Bristol Aero Engines in the UK to “clean up the design.” Bristol’s work led to an engine, but not an aircraft.

## **2. Program Details**

Many iterations of engines and aircraft designs followed with continued funding support from the U.S. through the MWDP, despite several dead-end design efforts. In 1963, the British, West German, and American governments entered into a joint effort, and by 1964, formally set up the “Tripartite Evaluation Squadron (TES)” to fund and test a VTOL aircraft. It was the continued support of this group and the continued design efforts of Hawker that led to the first US Marine Corps (USMC) combat Harrier aircraft, the AV-8A.<sup>2</sup> Because of the strong preference to “buy American”, Hawker Siddeley licensed the aircraft to McDonnell Douglas for sale to the USMC in 1970. The original intent of this licensing agreement was for McDonnell Douglas to produce the AV-8A aircraft in the U.S., but establishing a second production line proved uneconomical and the idea was canceled. All 102 AV-8As and 8 trainer aircraft were produced in the UK.

Operational experience with the AV-8A Harrier led to a next-generation design developed by British Aerospace and McDonnell Douglas, the AV-8B Harrier II. The AV-8B and AV-8B+ (shown in Figure 3 below) incorporated vast improvements over the

---

<sup>2</sup> The AV-8A was actually delivered as a short takeoff and vertical landing (STOVL) aircraft, as opposed to the original VTOL designs. This capability allowed for flexibility in the mission of supporting land forces.

AV-8A, including a new wing that allowed for double the payload, a night attack variant, and new avionics that included a stability augmentation system. The AV-8B+ with updated radar and sensor technology is still in use by the USMC today.



Figure 3. AV-8B+ Harrier II

### **3. Benefits of International Cooperation**

As discussed in Chapter II, the intent of international cooperation efforts is to reduce and share research and development as well as some production costs. The Harrier and its long history of design efforts by various countries prove that cooperation among allies does in fact allow for cost and technology sharing. There is little doubt the efforts of one country could have succeeded in designing and developing a VTOL or STOVL aircraft that rivaled the Harrier, but it would have come at a much greater financial burden to the lone developer.

Similarly, the NATO backed development of the Harrier allows for sharing of technology and interoperability among coalition forces. The concept of interoperability among coalition forces will be further discussed in Chapter IV; however, the reader should be aware that interoperability among coalition forces has significant positive impacts on cost savings and the success of coalition operations.

### **C. EXAMPLES OF DOMESTIC DEFENSE CONTRACTORS USING FOREIGN SUBCONTRACTORS: F-35 JOINT STRIKE FIGHTER AND USAF AERIAL REFUELING TANKER AIRCRAFT**

This section addresses the growing trend of the U.S. defense industry outsourcing a large portion of DoD contracts to foreign subcontractors. Two examples of heavy foreign subcontractor involvement are the F-35 Joint Strike Fighter (JSF) aircraft and the proposed USAF KC-30 Aerial Refueling Tanker aircraft. While there are countless examples of this type of business from past and present DoD procurements, these two examples are large-scale, high-value procurements and are consistently in the public eye. Additionally, the tanker proposal would put a foreign aircraft into the U.S. defense arsenal, marking a major shift in the defense industrial base.

#### **1. F-35 Joint Strike Fighter**

##### ***a. Background***

The Joint Strike Fighter (JSF) is a multi-role fighter aircraft that will be used by the U.S. Navy (USN), USAF, USMC, as well as the British Royal Air Force and Navy and possibly several other coalition militaries. The aircraft is set to replace the USN F/A-18 Hornet, the USAF F-16 Fighting Falcon, the aforementioned USMC AV-8B/-8B+ Harrier II, and several partner nation platforms. The F-35 Joint Strike Fighter (shown in Figure 4 below) is the largest development and procurement program in world history. This program is vital to both the U.S. and partner countries' military capability, as well as to the strength of the international defense industrial base.



Figure 4. F-35 Joint Strike Fighter

***b. Program Details***

In November 1996, the Acquisition Decision Memorandum was signed by the Milestone Decision Authority to begin Concept Development on the Joint Strike Fighter. Two contractor teams, one led by Boeing and the other by Lockheed Martin, went through a five-year concept/prototype development period. A “fly-off” was held in September and October of 2000 with the Lockheed team emerging victorious. As a result, the System Development and Demonstration contract was awarded to Lockheed Martin in October 2001. The United Kingdom had already invested over \$2 billion in January 2001 and seven more countries combined to invest almost \$2.4 billion by the end of 2002.<sup>3</sup> (DUSD(IP), 2003)

The Lockheed Martin team consists of two other major partners – Northrop Grumman, which is building the mid-section of the aircraft in the U.S., and British Aerospace (BAE) that is building the tail section of the aircraft. According to

---

<sup>3</sup> The UK invested \$2B, Canada \$100M, Denmark and Norway \$125M, Netherlands \$800M, Italy \$1.028B, Turkey \$175M, and Australia \$150M.

BAE North America leadership, the aft fuselage and empennage (tail and fins) for the JSF are being designed, engineered, and built at BAE Systems in the UK. In addition, one particular BAE executive had the following to say about BAE's participation in the program:

The company oversees the F-35's Electronic Warfare (EW) systems suite and is providing advanced affordable low observable apertures and advanced countermeasure systems. We're also providing critical components for the vehicle and weapon systems, in particular the fuel system, crew escape, life support system, and prognostics health management integration. The company has significant work share in autonomic logistics, primarily on the support system side, and is involved in the integrated test force, including the systems flight test and mission systems. Additionally, BAE Systems is supplying the vehicle management computer, the communication, navigation, and identification (CNI) modules, the active stick and throttle and the electro-optical targeting system (EOTS) laser subsystem. (Military and Aerospace Electronics, 2006, p. 2)

*c. Benefits of International Acquisition Strategy*

As noted above, the JSF program was both an international cooperation acquisition in that several allied nations are participating in the development, and an example of using international subcontractors in that a major share of the development work is being contracted to British Aerospace, a foreign supplier. The program was established as an international cooperation for several reasons: (1) to attract financial investments from allied nations so as to reduce U.S. expenses, (2) to capitalize on technological innovation from partner countries, and (3) to include early involvement with allied military services that would be likely users of this cutting edge aviation platform.

Similarly, BAE was selected to design and develop a major portion of the aircraft as a result of their position as a leader in the global aerospace industry, as well as the proven performance in similar aircraft programs. The decision to manufacture a major portion of the aircraft in the UK was also used as an incentive to solidify the



British government's decision to participate in this aircraft procurement. In other words, the UK economy and industrial job market is benefiting greatly by the U.S. allowing a major portion of the aircraft to be manufactured internationally.

## **2. KC-30 Aerial Refueling Tanker Proposal**

### ***a. Background***

The USAF aerial refueling platforms are some of the oldest aircraft in the inventory. The KC-135 Stratotanker is a Boeing design based on the commercial 707 platform. It was delivered to the Air Force in 1956, making it the second oldest platform in the USAF inventory behind the B-52 Stratofortress. The KC-10 Extender is a modified Boeing DC-10 with 88% commonality to the commercial airliner and was put into service in 1988. In addition to the issue of aging, these two platforms have been continually over-burdened during Operations ENDURING FREEDOM and IRAQI FREEDOM, and the Global War on Terror.

### ***b. Program Details***

As a result of these issues, the Air Force had no other choice but to modernize its tanker fleet. A failed attempt to lease modified Boeing 767 aircraft led the Air Force to a full and open competition to meet its imminent need in 2005. Proposals from two industry teams were allowed into the competition – a modified 767 from a Boeing team and a modified European Aeronautic Defence and Space Company (EADS) Airbus 330 (shown in Figure 5 below) from a team led by Northrop Grumman.<sup>4</sup>

---

<sup>4</sup> An Air Force decision from this source selection is currently pending; therefore, the discussion of benefits and the additional analysis in Chapter IV are based on a decision by the Air Force in favor of the Northrop Grumman/EADS proposal.



Figure 5. Airbus 330 Multi-role Tanker Concept

According to a 2006 *Air Force Magazine* article, EADS created a North American subsidiary “that would allow it to bid on U.S. contracts not otherwise open to foreign-based firms.” (Newman, 2006, p. 69) However, the Northrop Grumman/EADS team has also attempted to circumvent U.S. statute by assigning prime contractor/prime integrator duties to Northrop Grumman, while EADS is considered a sub-contractor or first-tier supplier. In reality, the Buy American Act must be waived if the Northrop/EADS proposal wins, because over 50% of the final tanker product will be manufactured outside U.S. borders – most likely in EADS’s German production facility.

***c. Anticipated Benefits of Northrop Grumman/EADS Contract***

While Boeing currently holds a monopoly on U.S. tanker production, EADS is not a newcomer to this industry. EADS is producing, or holds contracts to produce, this tanker variant for several allied nations including Germany, Canada, Australia and Britain. This ramped up production points to three perceived benefits if the DoD decides to go this route: (1) the EADS aircraft is a proven multi-role tanker/transport platform; (2) economies of scale bring the per-plane price down for all countries involved; and (3) the interoperability between allied nations flying the same aircraft is significantly improved.

## **D. CHAPTER SUMMARY**

Throughout Chapter III, the researchers have attempted to answer the following questions:

- To what extent is the DoD currently procuring from non-U.S. contractors?
- To what extent are U.S. contractors utilizing international suppliers and subcontractors?

Five examples have shown that not only do avenues exist to capitalize on the global defense industry, but also that the U.S. has used these avenues to benefit from technologies developed abroad. Unfortunately, these examples also point to bureaucracy and a political situation that does not make it easy for foreign contractors to get involved in the U.S. defense acquisition process. The Foreign Comparative Test program allows the DoD to test a foreign non-developmental item to determine if the product meets the current need, but does not allow the department to contract with that foreign contractor to modify the item. Instead, the foreign contractor must license production to a U.S. contractor or partner with that contractor. International cooperation efforts allow research and development costs to be spread among partner nations, but do not allow for a single foreign contractor to be the recipient of those multi-national funds. Finally, U.S. prime contractors can outsource work to foreign suppliers, but there are restrictions to the proportion of work that can be accomplished by the foreign supplier.

Chapter IV will draw on these examples to further analyze the perceived benefits of simplifying the process for foreign contractors to get involved in the U.S. defense acquisition process. Further, the perceived drawbacks and challenges to international competition will also be analyzed and contrasted to these perceived benefits.

## **IV. BENEFITS AND CHALLENGES OF DEFENSE GLOBALIZATION**

The purpose of this chapter is to examine the benefits, both realized and perceived, and challenges to the DoD moving towards globalization of its acquisition process. The realized benefits are drawn directly from the international procurement examples described in Chapter III. The benefits are also drawn from conclusive evidence and respected subject matter experts in defense acquisitions. Similarly, the challenges described herein are a summary of evidence, expert opinion, and common sense issues that the DoD faces when considering internationally-developed materiel solutions.

### **A. BENEFITS OF DEFENSE GLOBALIZATION**

#### **1. Capitalizing on the Expertise and Experience of Allied Nations**

While the U.S. has held an advantage in many areas of defense technology over the rest of the world for the last 60 years, several allied partners have comparable, and in some cases, superior technological solutions to U.S. military requirements. One glaring instance of a superior foreign technology was that of South Africa's de-mining and mine protected vehicle technologies. In February 1999, a U.S. interagency team including DoD officials visited South Africa to familiarize themselves with the country's de-mining R&D efforts. These officials ultimately wished to establish cooperation with South Africa in this field. (Landmine Monitor Report, 2000) The FCT project to evaluate two of South Africa's mine protected vehicles (previously described in III above) was a direct result of this meeting and the realization that South Africa was far more advanced than the U.S. in this arena. Today's MRAP vehicle is a direct descendant of South African mine-protection technology.

The contractors from other allied nations garner comparable technologies to the U.S. that have, in most cases, been exploited by the DoD. British Aerospace has long developed and produced advanced fighter and attack aircraft. The BAE Goshawk was adopted by the U.S. Navy and USMC as a jet trainer in the late 1990's. BAE was also ultimately responsible for

the Harrier and the vertical take-off technology later adopted by the USMC and Boeing in the AV-8B Harrier. Additionally, BAE is one of the major partners and developers on the F-35 program.

Similarly, Airbus, a subsidiary of the European conglomerate EADS, has long been a world leader in cargo and passenger transport aircraft. Airbus international sales are second only to Boeing, and depending on the outcome of the latest tanker source selection, EADS/Airbus is primed to introduce its transport aircraft technologies to the DoD.

Finally, Israel has long been a strategic ally of the U.S., with Israeli Defense Forces (IDF) purchasing DoD equipment including strike and fighter aircraft through Foreign Military Sales (FMS) channels. As a result, Israeli defense contractors such as Rafael have developed munitions and sub-systems to fit these U.S. platforms. One such case involved Rafael developing the Popeye missile to be used on the Israeli version of the McDonnell Douglas F-4E. In the late 1980s, the USAF viewed the Popeye as a short-term solution to its requirement for smart munitions and purchased the Popeye directly “off the shelf” from Rafael. The USAF then went on to partner with Rafael in modifying and marketing the munitions to fit the USAF B-52 and also several other foreign combat aircraft. (RAND, 2002)

These examples represent a small fraction of the foreign technologies that have been exploited, but they all point to the fact that the U.S. can benefit and certainly has benefited from the expertise and experience of allied nations. The DoD should continue to look towards the international defense market to exploit emerging and existing technologies that counter new and existing threats of the U.S. military force. This allows the DoD to spend its R&D funds more efficiently on new technologies, vice paying to develop the technology domestically. In the next section, the researchers will explore the benefit of sharing R&D costs among allied nations during MDAP development to lessen the cost to any one country, the U.S. in particular.

## **2. Shared Research and Development Costs among Allied Nations**

An obvious benefit of international cooperation, or more appropriately joint ventures between allied countries in developing new military technology is the sharing of cost, especially in the realm of research and development. The most plausible realm of the defense industry entering into a joint venture is with the development of future combat aircraft. The defense aerospace industry is often viewed as the most expensive and most difficult with regards to developing emerging technology. Consider the following hypothetical scenario.

The defense department of Country A faces the challenge of an aging combat aircraft fleet, as do several of its allies. Country A does preliminary trade-off studies, market research and business case scenarios (formerly known as cost-benefit analyses) to determine the possibility and potential value of adding a new aircraft to its arsenal. After the business case analysis shows positive results, Country A announces its plan to develop a state-of-the-art joint aircraft that will satisfy the needs of its own aging force. And knowing the situation of its allies, Country A gives those allies the opportunity to participate in requirements development and also share in the cost of developing this new technology. Obviously, Country A would take on one hundred percent of the effort, both in terms of requirements and funding, if the allies elect not to participate. But because the allies also see value in this new aircraft, they elect to participate, reducing the scope of work and funding commitment required of Country A to develop and field the aircraft.

This hypothetical scenario should sound vaguely familiar to the reader with knowledge of current DoD programs, as it is a basic summary of the way in which the U.S. began the Joint Strike Fighter program in 2000. As described in Chapter III, the U.S. received funding and requirements from eight of its allies in 2001 and 2002, all of whom are set to benefit from the operational fielding of this state-of-the-art aircraft. The U.S. is responsible for a majority of the funding, as well as the requirements and subsequent program development, but the support from allies could also be seen as a reason the program continues today after Congress threatened to cancel the program due to ballooning costs and schedule delays.

Many similar joint development efforts have taken place in the defense aerospace industry, including the Harrier aircraft. Chapter III details the specific timeline of the program and its (mostly) British development. However, the U.S. contributed a significant amount of funding through NATO channels and also involved several other nations in the progress and application of its vertical take-off technology development.

While international cooperation and its associated benefits are pertinent to the researchers and their analysis of defense globalization, the concept does have its critics. In his article featured in the Winter 1991-1992 edition of *Political Science Quarterly*, Ethan Barnaby Kapstein (1992) argues that these cooperation efforts are the second-best solution to defense acquisitions. Kapstein (1992) goes on to defend that:

Such arrangements (referring to international cooperation efforts) reflect the desire of states to maintain domestic military-industrial capacity on the one hand, while incorporating capital and technology from abroad on the other. In short, collaboration represents a form of protectionism. (p. 657)

Much of the article is based on the NATO arms market, but also bases the argument on a specific well-known failure in international cooperation of the time – the joint venture between the U.S. and Japan to co-develop the FSX fighter aircraft. This failure caused many DoD officials and members of Congress to question the validity of international cooperation in arms production. The simple, yet never overstated lesson learned from this example is that partner nations need to fully explain and understand the position of each other prior to beginning the development efforts. In the case of the JSF program, every country signed a Memorandum of Understanding that explained the roles and positions of partner nations.

Nonetheless, international cooperation does promote reduced R&D costs and a sense of shared responsibility. Additionally, the following section explains how international cooperation efforts promote interoperability among coalition and allied nations. Interoperability becomes increasingly important as the U.S. relies on its allies in fighting the Global War on Terror and other coalition campaigns.

### **3. Interoperability among Coalition Forces**

As the Global War on Terror and other multinational operations arise, interoperability and information sharing becomes increasingly important in meeting political and operational goals, as well as cutting down on the cost of war. Interoperability is defined by the DoDD 5000.1 as “[the ability of] systems, units, or forces to provide data, information, materiel, and services to and accept the same from other systems, units, or forces.” (DoDD 5000.1, 2003, p. 5) The most cost effective way to achieve the desired state of interoperability among coalition forces is through the co-development of new or use of similar technologies by allied nations.

The examples of DoD procurements from non-U.S. contractors described in Chapter III help to achieve this goal of interoperability among coalition forces. For instance, eight U.S. allies, in addition to the U.S. itself, plan to include the JSF aircraft in their military arsenals. Theoretically, any of those nations will be able to support the aircraft and exchange information during coalition efforts. These nations will also maintain similar baselines of this aircraft, allowing coalition partners nations to share any technological upgrades discovered. Similarly, operating and maintaining common military equipment allows for allied nations to train together and share operational tactics.

This reasonable and consistently understood benefit of interoperability is the goal of all coalition partners; however, achieving this goal becomes nearly impossible when co-development, joint ventures, international cooperation among allies, and/or internationally developed end products are disregarded during acquisition of materiel solutions. Another benefit that is often realized when allies strive to achieve this goal of interoperability is the strengthening of political relationships.

### **4. Strong Diplomatic Relationships among Allied Nations**

Similar to the benefit of interoperability, successful international cooperation efforts create stronger diplomatic relationships among partner nations as well. First, partners strengthen political ties through military reliance. As is the case with the discussion on interoperability, common equipment encourages and fosters shared training



and operational doctrine. Second, partner nations experience shared successes such as reduced R&D costs and improved military readiness as a team, creating a sense of kinship or diplomatic affiliation through military objectives. Finally, the partner firms from these nations can market these co-developed products to the global market ultimately increasing the relative size of the market for the product. The revenues from international sales, in turn, boost the economies of the partner nations.

In the *Pros and Cons of International Weapons Procurement Collaboration*, a 1995 RAND research study, the authors claim that the U.S. typically enters international cooperative arrangements to reduce R&D costs and promote weapons rationalization, standardization and interoperability. Another agenda of the U.S. is to push its military strategies, doctrine and tactics on its partners. In this sense, partner nations go into these arrangements with a sense of foreboding from the U.S. On the other hand, the U.S. often believes that partner nations only enter into these arrangements to receive U.S. technology transfers and bring nothing beyond money to the table. (Lorell and Lowell, 1995) In order to create successful arrangements, these countries must enter with an unbiased approach, and discuss motives early and honestly.

The research study also claims that political objectives of partner nations are rarely stated openly, but it is in this political arena that cooperative arrangements have garnered the most success. “For example, licensed Japanese production of the F-104J and later the F-4 and F-15J solved political problems for the United States and Japan.” (Lorell and Lowell, 1995, p. 27) From the U.S. perspective, the basis of this argument stems from the idea that Japan was retaining the burden of building its own defense industrial base while keeping close ties with the U.S. From Japan’s perspective, production of an American fighter aircraft supported domestic economic interests without alarming its volatile regional neighbors. (Lorell and Lowell, 1995)

One can further ascertain that the U.S. allowing corporations from allied partners to compete for its defense contracts shows a great sense of trust and diplomacy. Referring back to the current global environment and the ongoing Global War on Terror,

the U.S. can greatly benefit from strengthening these international relations. Additionally, the U.S. will also benefit from the increased defense industrial base which is discussed in the next section.

## **5. Increased Competition**

In order for the U.S. military to remain the most capable fighting force in the world, its warfighters must have superior training and equipment. This will only be possible if it is supplied by an extraordinarily capable and responsive industrial base. The DoD's primary method to provide the "best value" to warfighters is by maintaining a healthy defense industrial base through competition. Adequate competition in DoD procurement provides benefits such as technological innovation, reduction of cycle times, and significant reduction of costs.

The U.S. has a long history of antitrust legislation beginning with the Sherman Antitrust Act of 1890, which provides authority for the government to block mergers and acquisitions that may restrict competition. Current statutory requirements and DoD guidance continue to place a high importance on full and open competition. At the highest level, Title 10 U.S.C. 2304 and FAR 6.1 state the requirement for all federal procurements to be accomplished with the maximum amount of competition possible. (10 U.S.C 2304, 2006, FAR 6.1, 2007) In addition, these statutes along with others mentioned in Chapter II do not blatantly restrict competition to only domestic sources. In fact, with exception to the Buy American Act and Berry Amendment, the researchers have found that most U.S. statutes and defense acquisition guidance actually promote international cooperation and competition. As discussed in Chapter II, DFAR 225 guidance exempts the U.S. from Buy American Act restrictions in over twenty countries. (RAND, 2002)

Opening competition to international sources becomes more important when one considers the shrinking U.S. defense industrial base. The current status of the defense industry can be linked to the sizeable Cold War defense budget which enabled the sustainment of a vast industry to minimize precious ramp-up times. As a result, the defense industrial complex consisted of manufacturing plants, laboratories, test facilities,

and depots scattered across the country. (Sullivan, 2002). With the end of the Cold War, the DoD procurement budget plummeted 70 percent and research and development dropped 25 percent, causing a contraction in the defense industry. Employment fell from 1,400,000 in 1990 to 878,000 in 1999, and defense firms consolidated from 36 in 1993 to eight in the same time frame. (Markusen, 1999) Today, further mergers and acquisitions have reduced the number of major defense contractors to only four – Boeing, Raytheon, Lockheed-Martin, and Northrop Grumman. It can be argued this vast reduction in viable defense contractors has compromised the competitive environment needed to truly provide the “best value” to the warfighter.

## **6. Global Economic Impact**

A strong world economy enhances our national security by advancing prosperity and freedom in the rest of the world. Economic growth supported by free trade and free markets creates new jobs and higher incomes. It allows people to lift their lives out of poverty, spurs economic and legal reform, and the fight against corruption, and it reinforces the habits of liberty. (U.S. National Security Strategy, 2007, p. 1)

Historically, the U.S. arms involvement with allied countries has primarily focused on either cooperative efforts as a means of enhancing combat efficiency and effectiveness or the use of arms agreements as a way to strengthen treaties. However, with the diminishing of domestic and international defense budgets as well as the downsizing industrial bases in several nations, we can no longer look to foreign vendors solely for strategic purposes. Defense contractors around the world have been faced with economic decisions of how to re-structure business plans to compensate for the decreasing defense market. Companies have chosen alternate paths such as diversifying into other non-military markets or, in some cases, merged with other firms and downsized or eliminated certain business units. (Bitzinger, 1999)

An alternate solution to downsizing or switching segments is to take advantage of the global defense market and expand internationally. Globalizing is more than increasing arms exports, which is a highly competitive niche segment. Instead, the defense industry must follow lessons learned from their commercial counterparts and look beyond exports to items such as collaborative arrangements to decrease R&D and

production costs of existing products. Cost sharing early in a program is one example of a method to not only spread R&D costs but also reduce duplicative activities. In addition, economies of scale may be obtained through joint manufacturing efforts to increase the production run of a specific item. Globalization can also help penetrate new foreign markets by bringing new jobs into a country through license agreements. In this arrangement, a company in a foreign country is licensed to manufacture various components of a weapon system (hopefully at a lower unit cost) in return for purchasing the remaining components to assemble a complete weapon system.

It is almost universally accepted that globalization will continue regardless of any one country's lack of involvement. By abstaining from the inevitable, via national policy, a country is only taking away future jobs from its domestic businesses. Additionally, as national economies become more integrated, the nations have more to lose if military conflict arises. War among partners in a global world would not only result in human casualties, but also a breach of trade and investment ties resulting in long-lasting economic effects. Similarly, these economic ties through globalization have secondary benefits of exposure to new political constructs and ideas as well as modern technology and amenities. All of these facets help promote democracy, which in turn decreases the likelihood of future conflicts. (Griswold, 2005)

## **B. CHALLENGES OF DEFENSE GLOBALIZATION**

### **1. Buy America Mindset and Associated Political Pressures**

“Arguably, the [Buy American] Act remains a Depression-era reminder of the protectionist policies of the United States prior to World War II...” (Smyth, 1999, p. 265) As explained in Chapter II, the Buy American Act has been modified several times since it was codified in 1933 to adapt to the changing global economy; nevertheless, the name itself implies certain restrictions, namely that federal tax dollars will be spent domestically. Despite its outdated nature, the “Buy America” mindset still resonates through today's U.S. political sphere. The following anecdote further explains this attitude:

Imagine a political candidate – congressional, presidential, etc. – explaining to you, a supporter and local constituent, that he/she supports a global economy; not only does this candidate support a global economy, but also supports a global defense market. Additionally, this candidate aims to get the best value for every federal tax dollar spent on defense. This sounds like a strong platform from which to stand, especially considering all the negative press surrounding DoD acquisitions. The candidate goes on to explain that in order to get the best value, we have to allow a foreign contractor to bid on, and in some cases, build the next generation in military technology. Further, this will require sending hundreds of millions and possibly even billions of federal dollars to a foreign company. Instead of providing jobs and revenue to the U.S. defense industry and the U.S. economy, our federal tax dollars are going to a French company (just as an example) and will be supporting the French economy. This political platform is not so sturdy anymore, especially in regions of the country where the defense industry sustains the local economy. The political and economical stigma attached with promoting a global economy, especially a global defense market, has yet to transform.

As illustrated in the above scenario, members of Congress have a great self-interest in DoD procurements which provide or reduce jobs or resources to their constituents. This is not surprising given these loyalties are traditionally in the voters' minds when going to the polls. It is unfortunate these pork barrel politics have become commonplace within the federal budget process and something which DoD has been forced to accept. In the worst cases, pork barreling may lead to undesirable trade-offs, such the efficacy of the defense dollar for less efficient domestic sources. (Jones and McCaffery, 2008) Elected officials are seemingly in a “Catch 22” in trying to support the nation’s military troops and warfighting capability while also staying true to local supporters who put them in office.

Under the current federal system, Congressional members must constantly weigh their decisions in an attempt to reach a “win-win” perception for both national and local welfares. Even many of the exemptions to “Buy America” policies are supported because they ultimately provide domestic benefits and “paybacks” through trade agreements. Congress uses these trade agreements in attempts to please federal agencies

by allowing them to procure foreign goods. In addition, these trade agreements may ultimately be used as a “bait and switch” for local constituents by creating opportunities to export goods which may be produced more efficiently domestically than those being imported. Obviously, the goal for the elected official is to downplay the jobs being lost through international procurements while highly publicizing the creation of additional local jobs through increased exports.

Transitioning from domestic protectionism to globalization will be a long-term evolution which requires altering political and economic cultures. The nation as a whole will eventually benefit from globalization by allowing domestic manufacturers to concentrate on exploiting their core competencies and source those secondary competencies to alternate contractors. Fortunately, not all politicians are vehemently against foreign sourcing. In fact, the *anti-Buy American Act* manifesto has become a political platform to reduce pork-barrel politics. These forward-thinking politicians will need to cross bipartisan lines to educate others and set the precedence for their colleagues and constituents in order for the U.S. to benefit from the global market. In his speech to the Economic Club of Memphis, Senator John McCain (2007) stated:

Pork barrel politics balkanizes America into competing interests groups just as race-based or religion-based or class-based politics do. Congress is the national legislature, not a town council, not a state assembly, not a corporate boardroom. And it should be concerned with meeting national priorities, not fostering greater social divisions by squabbling over who gets the bigger piece of the federal pie at the cost of the national interest.

## **2. Lack of Knowledge among Leaders and the Acquisition Community**

While the researchers outlined a number of statutes, policies and DoD programs in Chapter II that allow defense procurements from non-U.S. contractors and joint ventures with allies, the sentiment in corporate America and around the halls of the Pentagon is that the “red tape” is overly burdensome and does not encourage maximization of the global defense market. In his 2005 U.S. Army War College Research Paper, USAF LtCol Mark McLean argued that most of the legislation bounding the acquisition workforce is ad hoc in nature and should be sufficiently reviewed and overhauled to support a global industrial base. (McLean, 2005)

According to a *Defense Acquisition Review Journal* article, “Almost without exception, the terms ‘Fortress Europe’ and ‘Fortress America’ were articulated by research interviewees (both corporate and government officials) to express the fear of Europe and the United States retracting into their respective defense industry shells.” (Switzer and Stropki, 2005, p. 164) These same officials are amiable to the idea of defense globalization and see the vast benefits, as explained earlier, but are of the opinion that this concept is presently beyond reach. As an example, the researchers have a combined 13 years in the DoD acquisition community and have spent the last 18 months studying the U.S. Defense Acquisition System in depth. However, up to the time of this report, the researchers were unaware that foreign procurement was allowed, except through the FCT program and similar atypical acquisition channels.

### **3. Security Implications: Technology Transfer, Information Sharing and Availability of Spare Parts**

Technology transfer has long been viewed as a threat to DoD dominance, and even more so now that the defense industry is moving towards globalization. Numerous means of technology transfer exist, including espionage, reverse engineering, third-party transfers and licensed production of dual-use technologies, several of which garner negative connotation. Additionally, as industries and industry partners merge internationally, the technology associated with each corporation’s products are susceptible to exploitation. (McLean, 2005) The U.S. diligently sets and enforces export laws via the Arms Export Control Act (AECA) and International Traffic of Arms Regulation (ITAR), but once outside U.S. borders, it becomes difficult to enforce these laws. The U.S. Department of State instituted a “Blue Lantern Program” in September 1990 that monitored overseas manufacturing and aimed to balance technology transfers. In 2003, audits concluded that 18 percent of transactions between the U.S. and allies resulted in unfavorable technology transfers, which was the highest ratio in the program’s 13 year history. (Secretary of State, 2005)

Similarly, information sharing is of primary concern to coalition forces. NATO defines six levels of information sharing – the most basic of which is exchanging documents all the way up to fully integrated use of same or similar systems. (NATO

Logistics Handbook, 1997) The problem with information sharing is more than just technological, however; it is also political in nature. The DoD is still struggling with the concept of multi-level security, in that one system or network cannot handle more than one level of classification. While this may resonate as a technological challenge, most experts view the U.S. restrictions on classified data as purely political. The argument is simply that officials are unwilling to share source code and cryptology methods, as they both foster a competitive advantage in information dominance. According to interviews of senior DoD and industry acquisition officials conducted by Sandra P. Switzer and Michael A. Stropki, "...several interviewees felt that *trust* will be the axiom that moves us toward collaborative multinational interoperability." (Switzer and Stropki, 2005, p. 165) Considering the disparity and ever-changing nature of relationships the U.S. has with its allies, this issue of trust may never be resolved.

Finally, the availability of spare parts is of the utmost importance with any weapon system. The security concern revolves around the relationship with a certain country deteriorating after the U.S. procures a system from that country. In this situation, how will the DoD obtain spare parts? While this concern is certainly valid, the DoD finds itself in a similar situation today. As discussed previously, the U.S. defense industrial base has been shrinking since the end of the Cold War; therefore, the DoD has been forced to find new ways to procure spare parts and sustain its weapon systems. The first and most obvious solution is for the DoD to procure the necessary spare parts with the initial procurement contract. The drawbacks to this simple solution are upfront procurement costs and the uncertainty of future spare parts requirements.

A more appropriate solution is similar to the way the DoD currently handles the issue of spare parts availability. In instances where the original vendor is no longer making spares or supporting the weapon system, the DoD has chosen to solicit new proposals from industry to make the necessary spare parts or provide logistics support. Further, the DoD allows the contractor to use available technical data packages to minimize development and ramp-up costs. If the DoD finds itself in a situation where



spares become unavailable from an international vendor (whether because of diplomatic reasons or industrial downsizing), the same methodology to sustain the weapon system can be used.

#### **4. Impact to U.S. Trade Deficit**

The U.S. trade deficit is a contentious topic both in politics and among corporate America. The impact of the burgeoning trade deficit on the U.S. economy is neither well understood nor agreed upon by politicians or economists. For instance, Daniel T. Griswold, associate director of the Cato Institute's *Center for Trade Policy Studies*, believes that the growing trade deficit is a signal for a stronger U.S. economy. He argues that “[The trade deficit] reflects an economy ripe with investment opportunities and flush with consumer confidence.” (Griswold, 2005, [http://www.cato.org/pub\\_display.php?pub\\_id=4995](http://www.cato.org/pub_display.php?pub_id=4995))

On the other hand, the trade deficit has been blamed for many of today’s economic problems – unemployment rate hikes, the loss of a skilled U.S. labor force, the rising gap between rich and poor, rising oil prices, and even the weakened U.S. dollar. There is little doubt that America has been exporting its jobs. Cheaper labor and commodity prices overseas have caused corporate America to turn to developing countries simply to increase profit margins. This leaves a growing number of domestic skilled workers out of jobs.

Obviously, this situation is not a cause for elation when considering the globalization of the defense market. Unlike other major industries, the protectionist nature of the defense market allows larger defense contractors to hire from the vast U.S. labor pool without fear of lost profits. Therefore, a push for an international defense industrial base may forever be protested by America’s skilled labor worker. The nature of democracy would then say that any political candidate pushing for a global defense industrial base will be defeated in regions of the country that are heavily influenced by labor forces.

## C. CHAPTER SUMMARY

Throughout Chapter IV, the researchers have attempted to answer the following questions:

- What are the benefits of competition from non-U.S. contractors?
- What are the potential challenges of allowing competition from non-U.S. contractors?

It should be noted that the researchers have found no examples of pure competition from non-U.S. contractors. As described in section B.1 above, pure competition from foreign companies goes against the protectionist nature, or “Buy American” mindset, of the U.S. defense market. Most examples that were explored are a result of cooperation, joint ventures, or other similar arrangements. As a result, the analysis of benefits and challenges relates to the globalization of the defense market, rather than strictly competition from foreign contractors. The connection is made that with a global defense industry comes increased and more open competition from non-U.S. contractors; therefore, the researchers feel that the benefits and challenges examined are applicable across the spectrum of globalization.

Chapter V will summarize the findings of this report by briefly addressing the research questions listed in Chapter I. Additionally, the conclusion will draw on the benefits and challenges from this chapter when considering a fully global defense industry. Finally, the conclusion will provide a wrap-up of the current state of defense globalization and how it impacts the U.S. defense acquisition system.

THIS PAGE INTENTIONALLY LEFT BLANK

## V. CONCLUSIONS

### A. RESEARCH QUESTIONS

The primary focus of this report was to answer the research questions posed in Chapter I. Below is a brief synopsis of the findings provided in the body of the report.

The primary research questions addressed in this professional report:

- To what extent is the DoD currently procuring from non-U.S. contractors?

Answer: The DoD is frequently involved in international programs with coalition and allied partners, including joint ventures, cooperative efforts and subcontracts with non-U.S. contractors. Five major international acquisition efforts were discussed in Chapter III; each illustrated the burdensome constraints which impede widespread foreign sourcing, and have completely precluded competition from non-U.S. contractors.

- What are the benefits of competition from non-U.S. contractors?

Answer: Six primary benefits were discussed in Chapter IV, including 1.) capitalizing on expertise and experience of allied nations, 2.) sharing research and development costs among allied nations, 3.) greater interoperability among coalition forces, 4.) strengthening diplomatic relationships among allied nations, 5.) greater competition resulting in better value to warfighters, and 6.) global economic growth.

- What are the potential challenges of allowing competition from non-U.S. contractors?

Answer: The main challenges revolve around protectionist mindsets and not just statute limitations. The following four main categories of challenges were found: 1.) “Buy America” mindsets and associated political pressures, 2.) a lack of international competition legality knowledge among leaders and the acquisition community, 3.) national security implications involving technology transfer and information sharing, and 4.) impacts to U.S. trade deficit.

The subsidiary/secondary research questions addressed in this report:

- To what extent are U.S. contractors utilizing international suppliers and subcontractors?

Answer: Numerous examples exist of U.S. prime contractors outsourcing work to foreign suppliers, but there are restrictions to the proportion of work that can be accomplished by the foreign supplier.

- To what extent is the DoD planning to incorporate competition from non-U.S. contractors into the acquisition process?

Answer: Although countless statutes and acquisition policies promote international involvement, there are no current DoD initiatives that outwardly promote international competition, regardless of the country's Buy American Act exemption status.

## **B. FINAL THOUGHTS**

The industries of the world are at various stages of migrating towards a global marketplace. The researchers have found the defense industry to be lagging their commercial counterparts in these international initiatives, primarily due to the U.S. government's long-standing protectionist mindset. In general, the defense industrial base desires to expedite this migration and has taken numerous efforts to expand foreign subcontractor relationships. As the U.S. abandons the protectionist outlook, we can expect to see gradual migration to a more global defense market. In order for this change to be realized, the Buy American Act and Berry Amendment must be annulled or greatly restructured to allow international full and open competition for the majority of DoD procurements. Allied warfighters will directly benefit through this defense industrial base globalization with better value, technically advanced, and more interoperable weapon systems.

The political and economic connotations attached with promoting a global economy are vast and therefore altering congressional and constituent perceptions will be a long-term challenge. Budget and acquisition reform will need to specifically target the reduction of pork-barrel politics which seem to encourage legacy "Buy America" mindsets. Those politicians who oppose "Buy American" legislation need to be the

spokespeople to their peers and constituents for the benefits of industrial globalization and international procurement. The first step, and most relevant to defense acquisitions, in amending various “Buy American” statutes should be to eliminate the domestic requirements for DoD procurements. This statute change would eliminate the need confusing DFAR exemptions and waivers which already permit numerous international acquisitions. In addition, the role of Congress in the DoD acquisitions process “should” be limited to funding authorization and appropriation of a *capability* and not a solution. Congressional opportunities to influence source selections should be eliminated and allow the acquisition professionals to be the stewards of the tax payers’ money.

In order for the DoD to move down the spectrum towards internationally competitive procurement, the acquisition workforce will need to adapt its culture and procedures. “Buy America” is so ingrained in DoD acquisitions that most of the workforce assumes it is not legally possible to procure directly from foreign sources. Even those who understand the statute nuances still see foreign procurement as a painful uphill battle through overly burdensome “red tape.” Regardless of any future globalization migration possibilities, DoD international procurement guidelines, policies and processes need to be fully incorporated into standard acquisition workforce training. This much-needed education will help to eliminate the “grey” areas of the Buy American Act and allow programs offices to better exploit international procurement opportunities.

The acquisition workforce needs to fully understand the laws and regulations that actually allow various methods of international cooperation and procurement. Congress has codified the majority of these laws under various U.S. Codes and Federal Acquisition Regulations. Cooperative research and development with allied nations falls under 10 U.S.C. 2350 while cooperative production is covered in 22 U.S.C. 2767. One of the most popular methods of procuring non-developmental items is through Foreign Comparative Test which is authorized by Congress under U.S.C. 10 2350a. Another important, but seemingly little known regulation is Defense Federal Acquisition Regulation Supplement Clause 225, which specifically calls out twenty-two countries that have received Buy

American Act exemption through various memoranda of understanding and agreements. These exemptions are authorized by the SECDEF under the “public interest” clause of 10 U.S.C. 2457.

Although the researchers discovered no pure examples of full and open international competition, numerous international cooperative efforts, comparative testing programs, and subcontractor outsourcings were found. Five of these examples were discussed in detail in Chapter III including the Fox NBC Reconnaissance Vehicle, Mine Protected Clearance Vehicle, AV-8B+ Harrier II, F-35 Joint Strike Fighter, and KC-30 Aerial Refueling Tanker. The analysis of these representative samples confirmed the DoD does look to the international market but in a very constrained and bureaucratic way. The laws, regulations and mindsets do not make it easy for foreign contractors to get involved in the U.S. defense acquisition process.

The benefits of defense industrial globalization and migration to international competition are notable but do not come without expected challenges. Interestingly enough, the researchers’ assessment found the largest hurdle is overcoming the protectionist, or “Buy American” mindset, and not necessarily statutes and policies. One of the major advantages of a global defense market is increased and more open competition from foreign sources. This could result in benefits such as better technological innovation, reduction of cycle times, and significant reduction of costs. Allowing international sources to compete on DoD contracts is even more attractive considering the U.S. defense industrial base has dramatically shrunk to four major prime contractors. Defense contractors can also benefit from a global economy by creating cost-, research-, and production-sharing relationships with foreign companies. With globalization occurring rapidly in other commercial industries, the DoD and defense industrial base must push to change mindsets and policy restrictions that are hampering the DoD’s ability to fully utilize a global market.

## LIST OF REFERENCES

- 10 United States Code §§ 2350a. (2006). Retrieved October 4, 2007, from [http://www.law.cornell.edu/uscode/html/uscode10/usc\\_sec\\_10\\_00002350---a000-.html](http://www.law.cornell.edu/uscode/html/uscode10/usc_sec_10_00002350---a000-.html).
- 10 United States Code §§ 2457. (2006). Retrieved November 1, 2007, from [http://www4.law.cornell.edu/uscode/html/uscode10/usc\\_sec\\_10\\_00002457---000-.html](http://www4.law.cornell.edu/uscode/html/uscode10/usc_sec_10_00002457---000-.html).
- 10 United States Code §§ 2533a. (2002). Retrieved August 27, 2007, from [http://www4.law.cornell.edu/uscode/html/uscode10/usc\\_sec\\_10\\_00002533---a000-.html](http://www4.law.cornell.edu/uscode/html/uscode10/usc_sec_10_00002533---a000-.html).
- 22 United States Code §§ 2767 (2006). Retrieved October 4, 2007, from [http://www.law.cornell.edu/uscode/html/uscode22/usc\\_sec\\_22\\_00002767---000-.html](http://www.law.cornell.edu/uscode/html/uscode22/usc_sec_22_00002767---000-.html).
- 41 United States Code §§ 10a. – 10d. (2000). Retrieved June 13, 2007, from [http://www.law.cornell.edu/uscode/html/uscode41/usc\\_sup\\_01\\_41.html](http://www.law.cornell.edu/uscode/html/uscode41/usc_sup_01_41.html).
- Bair, E.T. (1994). *Defense Acquisition Reform: Behind the Rhetoric of Reform – Landmark Commissions Lessons Learned. Executive Research Project for the Industrial College of the Armed Forces.*
- Birkler, J., Lorell, M., & Rich, M. (1997). *Formulating Strategies for International Collaboration in Developing and Producing Defense Systems.* Santa Monica, CA: RAND Corporation, IP-161.
- Bitzinger, R. (1999). *Globalization in Post-Cold War Defense Industry. Arming the Future.* Council on Foreign Relations Press, New York.
- Blue Ribbon Commission on Defense Management. (1986). *A Quest for Excellence: Final Report to the President.*
- Center of Military History: Department of the Army. (2004). *Defense Acquisition History Project Working Paper #3: The Evolution of DoD Directive 5000.1 Acquisition Management Policy 1971-2003.*
- Cohen, W.S. (1999). *Annual Report to the President and the Congress.* Chapter 17, Industrial Capabilities and International Programs.
- Comparative Testing Office. (2006). *Foreign Comparative Testing (FCT) Program.* Washington, D.C.: Office of the Deputy Under Secretary of Defense for Advanced Systems and Concepts. Retrieved June 12, 2007 from <http://www.acq.osd.mil/cto/2007/WebFCTBrief2007.ppt>.



- Defense Acquisition University. (2004). *Defense Acquisition Guidebook*. Retrieved October 4, 2007 from <https://akss.dau.mil/dag/DoD5000.asp?view=document>.
- Defenselink. (1999). FCT Projects Selected for 1999. Retrieved on October 19, 2007 from [http://www.defenselink.mil/news/Jul1999/FCT1999\\_072399.html](http://www.defenselink.mil/news/Jul1999/FCT1999_072399.html).
- Defense Federal Acquisition Regulation Supplement, Part 225. (2007). Retrieved on October 13, 2007 from <http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/dfars/Dfars225.htm>.
- Department of State: International Information Programs. *The Language of Trade*. Retrieved June 13, 2007 from <http://usinfo.state.gov/products/pubs/trade/glossac.htm#agrgov>.
- Deputy Under Secretary of Defense for Industrial Policy. (2003). International Industrial Participation: A Study of Country Approaches and Financial Impacts on Foreign Suppliers. Retrieved October 20, 2007 from [http://www.acq.osd.mil/ip/docs/jsf\\_international\\_industrial\\_participation\\_study.pdf](http://www.acq.osd.mil/ip/docs/jsf_international_industrial_participation_study.pdf).
- Farrell, L.P. (2004). Global Industry Key to Defense Preparedness. *National Defense*, 89(608), 4.
- Federal Acquisition Regulation 6.1: Full and Open Competition. (2007). Retrieved November 8, 2007 from [http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/far/06.htm#P17\\_1884](http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/far/06.htm#P17_1884).
- Gansler, J.S. (1995). *A Transatlantic Defense Industrial Capability Model for the 21<sup>st</sup> Century*. Washington, D.C.: U.S. Center for Research and Education on Strategy and Technology.
- Goebel, Greg. (2006). The British Aerospace/McDonnell Douglas Harrier. Retrieved on October 13, 2007 from <http://www.vectorsite.net/avav8.html>.
- Griswold, D. (2005). Increasing public understanding of free trade. *Center For Trade Policy Studies*. Retrieved on November 13, 2007 from [http://www.cato.org/pub\\_display.php?pub\\_id=4995](http://www.cato.org/pub_display.php?pub_id=4995).
- Jones and McCaffery. (2008). Budgeting, Financial Management and Acquisition Reform in the U.S. Department of Defense. Charlotte, NC: Information Age Publishing, Chapter 14.
- Kapstein, E.B. (1991-1992). International Collaboration in Armaments Production: A Second-Best Solution. *Political Science Quarterly*, 106(4), 657-675.
- Kuckelman, D.J. (1987). NATO Finally Tries Cooperation. *Defense and Foreign Affairs*, December 1987, 10.

- Landmine Monitor Report. (2000). South Africa: Mine Action Research & Development and Technology Transfer. Retrieved October 17, 2007 from [http://www.icbl.org/lm/2000/south\\_africa](http://www.icbl.org/lm/2000/south_africa).
- Lorell, M. & Lowell, J. (1995). Pros and Cons of International Weapons Procurement Collaboration. Santa Monica, CA: RAND Corporation Report, MR-565-OSD.
- Markusen, A. R. (1999). *Arming the Future: A Defense Industry for the 21st Century*. New York: The Council on Foreign Relations Press.
- McCain, John. (2007). Speech to the Economic Club of Memphis. Retrieved December 1, 2007 from <http://www.exploremccain.com/Informing/News/Speeches/32676e3b-4492-4fc4-b0e9-e01efe5cceb.htm>
- McLean, Mark. (2005). Defense Procurement Strategy for a Globalized Industry. *U.S. Army War College Research Paper*. Retrieved on November 14, 2007 from <http://stinet.dtic.mil/cgi-bin/GetTRDoc?AD=ADA431944&Location=U2&doc=GetTRDoc.pdf>.
- Military and Aerospace Electronics*. (2006). BAE Systems Leadership Sees Growth in C4ISR Funding. Retrieved on October 20, 2007 from [http://mae.pennnet.com/Articles/Article\\_Display.cfm?Section=Articles&ARTICLE\\_ID=248184&VERSION\\_NUM=2&p=32](http://mae.pennnet.com/Articles/Article_Display.cfm?Section=Articles&ARTICLE_ID=248184&VERSION_NUM=2&p=32).
- NATO Logistics Handbook. (1997). *Chapter 17: Standardization and Interoperability*. Retrieved on October 21, 2007 from <http://www.nato.int/docu/logi-en/1997/lo-1701.htm>.
- Newman, Richard J. (2006). The European Invasion. *Air Force Magazine*: Vol. 89, No. 6. Retrieved on October 19, 2007 from <http://www.afa.org/magazine/June2006/0606invasion.asp>.
- Office of the United States Trade Representative. Trade Agreements website. Retrieved June 13, 2007 from [http://www.ustr.gov/Trade\\_Agreements/Section\\_Index.html](http://www.ustr.gov/Trade_Agreements/Section_Index.html).
- Palmer, L. (1999). Foreign Comparative Testing (FCT): Increasing Defense Procurement Traffic on the “Two-Way Street”. Washington, D.C.: Office of the Secretary of Defense. Retrieved June 12, 2007 from <http://www.dtic.mil/ndia/marketplace/palmer.pdf>.
- Public Law 104-106, Sec. 357 and Sec. 4203. (1996). Retrieved June 10, 2007 from <http://www.defenselink.mil/cio-nii/docs/CCA-Book-Final.pdf>.
- Public Law 105-261, Sec 347. (1996). Retrieved June 10, 2007 from <http://www.defenselink.mil/cio-nii/docs/CCA-Book-Final.pdf>.

- Raines, F.D. (1996). Funding Information Systems Investments. *Memorandum for Heads of Executive Departments and Agencies*, M-97-02. Retrieved June 11, 2007 from <http://www.whitehouse.gov/omb/memoranda/m97-02.html>.
- RAND Corporation. (2002). Going Global? US Government Policy and the Defense Aerospace Industry, MR-1537. *Project AIR FORCE*. Retrieved November 7, 2007 from <http://stinet.dtic.mil/cgi-bin/GetTRDoc?AD=ADA411882&Location=U2&doc=GetTRDoc.pdf>.
- Raz, Guy. (2007). New Mine Resistant Vehicles Aimed at Foiling IEDs. *National Public Radio* website. Retrieved on October 19, 2007 from <http://www.npr.org/templates/story/story.php?storyId=10241461>.
- Secretary of State. (2005). *Congressional Budget Justification: Foreign Operations*. Bureau of Resource Management, U.S. Department of State. 547-551.
- Shenon, Philip. (1996). New Report Cited on Chemical Arms Used in the Gulf War. *New York Times*. Retrieved October 18, 2001 from <http://query.nytimes.com/gst/fullpage.html?res=9B07EED71030F931A1575BC0A960958260&sec=&spon=&pagewanted=2>.
- Smyth, Joseph S.(1999). The Impact of the Buy American Act on Program Managers. *Acquisition Review Quarterly*. 263-272.
- Stonecipher, H.C. (1999). Getting It Right: Defense Acquisition for the 21<sup>st</sup> Century. *Executive Speeches*, 14(1), 29.
- Sullivan, Shannon. (2002). Globalized Security: An Allied Industrial Base for the 21st Century. *Acquisition Review Quarterly*. 151.
- Switzer, Sandra P. and Stropki, Michael A. (2005). Effects of Defense Globalization: An Examination of Current and Future Command and Control Collaborations. *Defense Acquisition Review Journal*. 154-175.
- Tatelman, T.B. (2005). International Government-Procurement Obligations of the United States: An Overview. Washington, D.C.: Congressional Research Service.
- Under Secretary of Defense for Acquisition, Technology and Logistics. (2000). *DoD Instruction 5000.1: The Defense Acquisition System*.
- Under Secretary of Defense for Acquisition, Technology and Logistics. (2003). *DoD Instruction 5000.1: The Defense Acquisition System*.
- Under Secretary of Defense for Acquisition, Technology and Logistics, International Cooperation. (2006). *International Armaments Cooperation Handbook*.

United States Army Fact Files. (2007). *Nuclear, Biological, & Chemical Reconnaissance System M93/M93A1*. Retrieved October 18, 2007 from <http://www.army.mil/factfiles/equipment/nbc/m93.html>.

United States Small Business Administration. (1995). Federal Streamlining Act of 1994 and FACNET. Retrieved June 11, 2007 from <http://www.sba.gov/gopher/Ecedi/Facts/fact3.txt>.

Vesser, Dale. (2001). The Fox NBC Reconnaissance Vehicle Information Paper. Retrieved October 10, 2007 from [http://www.gulflink.osd.mil/fox\\_vehicle\\_ii/](http://www.gulflink.osd.mil/fox_vehicle_ii/).

THIS PAGE INTENTIONALLY LEFT BLANK

## **INITIAL DISTRIBUTION LIST**

1. Defense Technical Information Center  
Ft. Belvoir, Virginia
2. Dudley Knox Library  
Naval Postgraduate School  
Monterey, California