

## INTRODUCTION

Weapons, used defensively or offensively, have provided humankind the tools to accomplish political objectives by other means since the dawn of humans. Weapons evolved from stone to club, long bow, cannon, machine gun, dumb bomb, precision guided munitions, tank, destroyer, jet fighter-bomber, intercontinental ballistic missiles, and beyond. Today, simple weapons to complex weapon systems exist and are in use throughout the world. Among sovereign nations, weapons systems develop in accordance with the will of the people, the military, and their government – the Clausewitzian trinity (Carr, 2000, pp. 283-284) – to provide a public good, national security. The modern weapons industry finds itself providing a ranging variety of weapons and weapon systems to both integrated core nations and in Barnett's gap of developing nations that have yet to reap the benefits of globalization. Barnett, (2005). Yet the forces of globalization have made weapons increasingly accessible and available to core nations, gap nations, and non-state terrorist actors.

Accordingly, weapons acquisition plays an integral part in national security. Taking its research, development, and production cues from governments, the weapons industry involves itself in a variety of sovereign governmental concerns. These range from defeating emerging threats and maintaining explosive safety to developing advanced technology to maintain a security advantage over current and potential adversaries. Clearly, a tight link exists between a national government and both its domestic weapons industry and foreign weapons suppliers.

The Porter model provides a useful template to analyze the weapons industry response to national security strategy. Within this model, trends, challenges, and an outlook for the weapons industry emerge. Three significant general trends observed by this industry study are consolidation, systems integration, and dual use technologies. Among all the firms visited by this industry study domestically and internationally, government proved consistently to exist as the greatest consistent force influencing their business processes. Perhaps the greatest context for weapons industry analysis remains globalization, as thoroughly discussed in the 2005 ICAF Weapons Industry Study. (ICAF, 2005).

As a result of this year's research effort, the 2006 ICAF Weapons Industry Study (WIS) will present recommendations for the U.S. to better resource specific aspects and more general aspects of its national security strategy. The specific aspects will focus on response to improvised explosive devices (IEDs), explosive safety procedures and regulation, and electromagnetic launch as an emerging technology. This weapons industry study identifies four larger challenges as recommendations to improve weapons systems acquisition. Specifically, the U.S. Department of Defense (DoD) Acquisition community can: (1) increase awareness and communication among the Iron Triangle components of Congress, the Executive Branch and the Weapons Industry; (2) provide improved capabilities management; (3) enhance systems interoperability through improved acquisition management; and, (4) take advantage of immediate acquisition reform opportunities currently present.

## **DEFINING WEAPONS AND THE WEAPONS INDUSTRY**

Simply put, a weapon is a device “designed to kill, injure, or disable people, or to damage or destroy property” (AFI 51-402, p. 1). Weapons include nuclear, biological and chemical weapons of mass destruction as well as “conventional arms, munitions, materiel, instruments, mechanisms, or devices which have an intended effect of injuring, destroying, or disabling enemy personnel, materiel, or property” (AR 27-53, p. 1). Weapons systems include not only the weapon device, but also “those components required for its operation, but is limited to those components having a direct injuring or damaging effect on individuals or property (including all munitions such as projectiles, small arms, mines, explosives, and all other devices that are physically destructive or injury producing)” (AR 27-53, p. 1). Accordingly, the weapons industry consists of those firms engaged in the manufacture and sale of weapons. Broadly construed, this industry includes those engaged in the trade of air, land, and sea-based weapons, weapon systems, and the related components of such systems.

### **GOVERNMENT: GOALS AND ROLE**

Weapons and weapon systems, as used by a nation’s armed forces, provide a public good – national security. Accordingly, the weapons used by ground, maritime, and air forces are public goods. That is, all citizens/consumers benefit from the service of security provided by these armed forces without exclusion and without depletion by another consumer coming into the nation. (Baumol & Blinder, 314-315). Indeed, the benefit often extends to allies of a heavily armed nation through the “security umbrella” of association with the ally, such as Canada and Mexico’s benefit from their alliance with the United States. (Nunez, *Parameters*, 2004 available at <http://www.carlisle.army.mil/usawc/parameters/04autumn/nunez.htm>).

Yet, firms would not normally produce, nor would citizens likely choose, if given a choice, to invest tax dollars to pay for the items that produce the benefit of national security. Absent a market force, these firms and citizens would not build or buy jet fighters, tanks, armored vehicles, field artillery, amphibious assault vehicles, aircraft carriers, sniper rifles, ballistic missiles and such to provide for national security. In short, a market failure exists in the weapons industry. As a result, the appropriate role of government in the weapons systems industry is to correct this market failure to produce weapons as public goods required to establish and maintain national security.

The market failure to produce weapons systems absolutely requires and justifies government intervention by the executive and legislative branches to counter the lack of security that would otherwise result. The first order of business for a government is to protect borders, citizens and property (both public and private). The U.S. founding fathers deemed it foundational that for the new nation to exist, the citizens must “provide for the common defence... and secure the blessings of Liberty.” (Preamble, U.S. Constitution).

Monopsony power exists in the weapons industry as the government is the sole buyer and controller of sales. “Abstracting from foreign military sales, the U.S. government is a

monopsonist for the purchase of military products,” namely weapons. (Berg, ICAF Economic Notes, p. 162). Evidence of this monopsony abounds in the U.S. where the government limits defense contractors profit percentages under the Federal Acquisition Regulation (FAR) to no more than 15% and the actual average trends to 8%. (See Higgs, Defense Economics, 1992, at <http://www.independent.org/newsroom/article.asp?id=129>). Further buyer control exists as the U.S. government selects the contract types (such as fixed price or cost plus award fee). A final example of U.S. government monopsony power is the regulation of who else can purchase these goods through control of Foreign Military Sales cases.

Government involvement assures the production of weapons required by the civilian controlled military to deliver the public good of security - a good that private markets fail to provide. The U.S. government subsidizes the weapons industry by maintaining depots that are government owned and contractor operated. The government also tries to develop needed weapons in a timely manner, such as current efforts to develop countermeasures to improvised explosive devices. Still, regulation is required to address negative externalities of the weapons system industry. Ranging from prohibiting enemy and criminal access to weapons to regulating detrimental environmental impacts (such as unsafe training ranges, noise pollution, improper disposal or unsafe transportation of weapons and related explosives), governments seek to limit the risks and control the costs of providing this public good through legislation and judicial enforcement.

Thus national security serves as the primary goal of government in the weapons industry. This breaks down into several components, notably military, economic, diplomatic, and informational aspects of security. Enhanced military capability gained through governmental control of a weapons industry provides the most direct relation to a nation's security. Yet the positive economic impact can be seen through employment opportunities, and income produced by both major corporations that are publicly traded and private concerns that provide a niche small business defense capability. See Appendix B for the major defense contractors and Appendix D for the wide range of business units that enjoyed weapons specific contracts of \$25,000 or more with DoD during FY 2005. The economic profit extends beyond domestic sales. Appendix C provides some scope of the international market for U.S. manufactured defense products and services, chiefly weapons and weapon systems. Diplomatic influence increases with the evident military capability of a well armed nation that also possesses a robust defense industrial base. The U.S., Japan, and Singapore provide three notable examples of this enhanced diplomatic ability. With domestic industries among the world's top 100 defense firms (see Appendix A), each of these nations engages in both regional and global relations that improve their standing among developed nations. Governments use the informational value of a strong weapons industry to promote public policy at home and internationally. Such weapons capabilities afford a sense of public pride and reinforce a sense of security among a population should the nation feel threatened by terrorists or more traditional enemies.

## CURRENT CONDITIONS & CHALLENGES

Currently, the weapons system industry is consolidating as mergers and acquisitions see fewer firms chase fewer government dollars spent on defense as a percentage of national gross domestic product (GDP). As a result, and consistent with this trend, defense firms increasingly engage in systems integration to maximize profit and cut internal costs. Based on interviews with defense firms in the U.S., Singapore, and Japan, defense contractors seek to horizontally integrate their enterprise to gain efficiencies. A final area of profit seeking condition involves exploration of dual use of technologies. These exist in two forms; from commercial products that can provide a defense capability and from defense products that can provide a commercial capability.

Major sectors of the weapons industry include explosives manufacturing, ammunition, small arms, and weapons systems for aerospace, maritime, and ground based use, to include munitions, rockets, missiles, and propulsion. Direct and indirect correlations to these sectors exist within the North American Industry Classification System (NAICS) and the 2002 Economic Census Industry Series Reports listing by Security and Exchange Commission standard industrial classification (SIC) codes as shown in Figures 1 and 2.

**Figure 1: WEAPONS INDUSTRY BASED ON CENSUS BUREAU REPORTS**

NAICS	SEC SIC	DESCRIPTION	Report Number	Date	Link - Full Report	Link - Tables Only
325920	2892	Explosives Manufacturing	EC02-311-325920	01/11/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
332992	3482	Small Arms Ammunition Manufacturing	EC02-311-332992	01/19/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
332993	3483	Ammunition (except Small Arms) Manufacturing	EC02-311-332993	01/21/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
332994	3484	Small Arms Manufacturing	EC02-311-332994	01/25/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
332995	3489	Other Ordnance and Accessories Manufacturing	EC02-311-332995	01/25/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
336414	3761	Guided Missile and Space Vehicle Manufacturing	EC02-311-336414	01/14/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
336415	3764	Guided Missile, Space Vehicle Propulsion Unit, Propulsion Unit Parts Mfg	EC02-311-336415	01/14/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
336419	3769	Other Guided Missile, Space Vehicle , Auxiliary Equip Mfg	EC02-311-336419	01/07/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
336992	3790	Military Armored Vehicle, Tank & Tank Component	EC02-311-336992	01/18/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
336411	3721	Aircraft Manufacturing	EC02-311-336411	01/10/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>
336611	3731	Ship Building and Repairing	EC02-311-336611	01/07/2005	<a href="#">[PDF]</a>	<a href="#">[PDF]</a>

Adapted from Col (ret.) David King, ICAF Microeconomic Lecture materials, from the U.S. Census data at <http://www.census.gov/econ/census02/guide/INDSUMM.HTM>, from SIC codes used by SEC at [http://edgarscan.pwcglobal.com/EdgarScan/sic\\_list.html](http://edgarscan.pwcglobal.com/EdgarScan/sic_list.html) and at <http://www.osha.gov/pls/imis/sicsearch.html>.

**Figure 2: ANALYSIS OF PUBLICLY TRADED WEAPONS INDUSTRY**

COMPANY	Total Operating Revenue	Report Year	Rank by SIC	SIC	SIC Description
<a href="#">REMINGTON ARMS CO INC/</a>	393,000,000	2004	2	3480	<a href="#">Ordnance and Accessories, (No vehicles/Guided Missiles)</a>
<a href="#">ALLIED DEFENSE GROUP INC</a>	150,131,000	2004	3	3480	<a href="#">Ordnance and Accessories, (No vehicles/Guided Missiles)</a>
<a href="#">STURM RUGER &amp; CO INC</a>	145,624,000	2004	4	3480	<a href="#">Ordnance and Accessories, (No vehicles/Guided Missiles)</a>
<a href="#">SMITH &amp; WESSON HOLDING CORP</a>	123,963,973	2005	5	3480	<a href="#">Ordnance and Accessories, (No vehicles/Guided Missiles)</a>
<a href="#">LOCKHEED MARTIN CORP</a>	35,526,000,000	2004	1	3760	<a href="#">Guided Missiles and Space Vehicles and Parts</a>
<a href="#">ALLIANT TECHSYSTEMS INC</a>	2,801,129,000	2005	3	3760	<a href="#">Guided Missiles and Space Vehicles and Parts</a>
<a href="#">NORTHROP GRUMMAN CORP /DE/</a>	29,853,000,000	2004	1	3812	<a href="#">Search, Detection, Navigation, Guidance, Aeronautical Sys</a>
<a href="#">RAYTHEON CO/ HERLEY INDUSTRIES INC /NEW</a>	20,245,000,000	2004	2	3812	<a href="#">Search, Detection, Navigation, Guidance, Aeronautical Sys</a>
<a href="#">IONATRON, INC.</a>	151,415,000	2005	9	3812	<a href="#">Search, Detection, Navigation, Guidance, Aeronautical Sys</a>
<a href="#">RAE SYSTEMS INC</a>	10,930,522	2004	13	3812	<a href="#">Search, Detection, Navigation, Guidance, Aeronautical Sys</a>
<a href="#">CDEX INC</a>	45,540,000	2004	14	3829	<a href="#">Measuring and Controlling Devices, NEC</a>
<a href="#">METAL STORM LTD/ADR/</a>	4,069	2004	25	3829	<a href="#">Measuring and Controlling Devices, NEC</a>
	No Current Data in PwC EDGARCSAN			3829	<a href="#">Measuring and Controlling Devices, NEC</a>

Source: Col (Ret.) David King, CAF, Microeconomics Lecture Materials, ICAF, March 2006.

The 2006 WIS analyzed not only the major defense contractors (see Appendix A), but also five other firms to capture a more complete sense of the state of the weapons industry. The additional firms examined were Alliant Techsystems, Inc. (SIC 3480, NAICS 33299), Allied Defense Group (ADG)(SIC 3480, NAICS 33299), Hi-Shear Technology Corp., (SIC 3760, NAICS 33641) Ionatron (SIC 3812, no NAICS), and Remington Arms Co., Inc. (SIC 3480, NAICS 33299). See Appendix E for links to these five firms websites.

The 2006 WIS did not directly analyze or assess land combat systems (tanks and armor vehicles), defense shipbuilding (aircraft carriers, destroyers and amphibious vehicles), and the defense aviation (jet fighters, bombers, military tankers and airlift) industries as these sectors of the weapons industry are the subject of other ICAF industry study seminars.

After studying market demographics and Michael E. Porter's Five Forces from *Competitive Strategy* (1980, p. 49), the 2006 WIS applied Porter's "Three Generic Strategies" (1980, p. 39), to assesses the previously listed five firms. The 2006 WIS then applied Porter's Growth/Share Matrix (1980, p. 362) to portray the firms and their main products as seen in Figure 3.

**FIGURE 3: 2006 WIS ASSESSMENT OF REPRESENTATIVE FIRMS**

		Relative Market Share		
		High	Low	
Market Growth Rate	High	Stars	Question Marks	<u>Alliant Techsystems, Inc.</u> - Stars, cash cows, & question marks
	Low	Cash Cows	Dogs	<u>Allied Defense Group</u> - Stars & cash cows  <u>Hi-Shear</u> - Star product in niche subcontractor role  <u>Ionatron</u> - Question mark on emerging technology  <u>Remington</u> - Dogs & failing cash cow in mature arms industry

Income from cash cows is reallocated to stars and to question marks to stay competitive

Adopted From Porter (1980), p. 362, <http://www.answers.com/topic/growth-share-matrix> and [http://www.mindtools.com/pages/article/newTED\\_97.htm](http://www.mindtools.com/pages/article/newTED_97.htm).

Based on Porter's work in *Competitive Strategy* (1980), the 2006 WIS assessed both Alliant Technical Systems, Inc. (ATK) and ADG as representative samples or a proxy for the overall weapons industry. ATK and ADG employ a "Focus" strategy aimed at the U.S. government as a particular customer and on specialized product lines. Though recognizing an actual profit, such firms currently show minimal economic profit to attract investors. However their strategy remains viable as it is with moderate risk based on a narrow customer focus. The following analysis of ATK as a proxy for the weapons industry supports the 2006 WIS assessment.

**ATK Background.** Alliant produces ammunition, aerospace products, and defense products to the US government, US allies, law enforcement, and contractors. Alliant ammunition is also sold to the commercial sector. According to Yahoo Finance ([finance.yahoo.com/q/pr?s=atk](http://finance.yahoo.com/q/pr?s=atk)) and Alliant's website ([www.atk.com](http://www.atk.com)), the firm currently operates five business sectors:

- Advanced Propulsion and Space Systems – "rocket motors for space, strategic-missile defense, and tactical applications" ([www.atk.com](http://www.atk.com));
- Ammunition – Small and medium caliber, military, and law enforcement ammo;
- ATK Mission Research – Homeland security technology development, "such as directed energy, electro-optical and infrared sensors" (Yahoo);
- ATK Thiokol – space access motors, launch vehicles, and strategic missiles; and,
- Precision Systems – tactical missile systems, rocket motors and warheads.

**Reasons for Strategy Conclusions.** An examination of Alliant's customer base and product lines reveals its focus on a particular buyer group. According to Pricewaterhouse Coopers' data for 2005 (<http://edgarscan.pwcglobal.com>), Alliant focused 78 percent of

its business from all of its sectors, including ammunition on one customer – the US government. Specific percentages were: U.S. Army - 27%; U.S. Air Force - 17%; NASA - 15%; U.S. Navy - 11%; other U.S. government customers - 8%; and, commercial and international customers-22%. Alliant's recent announcement to reorganize into three main mission areas – mission systems, launch systems, and ammunition systems – further demonstrates its Focus strategy ([www.atk.com/NewsReleasesLatest3/](http://www.atk.com/NewsReleasesLatest3/)).

**Economic Profit.** Based on March 2005 filings, Alliant earned a net profit of \$153.5 million or 6.7% return on investment (ROI) ([finance.yahoo.com/q/is?s=ATK&annual](http://finance.yahoo.com/q/is?s=ATK&annual)). This ROI shows slight economic profit compared to 10 year US Treasury Bonds now yielding 4.7%. Yet, a conservative investor can expect 10.7% ROI from the S&P 500, surpassing Alliant by 4% ([www.frbsf.org/publications/economics/letter/2002/el2002-16.html](http://www.frbsf.org/publications/economics/letter/2002/el2002-16.html)). Another component of profit the risk premium associated with firms in the industry. The 2006 WIS assessed the risk premium associated with the five firms studied as slightly higher than the difference between their ROE and the 10-year Treasury rate, or about 2%. Considering the average P-E ratio for the S&P compared to the P-E ratio for these firms demonstrates the effect of a risk premium. These firms P-E ratio remains slightly lower than that for the S&P.

**Viability of Alliant's Strategy.** Alliant's strength in sales to the US government is also its greatest risk. With one NASA reusable solid rocket motor contract providing 14 percent and one Army small caliber ammunition contract providing 12 percent respectively of Alliant's annual gross sales, the firm remains at risk of government contract cancellations or policy shifts (<http://edgarscan.pwcglobal.com>). Alliant compensates for some risk by diversity of specialized product line segments. As to business strategy, the analysis of 'customer focus' remains self-evident - no other reason for being in product lines as disparate as 'dumb' bullets and self-propelled guided missiles exists. This of course also leads to the bifurcated subordinate strategy of 'cost focus' in bullets and a differentiation focus in missiles.

In summary, Alliant adopts a "Focus" strategy aimed at serving the United States government. Though secure in its client base, Alliant reflects no economic profit to attract investors given both the higher ROI in other industries or markets and the risk of its "Focus" strategy's reliance on the US government for 78 percent of gross revenue. As a result of this analysis, the 2006 WIS assesses the missile industry as oligopolistic and quite concentrated. Meanwhile, the ammunition (i.e., dumb bullet) manufacturers, although relatively small in number, seem more appropriately classified as operating in a monopolistically competitive environment, though manufacturing a mainly homogenous product.

## **WEAPONS INDUSTRY OUTLOOK**

Based on the 2006 National Security Strategy (NSS), the 2006 Quadrennial Defense Review (QDR) and related U.S. government policies (see Appendix E) the weapons industry can expect major trends of consolidation, systems integration, and dual use to continue. However, the trend of near 3.3% to 3.7% GDP spent on defense will likely

continue, especially as the US continues to engage in both combat and stability operations in the global war against terrorism (Chamberlain, 2004, p. 8). In response to these trends, firms continue to consolidate through mergers and acquisitions. (See Appendix B). The weapons industry will continue to exist in segments that reflect a focus strategy within the weapons industry sectors among prime contractors. This leaves the secondary or sub-contractors down the line to develop a niche product or service following a strategy of differentiation. These specialized firms are trending their technological developments towards modularity, materials optimization (lighter, stronger), and munitions or components that are smaller and smarter.

## **ABSTRACT 1 – RESPONSE TO IMPROVISED EXPLOSIVE DEVICES**

**Genesis of the Study.** The effective use of Improvised Explosive Devices (IEDs) against U.S troops in both Iraq and Afghanistan resulted in a multitude of efforts from within the military service to respond to this growing threat. The Joint IED Task Force was formed in October 2003 with the intent of coordinating the efforts of the military services and developing a full spectrum of countermeasures under a holistic approach of mitigating and/or defeating IEDs. In January 2006, the Task Force was designated as the Joint IED Defeat Organization (JIEDDO), an independent organization assuming the mission of the Joint IED Task Force, with the intent of providing more streamlined and timely support to the counter IED mission.

As part of its efforts to examine its processes and improve its ability to execute its mission, JIEDDO sought a method of evaluating its relationship with Industry and Academia. By looking at this relationship from the perspective of Industry instead of a JIEDDO-centric view, JIEDDO sought to examine where it could improve its interaction with Industry and Academia to better leverage their involvement and support in countering the IED threat. JIEDDO requested the 2006 WIS conduct a study on the effectiveness of JIEDDO's interaction with Industry and Academia

**Methodology.** The JIEDDO selection of ICAF was based on the ICAF curriculum, which focuses on national resource strategy, and includes instruction on macroeconomics, microeconomics, interaction of Government and Industry, and culminates with the forming of "Industry Study" teams that examine and assess the overall state of specific industrial sectors both foreign and domestic. The WIS was selected to execute the JIEDDO study due to its focus on weapon systems and on the general relationship between defense contractors and Government. JIEDDO provided the ICAF WIS with some specific topics to address and allowed the ICAF WIS to explore additional areas as necessary.

To ensure the WIS received candid views from Industry, the team conducted its interviews of representatives from within Industry in the context of its normal assessments of Government and Industry interaction. The defense contractors who were contacted were aware of the mission and focus of the ICAF, and the role of the Industry Study teams. However, representatives from Industry were not told of a specific interest in their interactions with JIEDDO, nor were they informed that the WIS was conducting a

study in response to a JIEDDO request. In addition to Industry representatives, the WIS also interviewed representatives from Government that had faced issues similar to those of JIEDDO, thereby seeking potential “best solutions” to the identified issues. The Government representatives were informed of the purpose of the WIS study and the fact that JIEDDO was sponsoring it.

**Industry Views.** Based on interviews of representatives within Industry, the WIS identified several areas where there was commonality within the views expressed. Overall, it was clear that Industry did not believe that there was a “Manhattan Project” type of emphasis by Government to counter the IED threat, and that this universal view is limiting the commitment of Industry in meeting this challenge. Some firms sought to market existing Commercial-Off-The-Shelf (COTS) systems to Government for use in a counter-IED role, while others used technologies being developed for other purposes and attempted to incorporate those technologies into counter-IED systems. These efforts fit into what JIEDDO had referred to as Industry responding to “low-hanging fruit,” but did not represent an investment by Industry in internal research and development (IRAD).

**Dissemination and Feedback.** Other Industry views obtained by the WIS included the methods by which the Government disseminates information. This theme recurred in several areas of questioning. Although JIEDDO-sponsored “Industry Days” were considered very useful, they provided insufficient information as currently administered. Industry preferred classified Industry Days, with detailed threat briefings that would layout specifics of the type of threat being encountered. They also expressed a desire to be able to take notes and/or have the classified information sent to them when they returned to their respective firms. Overall, the means of disseminating classified information via secure internet (SIPRNET) was considered inadequate. Many firms lack SIPRNET access or cannot use SIPRNET outside the scope of existing DoD contracts.

Industry expressed a strong desire for quicker and more specific feedback on their proposals. Quicker feedback would allow firms to decide whether or not they could move personnel and resources to other projects, while more specific feedback would allow them to understand JIEDDO requirements. If adjustments to a proposal could be made to meet JIEDDO desires, then Industry could react to this feedback. If the proposals were completely out of line with what is being sought, then the firm could eliminate the waste of time and resources in submitting the proposals. Moreover, feedback to the proposals would give Industry a tool for focusing their investment in IRAD, which would improve responsiveness to Government needs in the long-term.

**JIEDDO Staffing and Authority.** Closely related to the Industry views on delayed or non-existent feedback on proposals, Industry representatives felt that JIEDDO lacked the S&T and engineering expertise to properly evaluate proposals. Interviews of representatives from within Government also identified a shortfall in JIEDDO’s S&T and engineering expertise. Although JIEDDO has made recent efforts to resolve this issue by leveraging outside expertise (e.g., utilizing members of the Defense Science Board to review proposals), the lack of organic S&T and engineering expertise causes delays in the

proposal reviewing process, and also leaves JIEDDO at a disadvantage firms challenge JIEDDO on its reasons for dismissing a proposal.

Industry views related to delays in the contract awards process from JIEDDO were significant in that the views were coming from defense contractors who are already familiar with the delays inherent in the Federal Acquisition Regulation. The WIS conducted follow-up interviews with both JIEDDO representatives and representatives from other government agencies. The WIS noted a sizeable discrepancy between the authorities within JIEDDO when compared to other agencies. The authorization levels for program initiation and funding levels within JIEDDO do not promote rapid acquisition. Programs requiring funding of \$25M or more are beyond the authorization level for the Director, JIEDDO, and must go to the Senior Resource Steering Group (SRSB). No other formal documentation speaks to any number below \$25M, thus all funding and program decisions from \$0-\$25M remain the responsibility of only the Director, JIEDDO. Combined with what appears to be an insufficient staffing of contracting officers and individuals with acquisition experience, this appears to delay JIEDDO's acquisition efforts beyond that of the normal procurement process within Government.

**Specification of Requirements and Test & Evaluation Criteria.** Industry expressed mixed views as to whether it was better to have specific or more general-oriented Government requirements. Overall, the majority of Industry preferred general requirements, somewhat in the form of a capability requirement as generated by the Joint Capability Integration and Documentation System (JCIDS) process. Industry felt this allowed them to come up with innovative systems or technology applications to achieve the capability. At the same time, however, some firms objected to the lack of clearly defined criteria, early within the requirements process, for what would be considered acceptable system performance. A common view was that the best requirements would indicate both the end objective as well as what was the acceptable threshold of system performance. Including both threshold and objective goals in the requirement would allow Industry to innovate while understanding that certain requirements would have to be met before a system could be considered for procurement. Spiral development processes could then be utilized to continually improving capability sets.

Similar to the Industry views on requirements, the view of the test and evaluation process was mixed. Although the firms expressed respect for the technical capability and expertise of the test community at Yuma Proving Grounds (YPG), they had not known in advance what criteria was being set for the test. For the most part, they believed that the tests were based on realistic scenarios, but that the test criteria had not been indicated early in the requirements process.

**Potential Paths.** Based on the views expressed by Industry and the input provided by representatives of Government on the methods utilized by their agencies to respond to similar issues, the WIS has offered several Potential Paths by which JIEDDO could seek to better leverage Industry and Academia in their efforts to mitigate the IED threat. At the conclusion, WIS recommends incorporating all of these Potential Paths into one framework, discussed after the identification of the individual Potential Paths.

**Increasing Industry IRAD.** The lack of Industry IRAD is the result of Industry’s view that the counter-IED capability has no greater emphasis by Government than other DoD requirements. JIEDDO could attempt to change this perception through the institution of a “grand challenge,” with a commitment of funds to be awarded for technologies or systems that meet certain criteria. Absent this, JIEDDO may need to consider funding basic R&D funding, potentially through the military laboratories in the form of 6.1 and 6.2 funds.

**Changes in Manning and Authority.** Increasing S&T expertise organic to JIEDDO would expedite the process of reviewing proposals, and would better enable JIEDDO to reach out to Academia at the level of basic scientific research. Similarly, increasing JIEDDO’s number of contracting and acquisition –trained professionals could expedite the acquisition and contracting processes. More importantly, JIEDDO should document its formal authorization process, and seek to push the authorities down to the lowest possible level.

**Improving Dissemination and Feedback.** Greater dialogue between JIEDDO and Industry would increase Industry commitment to the counter-IED mission. JIEDDO should continue to sponsor Industry Days, but increase the amount and detail of classified threat intelligence given at these events. Based on responses from Industry, the WIS also advises that open time be allowed within the agenda to allow Industry representatives to speak with JIEDDO representatives privately, as many of the firms are reluctant to discuss proposals or ideas that are of a proprietary nature. JIEDDO should also allow representatives of Industry to take notes, and should send these notes, along with CDs of the information disseminated at the event, to properly identified security personnel within the firms that attended these events. Reliance on SIPRNET for dissemination of threat information and requests for proposals is inadequate and should be supplemented by other means of dissemination.

**Forming a Consortium.** Whereas JIEDDO could follow any of the Potential Paths noted by WIS, or very well identify other options, the WIS advocates that the optimal method would be to incorporate all of these Potential Paths within the basic framework of a counter-IED consortium. Using existing DoD-Industry consortia as examples, JIEDDO could establish a consortium that implements any or all of the Potential Paths. Moreover, by establishing such a consortium, JIEDDO would also be establishing a process for continuous dialogue with both Industry and Academia representatives, allowing other issues of effectiveness and communication between Industry, Academia and Government to be identified and resolved.

## **ABSTRACT 2 – EXPLOSIVE SAFETY**

**Purpose.** The Department of Defense Explosive Safety Board (DDESB) funded the ICAF 2006 Weapons Industry Study to conduct research into the military services’ operational explosive safety operations as part of the ICAF industry study academic curriculum program. The research team was asked to independently baseline each service’s explosive safety programs with respect to chapter 10 of DoD Directive,

6055.9E, *Ammunition and Explosive Safety Standard*. The team was also asked to provide a framework for DDESB's operational explosive safety (ES) program as the lead and oversight agency. In addition, the research team gathered comments on the operation of the DDESB, compiled a list of "best practices" from the safety centers, developed recommendations for DDESB consideration, and listed potential explosive safety topics for future research.

**Methodology.** The methodology used by the research team consisted of two basic activities. First, the 2006 WIS team conducted a high-level review of each of the Service's and DoD explosive safety regulations. Second, the team traveled to the explosive safety centers and interviewed experts from each of the military services. Baseline interview questions were provided to the Service safety centers before each visit as a starting point for the discussions. The WIS research team consisted of members with little or no ES expertise. This allowed the team to take an independent approach toward ES with no preconceived notions while they learned ES concepts and operations.

**Explosive Safety Program Baseline.** The "baseline" of each of the services' ES programs showed that all the services meet the requirements set forth in DoD 6055.9E, Chapter 10. A detailed service to service comparison was initially discussed but later deemed irrelevant due to the different mission requirements of each of the services. All the services use the same quantity distance (QD) values for their ES safety programs. The review of the regulations and the interviews with the ES staffs highlighted gaps and potential areas for improving the understanding and implementation of chapter 10 requirements. These issues are addressed below.

The Services' biggest concern with Chapter 10 is how it addresses the joint arena and Combatant Commanders. It is not clear between DoD Component headquarters and Combatant Commanders as to who has authority/responsibility for explosive safety. Because of the complexity associated with joint operations, it would be impossible for 6055.9-STD to address every scenario. A different approach may be to outline the C2 structure for different operations and then direct the Commander as to how they must address explosive safety in the operational plan supporting the mission. Chapter 10 could then provide specifics on the minimum required information for such things as: site plan process; risk management; waivers, exemptions, and deviations; as well as guidance concerning delegation of authority to execute explosive safety.

There are concerns over the level of expertise at the COCOM level regarding ES standards and how concerns with QD translate into a risk acceptance decision by the commander. Confusion exists over risk assessment, risk analysis, and risk management during contingency operations. The confusion is mostly due to unclear C2 relationships associated with joint operations as it pertains to ES. Without a clear delegation of authority, as mentioned above, the Services remain unsure as to who is the validation authority for any risk management tools used.

Services would like to revisit the site plan process during the early stages of any operation with hostilities. The general consensus among the Services is that the current

regulations are acceptable for post conflict operations; however the present criteria and documentation requirements are unrealistic in a hostile and fluid environment. The biggest concern is during the early stages of operations, without established base camps or operating bases, real estate restrictions frequently do not allow safe QD in accordance with DoD standards.

Services are looking for policy guidance regarding QD calculations for commingled U.S. and allied/coalition AE. The service ES centers are not sure how to calculate the NEWQD for the quality of various allied/coalition AE. Lastly, there is a concern over port waiver authority. Current policy does not adequately cover individual accountability and responsibility for waivers in this area.

**DDESB As Lead Oversight Agency.** In response to DDESB's request to provide a framework to support them as the lead oversight agency for DoD's ES programs, the team makes the following observations and recommendations:

**(1) Funding and Budget.** DDESB should work to develop its own budget line independent of the service ES centers. Currently, DDESB's funding falls under the Army's ES budget. The independent budget would allow them to conduct tests and execute new initiatives for DoD-wide ES programs. One example would be a combined DoD-level ES website sponsored and controlled by DDESB staff. Another example is the official ES site planning tool that is funded from the Army's ES budget might be better funded at the DoD level from the DDESB budget ensuring proper development and maintenance.

**(2) Information Management.** DDESB should be the starting point for web-based ES information for DoD. The services can and should maintain service specific ES information at a level lower than DDESB while the DDESB's website should provide information and assistance to Combatant Commanders (COCOMs) and their staff relative to ES requirements. DDESB should also be the official repository of QD data and the supporting scientific background. Web-Based ES Information and Assistance. All ES Centers should standardize their websites to include links to the DDESB website. The DDESB website should in turn have links to each service website. This will allow a user to easily move between websites which would ensure the latest information is obtained. This may save time, effort, and funds and bring about a synergy of effort for future ES tests, procedures, and operations.

**(3) Balance Technical Expertise with Policy Oversight.** DDESB must maintain an appropriate balance between technical expertise and policy expertise so it can better assist the services and COCOMs with ES issues. DDESB must be able to answer specific technical questions from the safety centers without directing detailed actions inside the service's ES program. On the policy aspect, DDESB should provide clear, concise policy direction for the services and COCOMs.

**(4) Explosives Testing.** The service ES offices believe that the DDESB could bring a consistency and economy by assuming the management of all explosive safety testing. Respondents pointed out that service-specific testing for explosives safety could, in many

cases, test several aspects simultaneously. Yet, because each service tends to have an understandably narrow view regarding ES testing, this is rarely accomplished. As the senior ES advocate within the DoD, DDESB could provide that forcing function to ensure multiple facets are accounted for during each test.

**(5) Risk Management versus Consequence Mitigation.** DDESB should work with the service ES centers to merge Risk Management and Consequence Mitigation together into a single concept. This change in perspective can help ES experts communicate risks and consequences to commanders. This “culture change” gives the commander options that help meet his mission requirements while protecting people and equipment to the maximum extent possible within the operational constraints.

**(6) Lead Interagency Coordinator.** DDESB should be the COCOM’s interagency liaison dealing with ES issues. Examples include coordination with the Department of State for host nation ES issues, Department of Transportation and the United States Coast Guard for shipment of explosives through US ports to name a few. This coordination would require ongoing relationships with all parts of the US government so the coordination could occur in a streamlined process during crisis situations.

**(7) Lead and Facilitate ES Discussion with all Service ES Centers.** Board Meetings: We were informed that no formal DDESB board meetings have taken place since the fall of 2004. Service explosives representatives believe these meetings are crucial to resolving current issues within the explosive safety community, as well as resolving emerging problems.

In addition to reporting the cessation of regular DDESB meetings, respondents also noted several other problems related to the conduct of meetings when they were being held. Specific recommendations to improve the productivity of DDESB meetings are as follows:

- Hold Board meetings on a strict recurring basis of either an annual or semi-annual basis.
- Publish meeting agenda no later than 60 days prior to the meeting to ensure proper research and preparation by the service explosive safety offices.
- Sufficient time should be allotted for open discussion of agenda items at board meetings.
- Additional time should be scheduled at the board meetings to discuss non-agenda items.
- Allow for additional service representation at board meetings by either minimizing DDESB staff attendance or scheduling meetings at facilities that can accommodate additional representation from services.

#### **Best Practices:**

**Tiered Explosives Site Plans (ESP).** Tiered ESPs may be useful when the NEWQD of a PES varies because of operational requirements (e.g., day-to-day, peace time,

exercise, war plan, contingency, combat, and MOOTW). It may also be useful when it is not practical on a day-to-day basis to meet the required QD separation from a PES to all ESs for the largest possible NEWQD. Under the tiered ESP concept, the responsible commander may take management actions (e.g., removal of personnel or equipment, re-designation of exposed sites) before introducing explosives or increasing the NEWQD of a PES. Tiered ESPs can be utilized for existing sites, modifications of existing sites, or for proposed new sites. This process would allow for the pre-authorization of potential operations which, in turn, would allow operational commanders the greatest possible flexibility to meet changing situations. There would be no need to get DDESB approval as it would already have been granted.

**Explosive Safety Mitigation Handbooks.** Handbooks should be promulgated from the Services and/or DDESB as uniform guides for generic operations associated with ES. These handbooks should be included on the DDESB and Service websites and should cover, but not be limited to, ES areas such as alternative barrier construction, loading of ordnance and commingling of allied/coalition AE. This would ensure that all Services are following the same guidelines and, as issues arise during joint operations, they will be handled in a familiar and accepted way. All deploying units should be provided the latest ES information with instructions to log on to the applicable website for additional information.

#### **Recommendations:**

**One Explosive Site Planning System.** The DDESB should designate one explosive site planning system as the approved method to conduct explosive site planning. Currently two computerized systems, the Assessment System Hazard Survey (ASHS) and the Explosive Safety Siting (ESS) system, are in use and both have their pros and cons for use and implementation. Once the approved system has been designated, the DDESB must provide oversight and funding so that the authorized system is well-suited to each of the services' individual ES needs while still meeting all DDESB requirements for ES.

**Hold Informal Service-Level ES Crosstalk.** During the site visits conducted by ICAF students, the Services provided a litany of concerns, issues, questions, and observations which were fairly uniform throughout. We recommend routine informal video-conference (VTC) ES crosstalks be initiated among the Services. These worker level VTCs will allow for the sharing of issues, problems, observations, and experiences among the Services, thereby reducing duplicative work and testing. These meetings would also lead to a more uniform practice of ES among the Services and allow the formal board to concentrate on higher order issues and policies. Additionally, these informal VTCs may identify additional areas for discussion and guidance which can be added to the agenda for the regularly scheduled formal meeting of the DDESB.

**Expand SAFER.** The DDESB should expand the Safety Assessment for Explosive Risk (SAFER) mitigation tool to include other considerations beside personnel death. A risk mitigation tool that includes personnel injury, equipment destruction, and damage to structures would be an ideal tool to help commanders understand the consequences of

their actions. A handbook and a website link with charts and diagrams would give instant feedback to a harried commander that will engender decisions based on knowledge and understanding rather than expediency as often happens in the fog of war.

**Areas For Further Research.** Several areas outside the scope of our research were identified during our series of interviews. These areas were interesting topics and are deserving of further study. Therefore, we have identified these areas as a means of providing areas for DDESB to consider future studies. The following areas apply:

**Risk-based Criteria:** At each service center visited, we were inundated with descriptions of the need to establish a risk-based criteria or consequence management system for ES. Currently, ES is boiled down to formulations related to QD. There is a great deal of interest in establishing a new way of establishing a risk construct, rather than just talking about risk of death to personnel. Cognizant explosives safety personnel were very interested in getting to a point where they could identify tools for use by field explosives safety technicians that quantify explosives safety risk and options to the operational commander. In other words, a means of quantifying risk so that a commander actually understands what the operational impact to his unit may be needs to be formulated. The risk calculation would be based not only on personnel death, but personnel injury, equipment destruction and damage o structures.

A process/system to quickly vet issues/concerns impacting an operational environment which results in timely answers such as tactics, techniques and procedures (TTPs), field expedient fixes, or commercially available off the shelf (COTS) solutions.

**Barrier Construction:** A frequent topic among explosives safety personnel during interviews was the subject of barrier construction and/or alternative barrier options. We were informed there was no “Center of Excellence” or approved manual related to barrier construction other than DoD 6055.9, chapter 5. What was requested was additional guidance on alternative barrier construction; that is direction on how to think about “out of the box” barrier construction. For example, instead of building barriers between bomb-laden aircraft in a CAPA (Combat Aircraft Parking Area), perhaps it would make more sense to have only every other aircraft pre-loaded with bombs. While most certainly destroyed, the unarmed aircraft would prevent the propagation of an explosion along a line a parked aircraft.

**Waivers:** We were informed that there is a controversy on lower-level waivers granted by individual services and the DDESB’s desire for visibility of all waivers related to explosives safety. Interviewees described this situation as an area for potential problems particularly when they involve sensitive political situations in nations such as Germany, Japan, or Korea, where dissemination of the waiver could cause tremendous governmental repercussions in the host nation. It is viewed as a risk to provide this visibility beyond cognizant personnel on the ground and the service explosives safety office.

### ABSTRACT 3 - ELECTROMAGNETIC (EM) LAUNCH

**Purpose.** The increasing investment of scarce U.S. scientific research and development (R&D) funding on a revolutionary experimental weapon system known as the electromagnetic gun, commonly called the “Electric Gun”, is expected to pay huge dividends for the U.S. military. Initial developmental findings have shown that by substituting electromagnetic propulsion for current chemical energetics, the electromagnetic gun technology promises increased acceleration, range, survivability, lethality, and desirable tactical advantages, over conventional guns, while also reducing the costs for sustainability and logistics. Yet despite these apparent advantages, the U.S. industrial base has been slow to support this emergent weapons technology. This brief research paper, developed by the Weapons Industry Study (WIS) of the Industrial College of the Armed Forces (ICAF), will concisely describe the history of the electromagnetic gun, identify the current technological leaders in this field, and propose a methodology to engage industry through increased ICAF involvement.

**Developmental History.** In essence the electromagnetic gun uses electrical energy, rather than gunpowder, to propel a projectile at tremendous speeds. The EM weapon system mainly consists of three parts: an electrical power source, a launcher and a launch package. (*Insert Matt’s slide #6 here*). When energized, the electrical power source sends an electrical current down one of two conducting parallel rails (the launcher) creating two opposing electromagnetic fields. The projectile and its conducting armature (the launch package), located between the rails, closes the circuit creating a third electrical field. The resultant repelling electromagnetic forces existing in the launcher shoot the launch package through the rails at hypervelocity speeds.

The basic principles behind the EM gun technology, based on the Lorentz Force law ( $F = \frac{1}{2} L'I^2$ ), have been in existence for over 150 years.

During that time spectacular progress has been realized on harnessing and focusing EM forces for all applications. “In March 1977, Dr. Harry Fair, [then] head of the Propulsion Technology Branch of the Army Research and Development Command in Dover, N.J., inquired whether any of the [EM] work might have ordinance applications” (Kolm, Fine, Williams and Morgeau, 1980). From that initial inquiry, a rather large directed effort has evolved with the Department of Defense to weaponize the EM technology. Our ICAF WIS group traveled to the Institute for Advanced Technology (IAT) at the University of Texas in Austin to interview Dr. Fair, and to the US Army’s Picatinny Arsenal in New Jersey to interview members of the U.S. Army’s EM program office.

Both locations graciously briefed us on the progress of their design, production and testing programs aimed at producing a prototype EM weapon. IAT and the Picatinny Arsenal are working together to effectively and efficiently produce an EM gun for the Army. The EM technical foundation is provided by the IAT folks and the Picatinny Arsenal EM program office is incorporating that input into its efforts to develop an EM prototype.

The U.S. Navy also has a separate robust EM gun program but we were unable to visit the facility or converse with its personnel due to time and funding constraints. According to IAT and the U.S. Army EM Program office, the Army and Navy programs are collaborating on subsystems but this paper did not evaluate the “jointness” of the overall DoD overall program for EM weaponization.

Dr. Fair advised us that a large number of foreign nations, including China, Iran and Russia, are actively pursuing weaponization efforts using EM forces. The EM gun is a demonstrated disruptive technology that offers many advantages over conventional guns such as zero muzzle flash, silent operation, and breechless operation to enable high rates of fire.

The main technical/engineering challenges for fielding a militarily effective EM gun system are the production and storage of massive amounts of power and the selection and refinement of materials to withstand high heat and conductivity requirements

The National Defense Authorization Act for Fiscal year 2004 directed that “The Secretary of Defense shall establish and carry out a collaborative program for evaluation and demonstration of advanced technologies and concepts for advanced gun systems that use electromagnetic propulsion for direct and indirect applications.”

Life Cycle Implications. As a clearly disruptive technology, the electric gun will present significant implications on the operational aspect of warfare. However, often overlooked early in weapons system development are the inevitable logistics impacts, both positive and negative. Given the electric gun’s pre-Milestone A status and the ability to influence its design based on logistics restraints and requirements, now is the optimal time to study these impacts in an effort to optimize the potential benefits and negate the potential disadvantages the weapons system may present.

A study addressing the specific logistics impacts of Pulsed Power Supply, the Launcher and the independent launch package of each of these components would be beneficial in developing a sustainable and maintainable weapons system. Integrated with a discussion of the logistics impacts, a rough cost estimate that tackles the potential cost savings or increases is necessary to ensure sufficient logistics support.

Each component of the EG must be analyzed for impacts on all logistics areas including Supply Support, Maintenance, Training, facilities, packaging, handling and storage. An example of one issue related to training is that the current artillery ranges are not large enough to accommodate the longer range of the electric gun projectiles. The proliferation of this weapon may potentially have significant repercussions within the Army training community. It is crucial to address the issues discussed above as well as many others early in the program’s life cycle. ICAF’s ability to collaborate with not for profit firms who are experts in logistics may likely provide excellent benefits to the to the electric gun program office.

## WEAPONS INDUSTRY STUDY CONCLUSIONS AND RECOMMENDATIONS

This study concludes that weapons systems acquisition could improve among the DoD Acquisition community in four broad ways: awareness, capabilities management, interoperability and sought opportunities. These four challenges require an internal and external approach among the Acquisition community.

**Awareness.** First, a challenge exists in the U.S. among Acquisition's three key players – the U.S. weapons industry (hereafter, “the Industry”), the U.S. Congress, and the U.S. Executive branch, particularly DoD – to improve self-awareness and situational awareness within and between themselves. In particular, this Iron Triangle could better understand, not necessarily agree on, the differences between weapons systems concepts of efficiency and effectiveness among their respective institutions. These differences exist most keenly in the trade-offs of risk associated with meeting the triple imperatives of performance, price, and production schedule. The fact that these differences exist creates a healthy tension between the Iron Triangle's components. Understanding the tension as a both a liability and an asset, helps the players move past frustration, say with expense, delay, or quality control, and forward to make appropriate trade-offs to provide a product or service capability to fielded forces.

**Capabilities Management.** The next challenge is to enhance the definition and delivery of joint capabilities requirements. Congress and the Executive branch seem to dance a slow waltz in defining, funding, and developing joint capabilities. Meanwhile, the Industry sits on the sidelines waiting for an opportune moment to cut in. An improvement in capabilities management would be for Congress and DoD to make the legislative and organizational changes required to fund certain joint capabilities separately rather than through Services (Mr. Krieg speech at ICAF, 1 May 06). Congress would start this effort by taking the QDR and the NSS and deciding to fund certain capabilities that require greater emphasis. Services could then bid on acquisition programs designed to meet those capabilities. This would encourage Services to champion a capability, particularly within context of the Services' perceived domains: aerospace, land, maritime, and cyberspace. The Joint Staff (JROC) could vet the proposal and USECDEF (AT&L) could approve up to a threshold, while SECDEF would make final decisions on major acquisitions.

**Interoperability.** Improve the US ability to deliver an integrated and interoperable warfighting capability to the joint warfighter. Though the DoD Acquisition community learned many lessons within the past fifteen years, DoD weapons systems acquisitions fall short when it comes to acquiring capabilities that “fit together” or that are interoperable. One of the challenges that continues to elude the Iron Triangle is the ability to deliver an interoperable “go to war” package without having to perform Herculean (and yes, out of funding cycle) actions to bring things together. This challenge is inherent in the way that the DoD Acquisition community approaches the business of acquiring systems.

On the positive side, the JCIDS process is targeting to resolve the integrated capability earlier in the development cycle. This step is absolutely necessary, though currently insufficient to resolve the problem. OSD seems to be moving toward more proactive “portfolio management” capability. This capability will help the DoD Acquisition community to make the hard business decisions about what capabilities to buy -- but again, this remains currently a necessary but insufficient capability. This study recommends pushing the focus of acquisition reform further down the acquisition process. This study maintains that for the most part, DoD does very well at acquiring individual systems. Yet, the warfighter will almost never use a system alone. Rather, System “A” capabilities must dovetail with System “B,” “C,” and so on in some meaningful way to provide an overall effective warfighting capability. For example, in late 2005, Taskforce Ironhorse (4<sup>th</sup> ID+) deployed to OIF 05-07 with a warfighting capability that included approximately 51 systems. These systems all needed to work together in a meaningful way -- integrated around 212 “mission threads” in such a way that critical warfighting capabilities were actually delivered. In the case of OIF 05-07, every system had “Interoperability” as a Key Performance Parameter (KPP) within their Acquisition Program Baseline (APB). Yet, the Army never fully defined the Interoperability KPP for each system in a coherent and consistent way. Hence, there were numerous outcomes where a system had spent precious program resources to either over develop or under develop interoperability capabilities that made the system architecture non-executable -- and critical battle command data could not flow across the battlespace. This shortfall must be addressed.

To improve weapons interoperability, this study recommends implementing the following three changes:

**(1) Establish an Organizational Construct to execute System of Systems Engineering.** Establish an organizational construct focused on planning and executing the programmatic and “System of Systems” engineering tasks necessary to define a top down, actionable architecture (according to the DODAF) that defines an optimized warfighting capability for a given timeframe. These architectural products should be appropriately incorporated into the individual system APB(s). The organizational construct should include a management segment at OSD, an execution segment at each of the service ALT organizations, and a coordination segment at each PEO. These cells would not need to be large, and would augment the oversight and portfolio management functions already in place. These organizations should be staffed with acquisition professionals (PM, SPRDE, T&E, Contracting, FM, etc) that have demonstrated successful system development execution.

**(2) Modify PM Charters.** Modify PM Charters requiring them to coordinate System Interoperability requirements through this new organizational construct. The interoperability requirements would become incorporated into the program APB, and the PM’s performance objectives.

**(3) Establish an accepted Integration WBS.** Currently there is not an accepted Work Breakdown Structure (WBS) that articulates the requirements and relationships of

System of Systems Integration tasks. The WBS would be instructional to the integration organizations and to the individual system PM's, but more importantly, it would be instrumental in establishing interoperability priorities and resourcing strategies to augment the portfolio management aspects of program oversight.

**Opportunities.** The fourth challenge exists in finding opportunities now to improve DoD Acquisition. Several areas seem to offer the potential for more rapid reform. The idea here is to set-up areas for the Iron Triangle to seize the initiative in efforts to improve. Some opportunity areas include:

**(1) U.S. COCOM contracting/ acquisition budget authority** – No more than nine percent of DoD budget available in multi-year money to a COCOM. The trade-off would come from Service acquisition accounts;

**(2) Arms Export Control Act (AECA) & International Traffic in Arms Regulation (ITAR) reform** – to allow both transparency and increase competition for firms involved in weapons manufacture and sales;

**(3) Contractors in the Battlespace** – Legislate and/or regulate contractors on the battlefield to define their status under Laws of War, to require registration, licensing, and reporting to DoD, DoS, and Department of Commerce. These players bring weapons, purchased in the U.S. and abroad, to a variety of battlefield and post-conflict scenarios (See Singer, 2003);

**(4) Less Than Lethal (Non-lethal) Weapons** – Policy guidance should expand to meet the boundaries allowed by international law; U.S. seems unnecessarily constrained and afraid to push policy to allowable reaches of normative standards;

**(5) Science and Technology Base** – Requires funding in basic research as well as applied research to maintain U.S. innovation dominance in critical disciplines that will advance weapons technologies, particularly in systems engineering; and,

**(6) Weapons Product Testing and Evaluation** – Get to operationally capable as a standard, while striving for best in class perfection on weapons and weapons systems.

Though ambitious, aspirational, and with certain fiscal impacts of savings in some proposals and increases in other proposals, these four challenges – to enhance awareness, capabilities management, interoperability and opportunities – could improve Acquisition within DoD and the Iron Triangle to improve U.S. warfighters' readiness and capabilities. Such readiness benefits national security through an improved military power, robust economic defense base, and increased diplomatic clout where capabilities of the nation become a factor of foreign diplomacy and international relations. The weapons industry is a key component of U.S. readiness and capability as contributors to national security. Adoption of these recommendations furthers both the health of the weapons industry and the security of the republic.

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**Appendix A: Comparison of Top Defense Contractors FY 2004 in Four Categories –  
World, U.S., Singapore, and Japan From Defense News**

**World 2004 (World Rank; Company (Nation); 2004 Defense Revenue):**

1	Lockheed Martin Corp. (U.S.)	\$ 34.05 billion
2	Boeing Co. (U.S.)	\$ 30.06 billion
3	Northrop Grumman Corp. (U.S.)	\$ 22.12 billion
4	BAE Systems (U.K.)	\$ 20.35 billion
5	Raytheon Co. (U.S.)	\$ 18.77 billion
6	General Dynamics Corp (U.S.)	\$ 15 billion
7	EADS (Netherlands)	\$ 10.5 billion
8	Honeywell (U.S.)	\$ 10.24 billion
9	Thales (France)	\$ 8.87 billion
10	Halliburton (U.S.)	\$ 8 billion

**U.S. 2004 (US Rank; World Rank; Company; 2004 Defense Revenue)**

1	1	Lockheed Martin Corp.	\$ 34.05 billion
2	2	Boeing Co.	\$ 30.06 billion
3	3	Northrop Grumman Corp.	\$ 22.12 billion
4	5	Raytheon Co.	\$ 18.77 billion
5	6	General Dynamics Corp.	\$ 15 billion
6	8	Honeywell	\$ 10.24 billion
7	10	Halliburton	\$ 8 billion
8	12	United Technologies Corp.	\$ 6.74 billion
9	13	L-3 Communications Holdings, Inc.	\$ 6.13 billion
10	14	Science Applications International Corp.	\$ 4.68 billion

**Japan 2004 (Japan Rank; World Rank; Company; 2004 Defense Revenue)**

1	19	Mitsubishi Heavy Industries	\$ 2.51 billion
2	40	Kawasaki Heavy Industries	\$ 1.33 billion
3	48	Mitsubishi Electric	\$ 0.95 billion
4	56	NEC	\$ 0.84 billion
5	83	Ishikawajima-Harima Heavy Industries	\$ 0.46 billion
6	91	Toshiba	\$ 0.38 billion
7	100	Komatsu	\$ 0.32 billion

**Singapore 2004 (Singapore Rank; World Rank; Company; 2004 Defense Revenue)**

1	53	Singapore Technologies Engineering	\$ 0.88 billion
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Chart derived from data at: <http://www.defensenews.com/content/features/2005chart1.html>

**Appendix B: Top U.S Defense Contractors by Fiscal Year (FY)  
Demonstrates Trend of Consolidation Within Defense Industry to Include  
Weapons Systems Manufacturing**

- [Top 100 U.S. Defense Contractors FY 2004](#)
- [Top 100 U.S. Defense Contractors FY 2003](#)
- [Top 100 U.S. Defense Contractors FY 2002](#)
- [Top 100 U.S. Defense Contractors FY 2001](#)
- [Top 100 U.S. Defense Contractors FY 2000](#)
- [Top 100 U.S. Defense Contractors FY 1999](#)
- [Top 100 U.S. Defense Contractors FY 1998](#)



### Appendix C: Top Importers of U.S. Defense Products & Services

<b>LEADING PURCHASERS OF U.S. DEFENSE ARTICLES &amp; SERVICES</b> <b>TOTAL VALUES OF DELIVERIES CONCLUDED</b> (In current U.S. dollars, rounded to nearest 10 million or 10 <sup>th</sup> of a billion)		
<b>WORLDWIDE DELIVERIES</b> <b>1997-2000</b>	<b>WORLDWIDE DELIVERIES</b> <b>2001-2004</b>	<b>WORLDWIDE DELIVERIES</b> <b>2004</b>
1 Saudi Arabia \$16 billion	1 Egypt \$5.3 billion	1 Japan \$2 billion
2 Taiwan \$7.7 billion	2 Saudi Arabia \$4.7 billion	2 Egypt \$1.7 billion
3 Israel \$3.8 billion	3 Japan \$4.2 billion	3 Israel \$1.5 billion
4 South Korea \$3.5 billion	4 Taiwan \$4 billion	4 Saudi Arabia \$1.2 billion
5 Turkey \$3.4 billion	5 Israel \$3.6 billion	5 Taiwan \$1.1 billion
6 Egypt \$3.2 billion	6 Greece \$3.4 billion	6 U.K. \$1 billion
7 Japan \$2.6 billion	7 South Korea \$2.6 billion	7 Greece \$990 million
8 Finland \$2.5 billion	8 U.K. \$2.4 billion	8 South Korea \$830 million
9 Greece \$2.1 billion	9 Italy \$1.6 billion	9 Italy \$690 million
10 U.K. \$1.8 billion	10 Turkey \$1.6 billion	10 Singapore \$590 million

From Grimmett, R.F. (2005). CRS Report for Congress, *U.S. Arms Sales: Agreements with and Deliveries to Major Clients, 1997-2004*. December 29, 2005

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**Appendix D: DoD Procurement Summary FY 2005 as Reported by DoD Statistical  
Information Analysis Division**

**DEPARTMENT OF DEFENSE PROCUREMENT SUMMARY**

(Dollars in Thousands)

Fiscal Year	Total Amount	DD350 Actions	DD350 Amount	DD1057 Actions	DD1057 Amount
1951	\$32,649,000				
1952	\$43,569,000				
1953	\$31,812,000				
1954	\$13,279,000				
1955	\$16,582,000				
1956	\$19,590,000				
1957	\$21,458,000				
1958	\$24,197,000				
1959	\$25,312,000				
1960	\$23,689,000				
1961	\$25,584,000				
1962	\$29,254,502				
1963	\$29,378,720				
1964	\$27,947,945		\$25,327,542		\$2,710,403
1965	\$27,196,136		\$24,330,689		\$2,865,447
1966 <sup>1/</sup>	\$38,559,435	208,393	\$35,078,711		\$3,480,724
1967	\$44,774,318	231,634	\$40,922,038		\$3,852,280
1968	\$44,038,716	215,069	\$40,606,228		\$3,432,488
1969	\$42,035,153	215,548	\$38,708,481		\$3,326,672
1970	\$36,002,140	188,027	\$32,898,359		\$3,103,781
1971	\$34,774,487	173,668	\$31,697,173		\$3,077,314
1972	\$38,661,641	188,017	\$35,415,362		\$3,246,279
1973	\$38,031,888	190,829	\$34,619,205		\$3,412,683
1974	\$40,699,877	202,852	\$37,017,677		\$3,682,200
1975	\$46,075,752	220,482	\$41,974,562		\$4,101,190
1976 <sup>2/</sup>	\$48,329,467	216,786	\$43,371,358		\$4,958,109
1976T	\$12,613,135		\$11,296,674		\$1,316,461
1977	\$55,571,616	244,548	\$50,384,917	10,075,593	\$5,186,699
1978	\$66,874,458	269,198	\$61,271,472		\$5,602,986
1979	\$69,348,065	293,683	\$63,252,114	10,591,486	\$6,095,951
1980	\$83,686,442	325,169	\$76,807,259	11,746,636	\$6,879,183
1981	\$105,222,886	365,622	\$97,388,528	12,380,331	\$7,834,358
1982	\$124,724,875	420,293	\$116,659,772	12,542,435	\$8,065,103
1983 <sup>3/</sup>	\$140,482,972	241,442	\$128,242,123	14,525,103	\$12,240,849
1984 <sup>4/</sup>	\$146,031,610	237,111	\$133,571,275	14,533,478	\$12,460,335
1985	\$163,725,360	252,276	\$150,674,308	14,247,657	\$13,051,052
1986	\$158,829,340	260,842	\$145,742,058	14,180,721	\$13,087,282
1987	\$156,507,586	259,901	\$142,482,308	15,047,108	\$14,025,278
1988	\$151,352,713	251,062	\$137,049,236	14,500,124	\$14,303,477
1989	\$139,343,457	221,377	\$128,958,161	9,066,334	\$10,385,296
1990	\$144,672,506	237,269	\$130,758,093	12,998,802	\$13,914,413
1991 <sup>5/</sup>	\$150,855,267	253,553	\$136,677,443	12,044,010	\$14,177,824
1992	\$136,296,711	236,248	\$121,437,966	11,851,077	\$14,858,744
1993	\$138,307,134	247,190	\$123,713,397	11,655,617	\$14,593,737
1994	\$132,219,300	237,614	\$118,114,086	10,978,949	\$14,105,214
1995	\$131,964,903	258,178	\$118,151,954	10,355,060	\$13,812,949
1996 <sup>6/</sup>	\$132,178,214	282,421	\$119,555,763	8,424,305	\$12,622,451
1997	\$128,414,938	275,984	\$116,680,480	7,510,756	\$11,734,458
1998	\$128,807,060	277,027	\$118,138,926	6,133,613	\$10,668,134
1999	\$135,160,155	292,127	\$125,037,045	5,532,574	\$10,123,110
2000	\$143,046,724	327,945	\$133,231,857	5,89,025	\$9,814,868
2001	\$154,131,880	348,387	\$144,634,898	4,726,114	\$9,496,981
2002	\$180,597,567	492,109	\$170,783,304	4,946,653	\$9,814,263
2003	\$219,461,600	619,919	\$208,963,563	5,184,205	\$10,498,037
2004	\$241,006,245	785,069	\$230,657,307	5,835,714	\$10,348,938

## DEPARTMENT OF DEFENSE PROCUREMENT SUMMARY

(Dollars in Thousands)

Fiscal Year	Total Amount	DD350 Actions	DD350 Amount	DD1057 Actions	DD1057 Amount
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1/ This is the first year of the automated system, no tapes exist for prior years data.

2/ This tape includes FY 1976T (transition) records.

3/ DD350 reporting changed from \$10,000 to \$25,000.

4/ MASTER file contains DD1057 records beginning with FY 1984.

5/ Files for FY 1966 through FY 2004 are available from National Archives.

6/ Purchases via the government purchase card are no longer reported.

Source: [http://siadapp.dior.whs.mil/procurement/historical\\_reports/trends/](http://siadapp.dior.whs.mil/procurement/historical_reports/trends/)



## Appendix E: Summary of DoD Weapons Contracts for FY 2005 of \$25,000 or More

Weapons	Contractor	State	City	Contract Number	Amount
	A & S TRIBAL INDUSTRIES	Montana	Poplar	SP075005MC341	34,706
	A FINKL & SONS CO	Illinois	Chicago	DAAA2203D0001	794,070
				DAAA2203D0003	335,360
	A J MACHINE INC	Wisconsin	Plymouth	W52H0904P0485	76,213
	A M PRECISION MACHINE, INC	Illinois	Elk Grove Village	W15QKN05C1111	45,650
			Schiller Park	DAAE2003D0113	2,188,250
				DAAE2003D0134	72,675
	A R M S INC	Mass	West Bridgewater	N0016405D4863	32,875
	AAI CORPORATION	Maryland	Hunt Valley	W15QKN04C1085	7,038,272
	AARDVARK TACTICAL, INC	California	Azusa	GS07F8940D	329,722
				W911S105W0244	36,926
	ABRAMS AIRBORNE MANUFACTURING,	Arizona	Tucson Country Club	N0024405P2303	78,717
	ACCUMET MATERIALS COMPANY LLC	New York	Briarcliff Manor	FA865105M0193	79,625
	ACCURACY INTERNATIONAL OF NORT	Tennessee	Oak Ridge	N0016405D4860	256,280
				N0016405P1176	65,487
			Oakridge	N0016405P0395	28,666
	ACR MACHINE INC	Penn	Coatesville	SPM76005M0488	55,800

## FY 2005 Contract Summary \$25,000 or Greater - Products

FY 2005, thru Sept. 2005 Contracts - \$25,000 and Greater Page 2675 of 2720

Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	ADVANCED CNC MANUFACTURING, IN	Florida	Largo	W52H0905C0156	84,747
	ADVANCED ORDNANCE LLC	Florida	Daytona Beach	SP074002D1043	409,590
				SP075005D7884	167,794
				W52H0904D0006	51,584
	ADVANCED PRECISION MANUFACTURI	Illinois	Elk Grove Village	W52H0904C0155	219,920
				W52H0904D0101	46,204
				W52H0905P0047	46,194
				W52H0905P0057	41,250
				W52H0905P0417	32,198
	ADVANCIA CORPORATION	Arizona	Tucson International	GS35F0619J	27,511
	AEROFLEX WICHITA, INC	Kansas	New Century	DAAH0102D0040	139,215
	AEROJET-GENERAL CORPORATION	California	Rancho Cordova	W15QKN04C1014	1,315,000
	AEY INC	Florida	Miami Beach	FA486105MB522	31,059
				H9223905P0033	40,728
				W911RZ05P0071	93,488
	AIRTRONIC SERVICES INC	Illinois	Elk Grove Village	DAAE2003C0123	289,848
				W52H0904C0148	297,465
				W52H0904C0163	29,280
				W52H0904C0196	91,110
				W52H0905C0209	56,250
				W52H0905C0228	146,000
				W52H0905C0230	386,400
				W52H0905C0280	149,856
				W52H0905D0287	59,496
				W52H0905D0328	4,069,000
				W52H0905P0200	55,750
				W52H0905P0263	69,000
	ALCOA GLOBAL FASTENERS, INC	California	Simi Valley	SP074004D7852	93,356
	ALLIANT TECHSYSTEMS INC	Arizona	Mesa	M8700405P0451	45,120
				N0016405C4840	2,917,571
				SP075005MG370	78,564
				W52H0904D0082	5,462,078
		Minnesota	Plymouth	DAAE3002C1125	506,547

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	ALLIED DEFENSE INDUSTRIES INC	W Virginia	Martinsburg	DAAE2002C0123	1,889,925
	ALLIED DYNAMICS LLC	New Jersey	Englewood	SP075004C3501	400,910
	ALLIED MATERIALS AND EQUIPMENT	Missouri	Kansas City	DAAE2002D0054	25,800
				W52H0905P0374	54,320
	ALLIED PACIFIC INDUSTRIES, LLC	California	San Bernardino	SP075005D7872	68,211
				SP076003D5050	31,543
	ALLOY SURFACES CO	Penn	Chester	N0016405M0085	93,510
	ALPHA MACHINING PRODUCTS & DEV	California	San Diego	W52H0904C0140	189,200
				W52H0904C0142	113,850
				W52H0904P0518	28,540
				W52H0905D0254	1,089,950
				W52H0905D0256	119,345
	ALPHA TECHNOLOGIES	Tennessee	Winchester	DAAE2001D0088	180,800
				W52H0904D0151	153,420
				W52H0904D0170	152,100
				W52H0904P0505	35,250
				W52H0905C0017	347,999
				W52H0905C0044	48,741
				W52H0905D0057	148,092
				W52H0905P0099	39,904
				W52H0905P0151	34,015
	AM GENERAL LLC	Indiana	Mishawaka	W52H0905C5005	9,425,547
				W52H0905C5009	4,943,872
	AMERICAN APEX CORPORATION	Ohio	Dublin	W52H0905P0194	787,000
				W52H0905P0655	104,000
	AMERICAN INDUSTRIAL CORPORATIO	California	Anaheim	SP074004D7884	48,782
				SP075005MD794	25,280
				SP075005ME419	29,364
	ANALYTICAL RESEARCH, LLC	Maryland	Bowie	N0002405C4302	279,236
	ANCO MACHINE CO	Alabama	Huntsville	SP075004D7767	27,874
				SP075005M9875	27,888
				SP075005MB750	55,825
				W52H0905P0411	83,104

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	APPLIED MANUFACTURING & ENGINE	Florida	Lake Mary	W52H0905C0144	203,580
	APPROVED SAFETY PRODUCTS, INC	New York	Long Island City	W52H0905P0212	48,000
	ARCADIA SUPPLY INC	New York	Albany	W911PT04A0005	90,838
				W911PT05P0504	26,265
	ARCO SALES CO	Penn	Philadelphia	SP075005V7439	35,696
	ARES INC	Ohio	Port Clinton	W91ZLK05P1089	34,997
				W91ZLK05P1265	38,990
				W91ZLK05P1505	41,610
	ARLINGTON MACHINE & TOOL CO	New Jersey	Fairfield	SPM76005M1860	51,238
	ARMALITE INC	Illinois	Geneseo	W911RX05P0063	243,040
	ARMSTAR CORPORATION	Virginia	Falls Church	SP075001D7263	248,854
	ARNOLD DEFENSE AND ELECTRONICS	Missouri	Arnold	DAAE2002D0094	2,330,924
	ARTIC TOOL & ENGINEERING CO ,	Rhode Islid	Warwick	W52H0905D0202	86,320
	ASSOCIATED AIRCRAFT SUPPLY CO	Texas	Dallas	SP075005D5H04	26,783
	AST ASSOCIATES INC	Conn	Old Saybrook	W52H0905D0318	98,372
				W52H0905P0100	32,749
	ATCHISON CASTING CORPORATION	Kansas	Atchison	W911PT05C0001	364,844
				W911PT05C0005	111,836
				W911PT05C0008	486,192
				W911PT05C0024	486,192
				W911PT05C0028	227,168
				W911PT05C0029	611,688
	ATK TACTICAL SYSTEMS COMPANY L	W Virginia	Mineral	F0863502C0049	29,039,153
	ATLANTIC DIVING SUPPLY, INC	Virginia	Virginia Beach	GS07F6072P	121,355
	AUSTIN PRECISION PRODUCTS INC	Texas	Leander	N0024405P3370	180,894
				W91CRB05P0178	47,965
	AVALON INDUSTRIES INC	Maryland	Baltimore	W52H0905C0185	347,000
	AVOT, LLC	New Jersey	Englewood	W52H0905P0543	68,200
	AXION CORPORATION	Alabama	Huntsville	W56HZV04D0007	2,747,816

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	AXSUN TECHNOLOGIES INC	Mass	Billerica	W15QKN05C0623	692,611
	AZURE BLUE INC	Nevada	Sparks	SP075005M9658	243,615
	B & B PRECISE PRODUCTS, INC	Maine	Benton	W52H0905D00129	162,750
				W52H0905P0221	32,092
	B & J MACHINE COMPANY	Kentucky	Williams	W52H0904P0012	35,970
	B A E SYSTEMS LAND & ARMAMENTS	Alabama	Anniston	SP075002D9724	770,911
		California	San Diego	N6339404D4000	459,857
		Hawaii	Honolulu	N6339404D4000	9,083,287
		Kentucky	Louisville	N0002404G4146	40,975,572
				N6339404D4000	661,363
		Minnesota	Minneapolis	DAAE3002C1079	404,102
				N0002401C4101	3,617,678
				N0002499C5206	44,164,231
				N0010401GA405	100,824
				N6339404D4000	560,007
		Penn	East York	DAAE3003D1003	2,345,988
			York Furnace	DAAE3003D1003	1,484,071
	B E MEYERS & CO INC	Washington	Redmond	GS07F0132D	81,014
	B&H MACHINE WORKS	Virginia	Front Royal	W52H0905D0163	303,000
	B-K MANUFACTURING CO, INC	Alabama	Arab	W52H0905D0181	61,409
	BADGER ORDNANCE	Missouri	North Kansas City	N0016405P1857	38,285
	BADGER TRUCK CENTER, INC	Miss	Camp Shelby	W9127Q05P0051	27,900
		Wisconsin	Milwaukee	W52H0905D0271	1,581,250
	BAE SYSTEMS CONTROLS INC	New York	Johnson City	W52H0905D0065	550,000
	BAE SYSTEMS INERTIAL PRODUCTS,	Conn	Cheshire	W52H0905D0139	1,644,738
	BAE SYSTEMS INFORMATION AND EL	N.H.	Nashua	W15P7T04D0055	3,184,500
	BAE SYSTEMS INTEGRATED DEFENSE	Texas	Austin	N0038305PN050	80,070
				W58RGZ04C0051	136,974
	BAE SYSTEMS LAND & ARMAMENTS L	Kentucky	Louisville	N0010402G0308	58,835
	BAR-STO PRECISION MACHINE	Virginia	Quantico	M6785405M1028	26,400

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	BARRETT FIREARMS MFG INC	Tennessee	Murfreesboro	DAAE3003C1128	8,681,808
				W52H0904C0192	1,132,000
				W52H0905P0277	63,782
	BARRONCAST INC	Michigan	Oxford	W911PT05C0011	154,145
				W911PT05P0349	26,248
				W911PT05P0500	37,609
	BARTMEX PRECISION MACHINING	California	Santa Clara	SP070005M7232	35,550
				SP075005M9308	32,775
	BASIC RUBBER AND PLASTICS CO ,	Michigan	Walled Lake	DAAE2001D0074	286,123
				SP075003D7828	256,262
				SP075004D7930	93,450
	BEAMHIT L L C	Missouri	Fort Leonard Wood	GS03F5026C	115,360
	BEAVER AEROSPACE & DEFENSE INC	Michigan	Livonia	W52H0905C0024	63,678
	BELL AEROSPACE SERVICES INC	New Jersey	Boonton	N0038302G014G	70,000
				N0038303G002B	1,137,503
	BELL HELICOPTER TEXTRON INC	Texas	Fort Worth	N0038303G001B	1,226,404
				N0038303G002B	200,000
	BEMSCO INC	Utah	Salt Lake City	W52H0904D0075	114,300
	BENCHMADE KNIFE CO INC	Oregon	Oregon City	SP074002D1032	3,657,406
	BEOWOLF CORPORATION	Alabama	Huntsville	SP075005D7667	57,645
				SP075005MD028	63,481
	BERETTA USA CORP	Maryland	Accokeek	M6785405C1047	1,889,992
				W52H0905C0033	415,740
				W52H0905C0130	6,541,656
				W52H0905C0166	581,731
				W52H0905C0192	359,526
				W52H0905D0223	163,266
				W52H0905D0233	3,682,376
				W52H0905D0262	932,698
				W52H0905D0284	354,287
				W52H0905D0296	320,260
	BERTOT INDUSTRIES INC	New Jersey	Morristown	SP075005MG032	97,704

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	BEST TOOL & MANUFACTURING CO	Missouri	Kansas City	DAAE2003D0166	115,750
				M6700405P1132	895,000
				W15QKN05C1217	2,752,136
				W52H0905C0071	7,089,690
				W52H0905D0067	289,500
				W52H0905D0108	1,356,010
	BIANCHI INTERNATIONAL	California	Temecula	SP074004D5L24	40,904
				SP075004VV851	36,005
				SP075005ME648	38,180
	BIW CABLE SYSTEMS	Mass	Franklin	N0010405CTM17	249,840
	BLACKHAWK PRODUCTS GROUP, LLC	Virginia	Norfolk	SP073005DE019	45,278
	BLAKE & PENDLETON, INC	Virginia	Fairfax	M6700405P0816	36,156
	BLUE CHIP MANUFACTURING & SALE	Ohio	Columbus	SP075005D7469	33,457
				SP075005M0337	57,372
				SP075005M3137	90,568
				SP075005M3260	44,346
				SP075005M9633	111,120
	BOEING COMPANY, THE	Florida	Fort Walton Beach	FA852005C0021	552,520
	BOGGS & ASSOCIATES, INC	Ohio	Columbus	SP075005MG632	40,950
	BOOZ ALLEN HAMILTON INC	Virginia	McLean	GS23F0025K	457,387
				GS23F9755H	796,206
	BORISCH MANUFACTURING CORP	Michigan	Grand Rapids	DAAE2003D0050	29,333
	BOTACH TACTICAL	Miss	Camp Shelby	W911SE05P0256	33,600
	BRASHEAR LP	Penn	Pittsburgh	DAAE2001C0123	254,931
	BREAK-FREE INC	Florida	Jacksonville	DAAE2002D0041	173,145
				W52H0905P0733	43,708
	BRENNER METAL PRODUCTS CORP	New Jersey	Wallington	SP075005M9722	25,894
	BRIGADE QUARTERMASTERS, LTD	Georgia	Kennesaw	GS07F0554N	26,137
	BROWNELLS, INCORPORATED	Iowa	Montezuma	W52H0906C0277	2,655,862
	BUJE WHOLESALE SUPPLY, LTD	Texas	Boerne	SP060005DBP23	26,652
	BURKE PRODUCTS INC	Ohio	Xenia	SP075005ME207	62,061

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	BUSHMASTER FIREARMS INC	Maine	Windham	W52H0904P0608	1,671,049
				BUSHNELL SPORTS OPTICS	57,886
	C A E SOLUTIONS CORP	California	Fremont	DAAE3001C1099	50,000
	C E I INC	New Jersey	Pitman	SP075005C3617	45,990
				SP075005MG089	84,847
	C M ENGINEERING INC	Indiana	Dugger	N0010403DL001	299,723
				N0010404DL003	137,301
				N0016405P0922	99,720
				N0016405P1220	40,414
	C R DANIELS INC	Maryland	Ellicott City	SP075005ME472	56,889
	C V TOOL COMPANY INC	Conn	Southington	W911PT05C0026	123,271
				W911PT05P0135	118,618
	CADILLAC GAGE TEXTRON	California	Santa Clarita	W52H0905D0335	910,629
	CADILLAC GAGE TEXTRON, INC	Louisiana	New Orleans	SP074005MLF01	25,739
				SP075000D9734	604,189
				SP075005MB023	47,546
	CALABRESE & SONS INC	Penn	Mechanicsburg	SP075005MG325	26,000
	CAMILLUS CUTLERY CO	New York	Camillus	SP074004D5B52	56,349
				SP074004D7885	341,274
	CANADIAN COMMERCIAL CORPORATIO	CANADA		DAAA2203D0004	241,800
				DAAA2203D0006	178,925
				DAAE2001D0097	674,600
				DAAE2002D0074	1,677,000
				DAAE2002G0002	1,476,300
				M6700405C0011	442,318
				N0016401D0025	4,932,148
				N0016404D4833	59,500
				SP070003D9703	1,638,673
				SP090003D9703	46,360
				W15QKN05C1223	145,650
				W52H0904D0161	611,098
				W911PT05D0004	449,800
				W911PT05P0353	99,840
	CAPCO INC	Colorado	Grand Junction	W15QKN04C1084	2,176,021
				W15QKN05C0455	4,218,142

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	CARLETON TECHNOLOGIES INC	Florida	Tampa	N0010405PLA95	79,066	
				N0010405PLA97	41,498	
				N0010405PLC14	28,803	
	CAROB, INC	Arkansas	Van Buren	DAAE2003D0066	2,106,263	
	CENTER INDUSTRIES CORPORATION	Kansas	Wichita	DAAE2002F0022	21,445,760	
	CENTRAL CITY MANUFACTURING INC	Iowa	Central City	SP075004D7810	69,484	
	CERINI, J P TECHNOLOGIES INC	Penn	Philadelphia	W52H0905C0182	156,800	
	CHAUTAQUA COUNTY CHAPTER, NYSA	New York	Jamestown	SP075005F0105	31,016	
	CHECK-MATE INDUSTRIES INC	New York	Wyandanch	W52H0904F0018	1,849,819	
				DAAE2000D0123	5,855,014	
				DAAE2002D0106	1,010,709	
				W52H0905C0135	378,800	
				W52H0905D0196	25,900	
				W52H0905D0308	335,500	
				W52H0905P0437	27,300	
	CHESAPEAKE STRATEGIES GROUP IN	Maryland	Annapolis	GS07F0222M	94,201	
	COAST METAL CRAFT, INC	California	Compton	W911PT04C0014	33,195	
	COASTAL ENTERPRISES OF JACKSON	N Carolina	Jacksonville (MCAS)	SP075005F0119	190,577	
	COLT CANADA CORPORATION	CANADA		SP075005ME411	39,869	
	COLT DEFENSE LLC	Conn	Hartford	DAAE2003D0191	4,521,064	
				FA527005P0199	72,800	
				HHM40205M0311	117,694	
				W15QKN05C1156	277,102	
				W52H0904D0088	104,999,070	
				W52H0905C0125	52,500	
				W52H0905P0233	336,815	
				W52H0905P0281	42,714	
				W52H0905P0363	787,539	
				W52H0905P0476	89,250	
				W52H0905P0502	1,485,000	
				West Hartford	F0960301M0923	31,284

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	COLT DEFENSE LLC	Conn	West Hartford	N0016405D4875	730,951
				N0016405P0408	86,800
				SP075005ME057	98,298
				SP075005ME647	42,000
	COLT'S MANUFACTURING COMPANY L	Conn	Hartford	N0016404D4826	1,459,268
				N0016405D4855	706,477
	COMMERCIAL & MILITARY SYSTEMS	Georgia	Augusta	SP075005V2312	26,984
	COMMERCIAL MACHINE	Mass	Ludlow	SP075005MG340	28,500
				SP075005MG578	29,600
	COMMONWEALTH TRADING CORPORATI	Florida	Clearwater	W52H0904P0298	30,600
	COMMUNITY COUNSELING CENTERS O	Illinois	Chicago	SP075005F0102	27,188
				SP075005F0114	52,050
	COMPTECH CORPORATION OF MARYLA	Maryland	Rockville	SP075005ME729	26,712
				SP075005MG385	71,604
				W52H0905C0187	324,450
	CONNECTEC COMPANY INC	California	Irvine	DAAE2002D0071	587,504
				DAAE2003D0166	719,750
				SP074005D5A46	27,761
				W52H0904D0078	287,450
				W52H0904D0137	77,330
				W52H0904P0619	82,800
				W52H0905C0199	99,900
				W52H0905C0234	214,320
				W52H0905D0055	121,215
				W52H0905D0075	443,071
				W52H0905D0148	171,370
				W52H0905D0266	94,406
				W52H0905P0064	31,914
				W52H0905P0516	44,604
				W52H0905P0664	29,190
	CONTAINER MACHINERY INC	Texas	Fort Worth	SPM76004M0823	41,376

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	CONTINENTAL MACHINE PRODUCTS I	Mass	Boston	DAAE2002D0092	88,899
	CONTRACT FABRICATION & DESIGN,	Texas	Princeton	SP075005MD891	31,598
				SP075005ME282	28,720
				SP075005ME440	33,955
				SP075005MG286	27,880
				W52H0905C0081	154,338
				W52H0905C0191	111,308
				W52H0905P0525	39,604
	COOPER SPLIT ROLLER BEARING CO	Virginia	Virginia Beach	N0010405VTT46	36,000
	CORONET MACHINERY CORP	New York	Yonkers	N0016405P2219	83,820
				SP075004D7787	77,080
				W52H0904P0488	31,064
				W52H0905C0294	177,925
	CORPORATION FOR THE PROMOTION	Alabama	Anniston	M0026405P0278	150,000
	COUNTY OF STAFFORD	Virginia	Prince William	M0026407A0005	25,000
	CREED-MONARCH, INC	Conn	New Britain	SP075005MD748	52,266
				SP075005ME718	27,800
				SP075005MG307	29,716
				SP075005MG439	28,191
	CTC ENTERPRISE VENTURES CORPOR	Penn	Johnstown	N0016405P1607	44,400
	CU ENTERPRISES, LTD	California	Santa Barbara	SP075005MD049	37,816
	CURTISS-WRIGHT CONTROLS INC	Mass	Littleton	DAAE0703CN148	110,000
				DAAE2002G0004	3,871,241
				W52H0905C0178	175,032
	CUSTOM TECHNOLOGY OF AMERICA,	S Carolina	Swansea	DAAE2001D0024	605,150
	CYTEC ENGINEERED MATERIALS INC	Texas	Greenville	W911PT05P0038	81,261
	D & E TOOL AND MACHINE, INC	Oklahoma	Tulsa	SPM74005D5C60	49,125
	D & M MIDWEST, LLC	Michigan	Cedar Springs	SP075005MD692	52,005
	D & R MACHINE CO INC	Penn	Langhorne	W52H0904P0423	40,007
	D K ENTERPRISE INC	N Carolina	Fayetteville	GS06F0036L	81,288

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	D R S TEST MANAGEMENT INC	Alabama	Huntsville	DAAE2003G0001	9,716,874
	D S ARMS, INCORPORATED	Illinois	Lake Barrington	N0016405P1855	29,848
	D WHEATLEY ENTERPRISES, INC	Maryland	Aberdeen	W52H0905C0117	1,395,813
	DAISY MANUFACTURING COMPANY, I	Arkansas	Rock Spring	M0068105P0911	40,481
	DANIEL D ROSS	Ohio	Medina	M6785405M1067	37,895
		Virginia	Quantico	M6785405M1020	49,895
	DANIEL DEFENSE INC	Georgia	Savannah	N0016405D4864	137,725
	DAVIDSON FABRICATING CO INC	Penn	Broomall	SP074003D7691	45,034
	DAVINGTON ASSOCIATES INC	Florida	Fort Walton Beach	N6893605P0485	90,000
	DCX-CHOL ENTERPRISE INC	Illinois	Pekin	SP075005C3580	184,470
				SP075005C3567	243,651
	DEFENSE SOLUTIONS GROUP, INC	Texas	Fort Worth	W9124L05P0246	44,812
	DEFENSE TECHNOLOGY CORPORATION	Wyoming	Casper	W15QKN05P0471	42,895
	DELTA ALTAMA CORPORATION	Georgia	Atlanta	W91CRB04D0031	190,421
	DELTA INDUSTRIES INC	Idaho	Idaho Falls	SP075004D7808	48,365
	DELTA PRODUCTS & DEVELOPMENT C	Michigan	Holland	W52H0904D0076	58,280
	DELTECH MANUFACTURING INC	Kentucky	Louisville	N6339405C4004	317,064
	DELTON, INC	N Carolina	Fort Bragg	H9223605P4185	34,170
	DEMCO GROUP INC	Florida	Rockledge	SP075004C3385	84,803
				SP075005MG278	46,905
				W52P1J05P0010	50,150
	DESTINY MACHINE SHOP	Missouri	Archie	W58RG205C0031	249,905
	DETEK INC	Maryland	Temple Hills	W31P4Q05P0429	120,210
	DH INSTRUMENTS, INC	Arizona	Phoenix	W911S005P1248	498,192
	DIEBOLD, INCORPORATED	Ohio	Canton		
	DIETERS CLOSE QUARTERS DEFENSE	Maryland	Trappe	H9224005P0116	70,972
	DILLON AERO INC	Arizona	Scottsdale	DAAE2002D0066	4,859,110
				N0016404D4830	1,407,995
				N0016405P1081	98,580

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	DILLON AERO INC	Arizona	Scottsdale	N0016405P1839	53,388
				N0016405P2110	52,704
				N0016405P2269	88,292
				SP074003D9753	245,784
				SP075005ME458	36,660
				SP075005MG445	30,420
				W52H0905C0053	199,170
				W52H0905P0774	484,524
				FA852005C0018	56,000
	DISAN ENGINEERING CORPORATION	Oklahoma	Nowata		
	DOL IMD CLASS 9 BRANCH	Washington	Fort Lewis	SP075004D1196	309,106
	DRESSER ARGUS INC	New York	Brooklyn	SP075099D7570	42,680
	DRIVE LINE INC	Florida	Sunrise	SP075004D7932	104,370
	DUOTECH SERVICES, INC	N Carolina	Franklin	N0038305CB015	120,615
	E G PRECISION MFG CORP	New York	Germantown	W52H0905P0079	129,060
	E W YOST CO INC	Penn	Center Square	DAAE2003D0138	157,887
				W52H0904D0087	40,722
				W52H0904P0661	53,124
				W52H0905C0006	89,080
W52H0905C0170				123,480	
W52H0905D0081				93,423	
W52H0905D0083				47,232	
W52H0905P0029				66,120	
W52H0905P0104				31,410	
W52H0905P0246				35,380	
W52H0905P0532				99,328	
N0016405P1853				49,436	
EAGLE INDUSTRIES UNLIMITED INC				Missouri	Fenton
EAST-WEST INDUSTRIES INC	New York	Ronkonkoma	N0038303G037B	36,138	
EDO ARTISAN INC	New Jersey	Parsippany	SP074004D7895	430,680	
			SP075005M9087	86,106	
EDO CORPORATION	New York	North Amityville	SP074004D7867	105,800	
EDSON TOOL CO OF LONG ISLAND,	New York	West Babylon	SP075004MG581	85,068	
EFW INC	Texas	Fort Worth	DAAE2002G0006	9,442,929	
EHMKE MANUFACTURING CO INC	Penn	Philadelphia	SP075002D7925	53,465	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	EHMKE MANUFACTURING	Penn	Philadelphia	SP075004D7724	183,638
				SP075003D7823	119,555
	EILERS MACHINE & WELDING, INC	Nebraska	Lexington		
	ELDORADO CARTRIDGE CORPORATION	Nevada	Boulder City	N0016405P1311	28,638
				N0016405P1983	180,600
	ELECTRO-LINE INC	Ohio	Dayton	SP074003D3100	34,957
	ELECTRO-MINIATURES CORP	New Jersey	Moonachie	SP075005V1115	27,570
	ELECTRO-TEC CORP	Virginia	Blacksburg	W52H0905C0051	4,363,570
	ELEIT TECHNOLOGY INC	Alabama	Woodville	W52H0905D0155	27,103
	ELLWOOD NATIONAL FORGE COMPANY	Penn	Irvine	W911PT04D0003	2,448,720
				W911PT06C0003	125,700
				W911PT06C0016	336,672
				W911PT06C0019	185,500
				W911PT06C0021	1,803,870
				W911PT06D0005	1,296,750
				W911PT04D0001	271,000
				ELLWOOD TEXAS FORGE LP	Texas
	ENGINEERED AIR SYSTEMS, INC	Missouri	St. Louis	M6700405P0804	1,365,098
	ENIVATE, INC	New York	Orchard Park	W52H0904D0139	70,014
	ENSIGN-BICKFORD AEROSPACE & DE	Conn	Simsbury	DAAE3003C1080	210,063
	ENVISION	Colorado	Peterson AFB	GS07F0112N	48,201
				SP075000D7730	58,023
				W52H0905F0019	234,311
				W911RX05F0045	53,120
	ENVISION XPRESS INC	Kansas	Wichita	FA462005MA132	40,766
	EOTECH ACQUISITION CORP	Michigan	Ann Arbor	GS07F0182L	191,488
				N0016404D4832	2,594,946
	ERIC ENGLER	Conn	Danbury	W911SG05P1078	45,066
				W911SG05P1102	28,003
	ESSEX INDUSTRIES, INC	Missouri	St. Louis	W52H0904D0054	1,063,071
	ESSEX P B & R CORP	Illinois	Edwardsville	W9113M05P0050	999,946
	EUR-PAC CORP	Conn	Waterbury	DAAE2003P0560	25,784
				SP075005V0637	42,560
				W52H0905D0245	138,400

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	EVANS MACHINING SERVICE, INC	Penn	Clairton	DAAE2003D0137	208,309
				SP075004D7817	572,346
				SP075005D7468	199,334
				W52H0905D0316	140,000
	F A T S INC	Georgia	Suwanee	GS02F0414D	222,183
	F N MANUFACTURING LLC	S Carolina	Columbia	DAAE2000D0046	1,241,545
				DAAE2001C0120	26,288
				DAAE2001D0082	618,882
				DAAE2001D0107	1,859,195
				DAAE2001D0108	2,159,483
				DAAE2002D0038	34,600
				DAAE2003C0082	2,428,290
				DAAE2003C0100	11,886,811
				DAAE2003D0143	737,341
				DAAE2003D0171	38,994,479
				DAAE2003D0177	1,100,231
				DAAH0103C0228	161,992
				H8224405M0676	65,004
				N0010405CLA23	343,654
				N0016400D0023	602,471
				N0016402D0024	2,158,847
				N0016405D4848	180,420
				N0016405P1156	46,539
				SP075004D7816	1,670,811
				SP075004D7938	473,412
				SP075005MD836	52,545
				SP075005ME225	84,190
				SP075005MG139	36,088
				W15QKN05C0682	876,000
				W15QKN05C1105	2,370,978
				W52H0904C0090	10,709,543
				W52H0904C0127	212,063
				W52H0905C0056	681,506
				W52H0905C0115	131,432
				W52H0905C0122	16,876,904
				W52H0905C0283	52,065,090
				W52H0905D0048	16,829,526
				W52H0905D0058	54,600

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	F N MANUFACTURING LLC	S Carolina	Columbia	W52H0905D0080	7,674,681
				W52H0905D0272	5,836,500
				W52H0905D0281	6,240,780
				W52H0905P0088	85,098
				W81CRB05P0032	586,054
	F P A MANUFACTURING FACILITIES INC	California	Los Angeles	N0010405PNE05	32,130
		Penn	Ambler	W52H0905P0224	52,661
				W52H0905P0637	25,451
	FAIRFAX PRECISION MANUFACTURIN	Virginia	Sterling	SP075005M9775	66,200
	FALVO MANUFACTURING CO INC	New York	Utica	W811PT05P0452	122,968
	FINE MANUFACTURING INC	New Jersey	Lodi	SP075005D7681	151,900
				SP075005MB818	45,780
				W52H0905P5516	82,440
	FIREBRAND INC	Georgia	Fort McPherson	W811SE05P0364	44,310
	FIRST AMERICAN ENGINEERED SOLU	D.C.	Washington	W8124805M0284	49,801
	FIRST SAMCO INC	Penn	Southampton	W811S805M0212	25,725
	FLIGHT LOGISTICS, INC	California	Valencia	SP074002D1040	178,061
	FLIGHT REFUELLING LTD	UNITED KIN		N6255803G4002	475,514
				N6255805C4002	1,536,209
				N6255805P4327	36,575
				N6255805P4376	83,730
	FN HERSTAL SA	BELGIUM		H8222205D0001	658,890
				M6785405M9002	28,678
				N0001905C0032	2,084,320
				N0001905C0061	2,058,003
				N0016405P1432	191,646
				N6255805P4254	46,784
	FNH USA LLC	BELGIUM		W15QKN05C0683	178,976
		Virginia	McLean	W15QKN05C1182	307,727
				W52H0905P0666	70,791
				W8124Q05P0048	33,731
				W8124Q05P0220	96,476
	FOLDY PAC PROTECTIVE SOLUTIONS	Illinois	Itasca	SP075005MG002	52,150
				SP075005MG019	32,700
	FORCE 3 INC	Maryland	Crofton	GS35F4389G	187,458

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	FOREIGN CONTRACTOR (UNDISCLOSE)	FOREIGN		W31F4Q05XXX8	129,800
	FOSTER-MILLER INC	Mass	Waltham	N6133105C0008	1,021,117
				W31F4Q04P0307	48,220
	FRASER MANUFACTURING CORP	Michigan	Lexington	DAAE2003D0108	5,675,257
				DAAE2099D0139	414,610
				SP075005M9099	31,821
				W52H0905D0153	40,836
				W52H0905D0175	1,912,930
				W52H0905D0194	596,500
				W52H0905D0200	59,447
				W52H0905D0241	586,728
				W52H0905P0452	53,386
				W52H0905P5881	36,875
	G M J MACHINE COMPANY INC	Alabama	Wilmer	SP075005M9066	26,020
	G&R TACTICAL LLC	Virginia	South Suffolk	N0018905P1194	66,550
	GEMINI TECHNOLOGIES, INC	Idaho	Boise	M6785405M9025	31,078
				M6785405M9086	30,808
				W8124805M0390	48,081
			Eagle	W52H0905P0574	50,112
				W8124M05P0346	59,137
	GENERAL DYNAMICS ARMAMENT AND	Maine	Saco	DAAE2000D0075	10,856,625
				H8222204C0026	411,453
				W15QKN05C0821	14,737,972
				W52H0904C0218	30,917,604
		Vermont	Burlington	DAAE2001C0090	1,624,893
				N0038302G014G	2,049,418
				N0042105C0110	7,500,591
				SP074001D9732	233,443
				SP074003D9732	2,736,417
				SPM74003D9732	74,939
				W15QKN04C1086	982,523
				W15QKN05P0521	92,000
				W52H0904C0184	900,000
				W52H0904C0183	1,453,200
				W52H0904D0108	1,854,000

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	GENERAL DYNAMICS ARM/	Vermont	Burlington	W52H0905C0022	1,248,480
				W52H0905C0137	176,608
				W52H0905C0210	5,289,536
				W52H0905D0060	8,678,983
				W52H0905P0314	90,000
				W52H0905P0324	64,205
				W52H0905P0561	75,785
				W52H0905P0620	89,596
				W911W604C0048	85,000
	GENERAL DYNAMICS C4 SYSTEMS IN	Arizona	Scottsdale	DAAB0703CN001	46,099,734
		Mass	Taunton	DAAH0103D0029	11,552,420
	GENERAL DYNAMICS C4 SYSTEMS, I	Arizona	Scottsdale	DAAB0703CN001	28,984,928
				W15P7T05CF201	11,952,250
	GENERAL DYNAMICS LAND SYSTEMS	CANADA		SP070005M7635	71,148
				SP075005C3500	100,000
		Florida	Tallahassee	W52H0905C0038	1,932,950
		Michigan	Muskegon	W52H0905D0005	6,934,199
			Sterling Heights	DAAE0700E0001	62,836
				DAAE0701GN001	6,740,126
				DAAE2099C0096	428,473
				W56HZV04E0001	7,976,011
			Warren	DAAE0701CN075	155,000
		Virginia	Woodbridge	N0016405P2203	123,792
	GENERAL DYNAMICS ORDNANCE AND	Florida	Saint Petersburg	M6785405D6014	13,941,405
	GENERAL MACHINED PRODUCTS INC	Texas	Fort Worth	SP075005D5571	26,340
	GENERAL MANUFACTURING CO	Penn	Bethel Park	DAAE2002D0114	751,800
				DAAE2003D0009	226,380
				DAAE2003D0140	344,600
				DAAE2003D0162	586,160
				SP075004D7939	339,038
				W52H0904C0070	32,700
				W52H0904D0092	43,580
				W52H0904D0143	223,200
				W52H0904D0162	148,800

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	GENERAL MANUFACTURIN	Penn	Bethel Park	W52H0905C0112	250,240
				W52H0905D0091	1,294,235
				W52H0905D0113	101,010
				W52H0905D0180	339,967
				W52H0905P0267	41,160
				W52H0905P0297	89,085
	GENERAL RELIANCE CORPORATION	New Jersey	Denville	SP075005ME289	27,927
				SP075005ME423	27,710
	GENERAL SCIENTIFIC CORPORATION	Florida	Panama City	W31F4Q05P0259	40,335
	GLOCK, INC	Georgia	Smyrna	W52H0905C0238	135,490
	GOODMAN BALL INC	California	Menlo Park	SP074001D7637	83,748
	GORDON BRUSH MFG CO , INC	California	Los Angeles	W52H0904C0072	215,301
				W52H0905D0325	68,081
	GOVERNMENT CHANNELS GROUP, INC	Maryland	Fort Meade	GS35F0482N	40,005
	GPC SMALL BUSINESS	Miss	Columbus AFB	FA701205D9003	29,177
	GR DYNAMICS, LLC	Vermont	Burlington	N0016404D4802	1,249,680
	GREAT LAKES FORGE COMPANY	Illinois	Chicago	W52H0904C0202	240,606
	GREENE METAL PRODUCTS INC	Michigan	Clinton	DAAE2002A0005	88,680
				SP075005M0743	33,390
	GUARDIAN PROTECTIVE DEVICES IN	New Jersey	Gibbsboro	W911SR05C0016	102,515
	H & R PARTS CO , LLC	New York	Garden City	DAAE2002A0011	115,142
				DAAE2002D0019	598,175
				M6700405C0004	170,270
				W52H0905C0008	852,996
				W52H0905C0035	131,688
				W52H0905C0067	82,622
				W52H0905C0189	25,708
				W52H0905C0215	75,850
				W52H0905D0068	217,138
				W52H0905D0090	64,276
	H SQUARED INC	Virginia	Quantico	GS07F5602P	494,738
	HAMILTON ASSOCIATES INC	Maryland	Owings	M8700405P1030	385,823

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	HAMILTON SUNDSTRAND CORPORATIO	Conn	Windsor Locks	F3460102G0004	45,912
				HANS J VANG	Arizona
	HAYES TOOLING & PLASTICS INC	Kansas	Olathe	SP075002D7882	41,172
	HECKLER & KOCH DEFENSE, INC	Virginia	Sterling	FA251705P6207	29,750
				M8785405M9000	91,368
				N0016405D4836	747,192
				N0016405M0025	61,466
				N0016405P0445	34,346
				W52H0905C0196	4,650,000
				W52H0905C0255	293,868
				W52H0905P0455	27,944
				W52H0905P0460	28,964
				W52H0905P0739	33,900
	HECKLER & KOCH INC	Virginia	Arlington	HMM40205M0238	89,499
				HMM40205M0367	70,250
			Sterling	W15QKN05C1250	331,774
	HECTOR AYALA	Texas	El Paso	W911SG05P1090	35,842
	HEIMER MANUFACTURING LLC	Texas	San Antonio	DAAE2003C0119	69,327
	HELLFIRE SYSTEMS LIMITED LIABI	Florida	Orlando	W31F4Q05C0197	328,109
	HER-FIC EN LIQUIDATION SA	BELGIUM		W52H0905C0048	1,528,800
				W52H0905C0213	980,000
				W52H0905P0626	78,750
	HERSTAL SA	BELGIUM		W31F4Q05C0046	138,202
				W31F4Q05C0211	549,738
				W31F4Q05C0283	531,144
				W31F4Q05D0030	84,968
				W31F4Q05D0033	139,314
				W31F4Q05P0064	79,366
				W31F4Q05P0099	45,364
				W31F4Q05P0107	43,710
				W31F4Q05P0247	76,728
				W31F4Q05P0274	43,044
				W31F4Q05P0291	65,884
				W31F4Q05P0622	25,938

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	HEUS MANUFACTURING COMPANY, IN	Wisconsin	New Holstein	W52H0905P0379	40,769
	HILL COUNTRY LEATHER, INC	Texas	Brownwood	SP075005MG306	42,478
	HOLLAND CORPORATION, J HENRY	Vermont	Vergennes	N0010405VTN78	58,131
	HONEMATIC MACHINE CORPORATION	Mass	Boylston	W911QX05P0008	84,144
				W911QX05P0916	40,859
	HONEYWELL INTERNATIONAL INC	Indiana	South Bend	DAAE0703CN191	728,435
	HOOSIER INDUSTRIAL SUPPLY, INC	Indiana	Goshen	SP075005ME363	27,730
	HOPEWELL DESIGNS INC	Georgia	Alpharetta	W31P4Q05P0417	64,800
	HORUS VISION LLC	California	San Bruno	W9124805M0242	107,999
	HUPP ASSOCIATES, INC	Indiana	New Haven	W52H0905C0094	53,850
	HYDRAULICS INTERNATIONAL INC	Montana	Billings	N0010405PLC61	26,498
	IMC MAGNETICS CORP	Arizona	Tempe	SP074003D7855	153,906
	IMCO INC	Alabama	Mendiantville	SP074001D7868	73,780
	INDUSTRIAL CONSORTIUM INC	Penn	Reading	SP076004M5661	48,064
	INDUSTRIAL MACHINING AND DESIG	Ohio	Youngstown	DAAE2003D0107	1,891,141
	INFORMATION NETWORK SYSTEMS, I	Penn	Doylestown	GS10F0150N	157,376
	INSIGHT TECHNOLOGY INC	N.H.	Londonderry	N0016404D4840	5,018,437
				N0016405P0461	65,886
				N0016405P1193	249,880
				N0016405P1830	79,040
				N0016405P1920	46,844
				W15QKN04C1147	17,572,574
	INTEGRATED PROCUREMENT TECHNOL	Conn	Norwalk	W56HZV05C0401	119,075
	INTEGRATING SYSTEMS & TECHNOLO	Indiana	Crawfordsville	N0016405P0542	77,320
	INTERGRAPH CORPORATION	Alabama	Madison	GS35F0011K	99,350
	INTERNATIONAL ENTERPRISES INC	Alabama	Talladega	FA852005C0019	424,356
				FA852005M0015	99,000

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	INTERNATIONAL TRADING ESTABLIS	JORDAN		W56HZV05D0126	42,161,610
	IPPOLITO, JAMES & COMPANY OF C	Conn	Bridgeport	W52H0905P0420	45,910
	TROBOT CORP	Mass	Somerville	W31P4Q05P0351	118,015
	ISLAND COMPONENTS GROUP, INC	New York	Bohemia	W52H0905C0001	1,508,288
	ITT INDUSTRIES, INC	Indiana	Fort Wayne	DAAB0700DC251	1,330,888
	J G B ENTERPRISES INC	New York	Liverpool	SP075005M9076	25,954
				SP075005V2123	31,038
				SP078005D5A47	85,615
				W52H0905C0129	226,548
				W52H0905D0027	143,080
	J G W INTERNATIONAL LTD	Virginia	Quantico	M6700405P0808	221,900
	J K M MANUFACTURING INC	Alabama	Eufaula	DAAH0103C0158	124,752
				N0038304CN130	499,992
				N0038305CN003	549,976
				N0038305CN026	760,425
	JAMES MCMATH	S Carolina	Ridgeland	SP075005D7525	39,957
	JANET'S CONSULTING, LLC	New Jersey	Picatinny Arsenal	W15QKN04C1105	97,226
	JEFFREY ALAN MANUFACTURING & E	Michigan	Goodells	SP075005MC122	39,788
	JGILS, LLC	Louisiana	Slidell	SP075005MG411	26,450
				SP075005V0421	48,936
	JKS INDUSTRIES, INC	Florida	Mulberry	W52H0905D0205	496,372
	JO-BAR MFG CORPORATION	Ohio	Bedford	DAAE2003D0097	114,899
	JOHN KNOELL AND SON INC	Penn	New Britain	W52P1J05P0011	26,361
	JOSEPH GADDINI	Georgia	Evans	W15QKN05C1157	713,963
			Evansville	N0024405P2061	59,967
	JTM CONCEPTS INC	Illinois	Rock Island	W52H0904P0327	53,485
				W52H0905P0043	82,955
				W52H0905P0178	99,474
	KAEPER MACHINE, INC	Ohio	Mentor	DAAE2003D0081	518,000
				DAAE2003D0146	853,075
				DAAE2003D0154	323,258

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	KAEPER MACHINE, INC	Ohio	Mentor	W52H0905D0107	165,000
				W52H0905D0279	323,720
	KAL CALIBRE MECHANICS CORP	New York	Croton-on-Hudson	SP075005MG310	31,200
	KAMAN AEROSPACE CORPORATION	Conn	Bloomfield	N0038301G034B	29,795
KAMPI COMPONENTS CO INC	Penn	Fairless Hills	SP070003D9723	228,405	
			SP075005D0725	39,809	
			SPM70003D9723	26,883	
KAYDON CORPORATION	Michigan	Muskegon	SPM76005V2634	26,456	
			SP075005MG583	28,336	
KEHOE ASSOCIATES INC	Penn	Bridgeport	SP075005ME436	90,730	
KEYSTONE TOOL & MACHINE, INC	Penn	Carlisle	SP075004MC986	30,744	
KILGORE FLARES COMPANY LLC	Tennessee	Toone	W9124Q05P0246	99,312	
KING NUTRONICS CORPORATION	California	Woodland Hills	N0010405PAF84	34,876	
KIPCO MACHINE & TOOL INC	New York	Brooklyn	SP075005MG322	28,652	
			SP075005M0865	25,385	
			SP075005MD725	51,336	
			SP075005MG031	33,390	
KIT PACK COMPANY, INC	New Mexico	Las Cruces	W56HZV04D0229	3,840,978	
KLUNE INDUSTRIES INC	Utah	Spanish Fork City	DAAH0101D0012	26,748	
KNIGHT'S ARMAMENT CO	Florida	Titusville	N0010403DL004	1,278,847	
			M8700405P0268	510,300	
			N0016405D4872	88,350	
			N0016405M0448	64,429	
			N0016405P1266	194,016	
			N0016405P1428	41,840	
			N0016405P1804	47,815	
			N0016405P1962	73,801	
			N0016405P2088	88,787	
			N0016405P2220	120,066	
			SP075005M0873	113,280	
			SP075005MG027	46,360	
			SP075005MV026	31,462	
SP075005VB183	26,967				

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars			
Weapons	KNIGHT'S ARMAMENT CO	Florida	Titusville	SP075005VB833	65,852			
				W15QKN05C0889	304,870			
				W52H0905D0073	74,378,701			
				W52H0905P0120	163,560			
				W9124E05M0194	85,812			
				Vero Beach	N0016404D0003	1,486,827		
					N0016404D4831	981,416		
					SP074003D7716	173,039		
				KNIGHT'S ARMAMENT COMPANY	Florida	Vero Beach	M8785405M1040	682,926
				KULITE SEMICONDUCTOR PRODUCTS,	New Jersey	Leonia	GS07F5963P	48,433
				KUWAIT DYNAMICS LIMITED	KUWAIT		DAAE0701C0005	622,922
				L & M PRECISION CO INC	Georgia	Warm Springs	W52H0905C0160	183,807
				L C IND INC	N Carolina	Durham	FA486105FB524	41,808
FA480305P0263	229,723							
L R G CORP	Penn	Jeannette	M8700405P0450	34,500				
			SP075005M9172	64,560				
L-3 COMMUNICATIONS CORP	New Jersey	Budd Lake	DAAH0100C0147	393,848				
			W31P4Q05C0195	154,485				
L-3 COMMUNICATIONS TITAN CORPO	New Jersey	Picatinny Arsenal	DAAE3003C1162	220,387				
LAN-CAY, INC	Kentucky	Carrollton	DAAE2002D0109	27,600				
			DAAE2003D0170	310,548				
			W52H0905C0106	408,500				
LANSON ASSOC INC - POLYTECHNI	New Jersey	Mount Laurel	SP075005MG392	25,650				
			SPM76005M0629	98,500				
LANZEN FABRICATING INC	Michigan	Rochester	W52H0904P0633	91,162				
			SP075003D7841	339,877				
			SP075005D7439	121,199				
LANZEN FABRICATING NORTH INC	Michigan	Rochester	W52H0905P0118	43,132				
LAW ENFORCEMENT TARGETS INC	Texas	Fort Sam Houston	W9124J05P0199	124,925				
LAWMEN SUPPLY COMPANY, INC	GERMANY		W912CM05P0377	361,921				
LEE PRECISION MACHINE SHOP, IN	Alabama	Madison	SP075005C3672	226,963				

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	LEE PRECISION MACHINE	Alabama	Madison	SP075005M0022	37,270	
					W52H0904C0193	738,500
					W911PT05C0004	180,416
					W911PT05C0009	128,795
	LEKTRON INC	Alabama	Arab	W911PT05C0020	180,416	
			Hartselle			
				W911PT05C0020	180,416	
	LEUPOLD & STEVENS, INC	Oregon	Beaverton	N0016405P0407	26,974	
				W52H0905P0688	31,316	
	LEWIS MACHINE & TOOL CO	Illinois	Milan	DAAE2002D0055	196,846	
				N0016405P0164	89,250	
				N0016405P1078	53,010	
				N0016405P1631	46,710	
				N0016405P1812	29,315	
				N0016405P1856	66,750	
				N0016405P2248	39,670	
				SP075001D5780	33,644	
				W15QKN04M0372	530,419	
				W52H0904D0140	187,000	
				W52H0905C0291	498,400	
				W52H0905C0308	491,400	
				W52H0905D0006	327,000	
				W52H0905P0041	93,132	
			Milan (Township of)	N0016405P1019	81,673	
	LIGHTFORCE USA INC	Idaho	Orofino	N0016405P1250	120,059	
	LINDA ZUMBUSCH	Montana	Great Falls	SP075005MD050	41,633	
	LIONS INDUSTRIES FOR THE BLIND	N Carolina	Kinston	SP075001D0010	221,130	
				SP075005D7662	223,605	
	LITTON SYSTEMS INC	Florida	Apopka	M8785403C8004	5,295,024	
		Texas	Garland	N0016404D4839	15,232,197	
	LOC PERFORMANCE PRODUCTS, INC	Michigan	Plymouth	W52H0905A0005	31,640	
				W56HZV05C0289	2,072,000	
	LOCKHEED MARTIN CORPORATION	Arkansas	Camden	W31P4Q05C0284	525,853	
		Florida	Orlando	F0863503C0018	16,362,598	
				F0863503C0021	2,986,825	
				FA867705C0025	54,580,544	
				FA868204D0308	903,271	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	LOCKHEED MARTIN CORP	Maryland	Baltimore	N0002404C6453	36,227,780	
					N0002401C5168	229,834,881
					DAAH0100C0109	1,259,205
					W31P4Q04C0093	2,218,083
					W31P4Q05C0030	3,723,809
					W31P4Q05P0577	73,416
					W31P4Q05P0784	34,013
					GS00F0040M	124,171
					W9115F05P0094	27,601
	LOGIS-TECH	Virginia	Alexandria	GS00F0040M	124,171	
	LOTT'S PATTERN & CASTINGS INC	Georgia	North West Point	W9115F05P0094	27,601	
	LOUGHMILLER MACHINE, TOOL & DE	Indiana	Loogootee	N0016405P0683	67,160	
				N0016405P0767	44,310	
				N0016405P2236	53,250	
				N0016405P2289	99,481	
	LUMINESCENT SYSTEMS INC	New York	East Aurora	W31P4Q05C0049	101,320	
				W31P4Q05P0656	98,787	
	LYNX MACHINE TOOL CORP	New York	Bergen	DAAE2003C0026	197,568	
				W52H0905D0105	57,930	
	M/A-COM, INC	Mass	Lowell	W15P7704C0061	3,428,150	
	MAC INDUSTRIES, LLC	Utah	Salt Lake City	W52H0905C0278	76,953	
				W52H0905C0287	27,016	
	MACHINING TECHNOLOGIES INC	Maryland	Hebron	DAAE2000D0100	670,464	
				DAAE3002C1123	5,532,308	
				SP075005ME875	119,121	
				W52H0905C0041	4,455,623	
				W52H0905D0049	191,310	
				W52H0905D0127	4,413,673	
				W52H0905D0176	555,060	
	MAGNA JAMES LTD	California	Ontario	FA852005C0012	281,288	
	MAJESTIC METAL FABRICATING COM	Michigan	Mount Clemens	W52H0905C0070	149,550	
			Roseville	SP075005M9018	55,803	
	MANAGEMENT SOLUTIONS, L C	Virginia	Louisa	SP075005V1121	75,520	
	MANCHESTER ENTERPRISES	Penn	Sellersville	SP075004D6D80	26,490	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	MANDALL ARMOR DESIGN & MANUFAC	Arizona	Phoenix	FA940105P0208	74,000
	MANDUS GROUP LTD	Iowa	Long Grove	SP071105ML781	32,400
				SP071105ML783	92,810
				W52H0905C0279	150,341
MANUFACTURING SUPPORT INDUSTRI	Maryland	Salisbury	W52H0905D0322	2,051,255	
			W52H0905D0331	150,375	
MARATHON TECHNOLOGIES	Illinois	Elk Grove Village	DAAE2002D0026	1,047,150	
			DAAE2002D0052	282,316	
			SP075004D7726	71,911	
			W52H0904C0234	441,850	
			W52H0904D0133	29,303,199	
			W52H0904D0178	109,600	
			W52H0905C0154	176,100	
MAROTTA CONTROLS, INC	New Jersey	Montville	SP076003D7002	49,600	
MARTIN ELECTRONICS INC	Florida	Perry	N0016405M0020	99,993	
			N0016405M0339	91,499	
			W52P1J05P0004	43,379	
MARVIN ENGINEERING CO., INC	California	Inglewood	F0960303D0179	2,233,290	
			FA852004C0021	25,000	
			FA852005C0001	3,266,676	
			FA852005C0002	954,520	
			FA852005C0003	206,040	
			FA852005C0008	496,650	
			FA852005C0009	2,055,888	
			FA852005C0010	756,320	
			N0038304CG070	93,000	
			SP074003D7664	53,358	
			SP074004D7928	389,060	
			SP074005D5M73	26,952	
			SP075005D5M59	30,600	
			SP075005D7665	38,340	
			SP075005MD029	51,000	
			SP075005MD064	30,840	
			SP075005MD160	33,180	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars			
Weapons	MARVIN ENGINEERING CO.	California	Inglewood	SP075005MD363	26,910			
				SP075005MD736	44,730			
				SP075005MD835	36,120			
				SP075005MD937	32,550			
				SP075005MG492	73,425			
				SP075005MG538	77,924			
				SP075005MG577	65,880			
				SPM74004D7928	258,210			
				MASTER RESEARCH & MANUFACTURIN	California	San Fernando	W52H0905P0274	49,815
				MC GILL MANUFACTURING COMPANY,	Indiana	Valparaiso	SP074000D7412	65,930
				MC KEE, INC	GERMANY		W912CM05P0152	50,121
				MCDONNELL DOUGLAS HELICOPTER C	Arizona	Mesa	DAAH2301G0024	351,477
							N0016404C4813	817,494
				MCNALLY INDUSTRIES, LLC	Wisconsin	Grantsburg	W52H0904G0004	6,670,301
DAAE2003D0051	1,832,982							
FA852004C0030	311,250							
N0002402C4065	3,490,098							
N6339405C4003	452,000							
W52H0905C0198	30,680							
W52H0905D0265	328,472							
W52H0905P0039	45,560							
W52H0905P0252	49,700							
MEASUREMENT SYSTEMS INTERNATIO	Washington	Seattle	N0010404PLF36	31,424				
MED-ENG SYSTEMS INC	Georgia	Fort Gillem	GS07F9145D	515,172				
MEGGITT WESTERN DESIGN INC	California	Irvine	DAAE2002D0057	6,832,497				
			H0224104C0038	103,918				
			SP070099D9710	725,458				
			W52H0904C0122	200,000				
			W52H0905C0189	450,000				
MELSTROM MFG CORP	New Jersey	Farmingdale	SP075005ME365	73,399				
METAL CORPORATION	California	Sun Valley	W52H0905P0069	82,945				
			W52H0905P5632	93,900				
METRAVIB RDS	FRANCE		W15QKN05M0117	70,000				

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	METRO DYNAMIC SCIENTIFIC INSTR	New York	Copiague	SP075005C3636	44,570
				SP075005M9026	49,886
				SP075005ME083	57,486
				SP075005MG025	26,418
				SP075005MG063	40,726
	MICHELIN NORTH AMERICA INCORPO	S Carolina	Greenville	W56HZV05P0211	771,528
	MICROBEST, INC	Conn	Waterbury	SP075004MG632	117,880
	MIDWEST GEAR & TOOL INC	Michigan	Warren	W52H0904C0219	49,960
	MIDWEST METALS	Missouri	St. Charles	W011PT05P0527	48,879
	MILITARY SYSTEMS GROUP INC	Alaska	Fort Richardson	W012CZ05P0063	118,120
		Tennessee	Nashville	W011S705P0715	52,892
				W012CN05P0473	28,039
				W012CN05P0695	83,591
		Virginia	Fort Belvoir	W0124Q05P0105	36,698
	MILKOR USA INC	Alaska	Wasilla	M0785405C1065	1,390,571
	MILTOPE CORPORATION, A WHOLLY	Alabama	Hope Hull	DAAH0101D0060	16,483,604
	MINOWITZ MANUFACTURING COMPANY	Michigan	Roseville	W52H0904D0003	129,325
				W52H0905D0138	214,348
	MISCELLANEOUS FOREIGN CONTRACT	ECUADOR		W012CL05P2024	52,616
	MONTEREY BAY CORPORATION	Maryland	Columbia	GS03F5028C	312,952
			Ellicott City	GS03F5028C	165,890
	MOOG COMPONENTS GROUP INC	Virginia	Blacksburg	W52H0904C0065	165,912
				W52H0905C0127	542,815
	MOOG INC	New York	East Aurora	W52H0904C0054	150,418
	MORRISSEY, INC	Minnesota	Bloomington	W52H0904D0145	657,090
	MOTOR MAGNETICS, INC	New York	Lindenhurst	W52H0904D0095	364,190
	MRT INC	Mass	Longmeadow	SP075004C3392	83,500
				SP075004D7719	36,785
				SP075005MG091	39,207
	MSC SOFTWARE CORPORATION	New Jersey	Picatinny Arsenal	W15QKN05M0030	39,640

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars		
Weapons	MUNITIONS TECH INT LLC	Wyoming	Wapiti	W15QKN05P0161	91,210		
				W15QKN05P0530	97,850		
	NAPCO INTERNATIONAL LLC	Minnesota	Hopkins	DAAE2002D0039	43,441		
	NARODZONEK, NORMAN S	Michigan	Macomb	SP075005M9569	126,750		
	NAVAL SURFACE WARFARE CENTER,	Indiana	Crane	SP075905PC382	31,900		
				Kentucky	Louisville	SP075905PC391	40,500
						SP075905PC394	49,000
	NESTOR SALES LLC	Florida	Largo	SP070003D9722	319,152		
				SP074004D5D46	25,746		
				SP075004D7875	139,529		
				SP075004D7925	302,188		
				SP075005D7458	32,505		
				SP075005D9720	35,780		
				SPM70003D9722	84,824		
				SPM70005V0483	46,487		
	NET SHAPES, INC	California	Ontario	SP075005C3674	180,477		
	NEW ERA CONTRACT SALES INC	Washington	Tacoma	SP050004D9732	39,870		
				SP075004D7943	155,522		
				SP075004D9732	157,318		
	NICO-PYROTECHNIK HANNS-JURGEN	GERMANY		N0016405D4858	159,720		
	NIGHT VISION EQUIPMENT CO, INC	N Dakota	Minot AFB	GS07F9474G	205,777		
	NMC, INC	Indiana	Dugger	N0016405M0231	72,000		
				N0016405P0682	147,451		
				N0016405P2041	62,605		
				SP075005D7887	29,218		
				W52H0904D0079	182,510		
				W52H0904P0663	39,790		
				W52H0905D0146	84,434		
				NOBLES MANUFACTURING INC	Wisconsin	Saint Croix Junction	SP075005ME531
				SP075005V4103	28,778		
				SP075005VB457	28,083		
			St. Croix Falls	SP074001D7800	55,329		
				SP075005ME203	81,257		

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	NOBLES MANUFACTURING	Wisconsin	St. Croix Falls	SP075005ME428	28,590	
				SP075005V7810	39,143	
				SP075005V7844	31,758	
				SP075005VE453	33,582	
NORGON, L L C	Virginia	Springfield	N0016405P2109	110,823		
NOROTOS INC	California	Santa Ana	M8740005P0191	85,137		
NORTH ALABAMA COMPOSITES CO IN	Alabama	Rogersville	N0016405P0209	52,500		
NORTHROP GRUMMAN INFORMATION T	Virginia	McLean	GS35F4606G	203,385		
NORTHROP GRUMMAN SYSTEMS CORPO	California	Sunnyvale	SP070003G0001	53,252		
			Florida	Miami	N0002402C8324	8,775,725
			Maryland	Annapolis	N0010404GA303	371,057
			Linthicum Heights	FA882005C3008	1,105,144	
O F MOSSBERG & SONS INC	Conn	North Haven	N0016405D4835	304,790		
			W52H0905C0078	2,668,990		
			W52H0905C0228	1,382,699		
			W52H0905D0135	345,918		
O K TOOL & DIE CO	New Jersey	Williamstown	DAAE2001D0048	86,432		
			SP075005M9891	25,218		
			W52H0904C0131	105,550		
O P S INC	California	Shingletown	N0016405M0429	50,625		
	Colorado	Fort Carson	W911RZ05P0281	130,000		
	W911RZ05P0378	85,000				
O'GARA-HESS & EISENHARDT ARMOR	Ohio	Fairfield	W912CN05P0722	215,724		
			W912CN05P0726	54,314		
OCEAN OPTICS INC	Florida	Dunedin	W911QX05P0964	85,000		
OFFICE DESIGN GROUP INC	Miss	Camp Shelby	GS29F0046N	95,700		
OKAY INDUSTRIES INC	Conn	New Britain	DAAE2003C0009	9,827,600		
ON TIME TOOLING	Tennessee	Pulaski	N0016405P2174	54,901		
ONODI TOOL & ENGINEERING CO	Michigan	Melvindale	SP075005M9358	25,000		
ONTARIO KNIFE CO	New York	Franklinville	SP070005M7851	57,609		
			SP075005D5M12	25,668		
			SP075005D7873	178,131		
			SP075005MD912	95,984		

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	ONTARIO KNIFE CO	New York	Franklinville	SP075005ME842	62,244
				SP075005MG617	49,388
				SP075005V1912	71,808
				W52H0905C0265	797,000
ORLOTRONICS CORPORATION	Penn	Bridgeport	N0016405M0329	26,880	
			SP075005MG155	62,300	
OSHKOSH TRUCK CORPORATION	Wisconsin	Oshkosh	W52H0905C0183	2,448,600	
OTIS PRODUCTS INC	New York	Lyons Falls	GS07F0383M	28,018	
			SP073002DE001	51,910	
			SP075000D7782	3,595,536	
			SP075002D7885	120,466	
			SP075003D8B66	38,216	
			SP075004D8E30	99,959	
			SP075005D5M25	97,500	
			SP075005MD731	34,333	
			SP075005MD967	40,067	
			SP075005ME428	42,347	
			SP075005ME559	249,988	
			SP075005ME646	249,988	
			SP075005MG077	99,958	
			SP075005MG104	99,958	
			SP075005VA740	29,835	
			SP075005VC930	28,634	
			SP075005VE062	49,335	
			SP075005VE573	48,750	
			SP075005VF110	36,911	
			W15QKN04M0354	808,339	
W15QKN05C0446	30,000				
OTO MELARA S.P.A.	ITALY		N8339405P0533	34,682	
OTO MELARA SPA	ITALY		N0010402G0307	53,758	
			N8255805P4335	55,898	
			SP075005M9649	65,840	
OWYHEE GROUP COMPANIES	Idaho	Eagle	GS07F0370M	38,297	
	Louisiana	Fort Polk	GS07F0370M	311,513	
OXNARD PRECISION FABRICATION	California	Oxnard	SP075004D7003	173,490	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	OXNARD PRECISION FABR	California	Oxnard	SP075005VG093	26,080
	P T E INC	New York	Copiague	DAAE2002D0079	334,705
				SP075005MD671	29,798
				SP075005MG083	27,168
PACIFIC COAST SYSTEMS, LLC	California	Fort Irwin	W9124B05M0437	54,760	
PARK-OHIO INDUSTRIES INC	Illinois	Cicero	W911PT05P0368	27,456	
PENNSYLVANIA COLD DRAWN LLC	Penn	Beaver Falls	N6893605P0187	47,599	
PMB, INC	Missouri	Poplar Bluff	W52H0904C0182	31,750	
POLEX PRECISION MACHINING	California	Santa Clara	SP075005M9041	25,950	
POLYMER TECHNOLOGIES INC	New Jersey	Clifton	DAAE2001D0059	1,751,924	
			W52H0905D0313	1,022,630	
POWER CONNECTOR, INC	New York	Bohemia	SP075005MG344	48,750	
PRECISION METALS CORP	New York	Bay Shore	SP070005M7314	36,765	
			SP075005M9565	28,042	
			W52H0905P0023	53,000	
			W52H0905P0311	27,375	
PRECISION REFLEX, INC	Ohio	New Bremen	N0016405P1442	238,928	
			N0016405P2211	138,380	
PRECISION REMOTES, INC	California	Point Richmond	W909MY05P0036	89,989	
PRECISION SPECIALTY CORP	Alabama	Meridianville	SP075005MG338	37,699	
PRECISION STANDARD INC	Michigan	Ferndale	SP075004D7731	120,372	
PRESCOTT AEROSPACE INC	Arizona	Prescott Valley	SP075005MG026	31,285	
PRIETO MACHINE CO, INC	Penn	Warminster	SP075005D7893	30,871	
PRIME PROJECTS INTERNATIONAL L	IRAQ		W917B605P0093	71,305	
PRODUCTION PRODUCTS MANUFACTUR	Missouri	St. Louis	W52H0905D0101	176,382	
PROMPT MACHINE PRODUCTS INC	California	Chatsworth	W911PT05D0002	66,602	
			W911PT05D0006	239,490	
			W911PT05P0241	31,750	
			W911PT05P0332	28,571	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	PRONTO TOOL & DIE CO INC	New York	Ronkonkoma	SP075005MD954	70,122
	PROTECTIVE PRODUCTS INTERNATIO	Florida	MacDill AFB	GS07F9029D	280,100
	PUROLATOR FACET INC	N Carolina	Greensboro	N6339405C4002	299,912
	PYROTECHNIC SPECIALTIES INC	Georgia	Byron	N0464A05M0112	36,985
QINETIQ, INC	UNITED KIN		W15QKN04C1072	514,699	
QUALITY TOOL & GAGE INC	Indiana	Richmond	W52H0905D0278	1,121,700	
R & D ELECTRONICS, INC	Alabama	Brownsboro	DAAH0101C0048	131,145	
			W911RQ05P0053	37,100	
R&D TOOLS SPECIALIST	California	San Jose	SP075005ME175	47,566	
R. ALKAN ET COMPAGNIE	FRANCE		W52H0904C0095	412,470	
RALEIGH LIONS CLINIC FOR THE B	N Carolina	Raleigh	W52H0904F0009	140,750	
			W52H0905F0008	87,750	
RALOID TOOL COMPANY INC	New York	Mechanicville	W911PT05P0399	49,134	
RANDOLPH COATED FABRIC INC	Arkansas	Camden	SP075002D7926	30,340	
RAYTHEON COMPANY	Arizona	Tucson	N0001903G0011	244,445	
			N0010400DZD21	1,080,436	
			N0002404C5480	92,380,612	
			M8785401C2097	880,879	
			W31F4Q04C0114	11,424,360	
			N0010402G0302	55,668	
			N0010405GA754	453,014	
			N0010499GA300	1,447,178	
			DAAE2002G0003	11,353,551	
			N0038302G018A	25,701	
			N0002404C6101	112,563,773	
			N0010402G0302	5,952,362	
			N0038304G018F	27,454	
N0042102D3073	622,312				
N0042102D3073	2,185,882				
RAYTHEON TECHNICAL SERVICES CO	Indiana	Indianapolis	DAAE3003D1010	4,386,463	
RAYTHEON/LOCKHEED MARTIN JAVEL	Arizona	Tucson	W31F4Q04C0046	97,382	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	RAYTHEON/LOCKHEED MA	Arizona	Tucson	W31P4Q05P0867	52,447
				W31P4Q05P0889	80,380
	REAL TIME LABORATORIES, LLC	Florida	Boca Raton	W52H0905P0741	57,838
	RECON/OPTICAL	Maryland	Aberdeen Prov Grnd	W15QKN05C0433	1,440,838
	REMINGTON ARMS COMPANY, INC	N Carolina	Madison	N0016405M0437	57,886
				W52H0905P0293	1,010,448
		New York	Ilion	DAAE2002D0127	924,468
				DAAE2003P0608	35,571
				W52H0905C0262	1,750,391
		Virginia	Quantico	M6785405M1021	54,171
	REMOTEC INC	Georgia	Fort McPherson	GS07F0538M	315,783
	RFD BEAUFORT INC	Ohio	Sharon Center	SP075005MG302	49,742
	RIDGE INSTRUMENTS CO , INC	Alabama	Decatur	W31P4Q05C0041	146,723
				W31P4Q05C0072	158,616
				W31P4Q05P0255	93,694
			Huntsville	W52H0905C0065	470,845
	RIDGWAY'S LTD	Alabama	Mobile	W9127804P0455	50,000
	RIMECO PRODUCTS INC	Ohio	Willoughby	SP070005M7582	35,982
				W52H0904C0115	133,020
				W52H0905D0290	202,400
	RL STONE CO , INC	New York	Syracuse	W911PT05P0029	65,780
				W911PT05P0451	69,515
	RO DEFENCE PROJECTS LTD	UNITED KIN		DAAE3097C1032	15,717,311
				W15QKN05C1173	205,141,010
	ROBERTSON AVIATION L L C	Arizona	Tempe	W58RGZ04C0069	11,512,613
	ROCK CREEK BARRELS, INC	Wisconsin	Albany	W15QKN05C1180	352,453
	ROCKWELL COLLINS, INC	Iowa	Cedar Rapids	GS35F6926H	384,750
	RODELCO ELECTRONICS CORP	New York	Ronkonkoma	W52H0905C0030	1,038,450
	ROHM AND HAAS COMPANY	Penn	Philadelphia	W52H0905C0185	9,216,000
	RONAL INDUSTRIES INC	New York	Port Chester	SP075005C3546	85,055
				SP075005M9659	44,248
	ROSELM INDUSTRIES, INC	California	South El Monte	SP075004C3303	175,456

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	ROTAR INTERNATIONAL BV	NETHERLAND		W909MY05P0034	321,593
	ROTEK INCORPORATED	Ohio	Aurora	W52H0905D0041	832,400
	ROTH FABRICATING, INC	Michigan	Morenci	SP075004D7992	1,165,528
	ROTHENBUHLER ENGINEERING CO IN	Washington	Sedro Woolley	N0016405P2238	48,950
	ROYAL ARMS INTERNATIONAL, INC	California	Canoga Park	N0016405P1714	32,000
	RSR GROUP INC	Florida	Winter Park	SP075005MG565	29,864
	RUOFF & SONS INC	New Jersey	Runnemede	W15QKN05P0170	70,189
				W15QKN05P0220	29,013
				W52H0904P0333	39,301
				W52H0905P0377	48,516
				W911PT04A0026	651,775
	S S WHITE TECHNOLOGIES INC	New Jersey	Pinkneyville	SP074005MLD97	64,350
				SP074005V1166	49,250
				SP074005V7271	94,050
				SP075005MD335	59,400
	S W ELECTRONICS & MANUFACTURIN	New Jersey	Moorestown	SP074000D7394	61,285
	SAAB BARRACUDA LLC	N Carolina	Lillington	W15P7T04DA601	132,821,905
	SAAB BOFORS DYNAMICS AB	SWEDEN		DAAE2003D0103	317,065
				N0016405P2312	97,323
				W15QKN05P0299	80,000
	SABRE DEFENSE INDUSTRIES, LLC	Georgia	Albany	M6700405P0711	89,850
		Tennessee	Nashville	DAAE2001C0049	89,700
				M6700405P0439	95,000
				SP074004D7874	198,176
				W52H0904D0107	7,724,000
				W52H0905D0145	5,142,975
				W52H0905D0177	540,500
				W52H0905P0302	100,000
				W52H0905P0441	42,133
				W52H0905P0569	26,550
				W52H0905P0612	94,400
				W52H0905P0683	96,250
				W52H0905P6287	49,500

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	SABRE DEFENSE INDUSTR	Tennessee	Nashville	W9124E05M0317	35,400
	SAFETY & SECURITY INTERNATIONA	Tennessee	Brentwood	H0224005P0061	50,736
	SAFETY SYSTEMS CORPORATION	Alaska	Fort Richardson	GS07F8860D	53,853
			Illinois	Carle Springs	GS07F8860D
			Carol Stream	GS07F8860D	78,907
				SP075005D7685	356,800
				SP075005MG636	80,981
		Virginia	Langley AFB	FA489005P0024	32,764
	SAGE INTERNATIONAL LIMITED	Michigan	Oscoda	N0016404D4824	607,983
				W9124705P0285	55,584
				W9124805M0378	122,688
				W9124805M0380	86,730
	SAI INDUSTRIES	California	Glendale	FA483005M0010	40,206
				SP074003D7683	135,649
				SP074004D5G22	25,219
				SP075002D7884	26,813
				SP075005D5K23	55,285
				W52H0904D0099	1,456,870
				W52H0906C0286	331,700
	SAIA-BURGESS INC	Ohio	Vandalia	SP075005MD301	64,200
	SAM R MORIN	Texas	Fredericksburg	SP075005MB714	29,895
	SANA TRADING & SERVICES	Arizona	Tempe	SP075005ME652	77,846
	SANDIK MFG INC	New Jersey	Passaic	SP075005D5561	27,804
SARCO- INC	New Jersey	Cherry Hill	SP075005VF777	64,176	
SAUDI LOGISTICS AND TECHNICAL	S ARABIA		W31P4Q04G0003	2,094,422	
SAVIT CORPORATION	New Jersey	Parsippany	W15QKN05C0432	1,474,584	
			W15QKN05C1244	8,089,788	
SCHMID TOOL & ENGINEERING	Illinois	Franklin Park	SP075005D7879	64,985	
SCIENCE APPLICATIONS INTERNATI	Georgia	Albany Naval Air Sta	GS23F0107J	141,848	
SCOT FORGE COMPANY	Illinois	Spring Grove	W911PT05D0001	251,692	
			W911PT05D0007	242,919	
			W911PT05P0378	28,640	
			W911PT05P0395	99,937	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	SCOT INCORPORATED	Illinois	Downers Grove	FA852005D0006	905,627
	SCOTT INDUSTRIAL SYSTEMS INC	California	Corona	SP070099D9729	294,110
	SEA CON PHOENIX, INC	Rhode Islnd	Westerly	N0016405P2164	44,580
	SEILER INSTRUMENT AND MANUFACT	Missouri	St. Louis	W52H0904D0109	49,881
				W52H0905C0007	250,776
				W52H0905P0507	68,500
				W52H0905P0744	35,770
	SEK SOLUTIONS	New Jersey	Picatinny Arsenal	W9124Q05P0520	1,327,141
	SEQUEL SYSTEMS, INC	Mass	Lowell	SP075003D7748	32,740
				SP075005ME677	30,420
	SHADOW VALLEY ARMS CO, LLC	Mass	Ayer	W912SV05P0209	56,950
	SHIELD TECHNOLOGIES CORP	Illinois	Itasca	SP075005MD907	33,450
				SP075005ME160	49,128
	SHUR-LOK CORPORATION	California	Irvine	SP075005V7169	49,663
	SIGARMS, INC	N.H.	Exeter	HMM40205M0312	69,946
				N0016405P0800	42,500
				N0016405P1175	34,272
				SP075005D7569	66,019
				SP075005MD265	76,232
				SP075005MD779	47,798
				W52H0905C0059	1,756,550
				W52H0905C0239	444,922
				W52H0905C0254	718,859
				W52H0905P0174	58,915
				W52H0905P0699	130,000
				W52H0905C0134	121,500
				W52H0905C0275	125,100
				W52H0905D0015	1,264,011
	W52H0905D0134	65,200			
	W52H0905P0594	26,600			
	SIGMA MANUFACTURING INDUSTRIES	New York	Bronx (County)	SP075002D7758	108,803
				SP075005MG087	45,936
				SPM76005M0831	62,700
			New York	SP075005ME540	26,000

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	SIKORSKY AIRCRAFT CORPORATION	Conn	Stratford	N0038301G015N	33,599
	SMITH & WESSON CORP	Mass	Springfield	W52H0905P0726	3,378,192
	SMITH ENTERPRISE, INC	Arizona	Tempe	N0016405P1443	113,465
				W9124805M0415	243,282
	SMITHS AEROSPACE LLC	New Jersey	Whippany	W31P4Q05C0087	283,866
				W31P4Q05C0327	318,766
		Washington	Yakima	W52H0905C0083	540,015
				W52H0905C0184	200,000
	SMITHS DETECTION-EDGEWOOD INC	Maryland	Edgewood	HMM40205MD400	38,130
				HMM40205MD404	94,420
				W911SR04D0004	2,156,617
	SNC TECHNOLOGIES CORP	Conn	Avon (Town of)	N0016405P0884	147,734
				N0016405P2111	79,935
			West Avon	W91ZLK05P0544	43,853
	SOLIGEN, INC	California	Northridge	W52H0905P5714	51,349
	SOLO ENTERPRISE CORP	California	City of Industry	SP074005C4705	154,000
	SOLVENTS AND CHEMICALS, INC	Texas	Pearland	W52P1J04D3000	197,588
	SOURCE ONE DISTRIBUTORS, INC	Florida	Wellington	GS07F5490R	32,966
				M6786105P0014	26,123
	SOUTH BEND REPLICAS INC	Indiana	South Bend	W911SD05P0489	66,600
	SPACESAVER STORAGE SYSTEMS, IN	Wisconsin	Fort Atkinson	GS28F1003C	56,798
				SP071105MLS93	58,806
				SP075005MD795	127,629
				SP075005ME081	37,950
				SP075005ME292	93,225
				SP075005ME336	41,926
	SPECIALTIES MANUFACTURING COMP	Alabama	Talladega	W52H0905D0147	113,393
	SPECIALTY COMPONENT RESOURCES	Georgia	Dallas	SP075005M9292	47,264
	SPECTRA-PHYSICS LASERS, INC	California	Mountain View	N6893605P0658	32,300
	SPEED LOGISTICS, LLC	New Jersey	Little Falls	SP075004D5A99	60,488

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	SPRINGFIELD INC	Illinois	Geneseo	M6785405M1032	28,836
				M6785405M1038	284,850
				N0016405P1879	80,619
				W52H0905D0066	325,850
	SSI TECHNOLOGY, INC	Michigan	Troy	W52H0905D0159	72,958
	STAFF GASKET MFG	New York	New York	SP075005VF691	27,284
	STANLEY MACHINING & TOOL CORP	Illinois	Carpentersville	DAAE2003D0133	84,300
	STAR-GLO INDUSTRIES LLC	New Jersey	East Rutherford	SP075005D7703	64,754
				SP075005MG059	34,396
	STARWIN INDUSTRIES INC	Ohio	Dayton	SP075005D7707	129,000
	STEWART-WARNER SOUTH WIND CORP	Indiana	Troy	W52H0904C0159	83,460
				W52H0905P0474	36,740
	STREICHER'S INC	Minnesota	Minneapolis	GS07F0121N	39,069
	STURM, RUGER & COMPANY, INC	Conn	Southport	W52H0905C0058	1,271,700
	SUPERSONIC SERVICES INC	Florida	Cooper City	SP075004D7845	54,622
	SUPPLY LINE, INC	Alaska	Anchorage	SP075004MG984	83,516
	SUREFIRE, LLC	California	Fountain Valley	N0016405P1816	69,787
				W52H0905P0658	89,247
		Georgia	Fort Benning	W911SF05P0621	28,483
	SUSQUEHANNA ASSN FOR THE BLIND	Penn	Le Boeuf Gardens	SP075005F0118	45,548
	SUSTAINMENTPLUS CORPORATION	Florida	De Land	W15QKN05P0585	45,028
	SWISS TECHNOLOGY, INC	New Jersey	Newark	SP075005MD789	32,562
				SP075005V0122	29,234
				W52H0904C0136	107,320
				W52H0905C0012	110,400
				W52H0905P0638	41,180
	SWITLIK PARACHUTE CONC	Texas	Dyess AFB	FA468105P0090	26,714
	SYMMETRON LLC	Virginia	Fairfax	N0002404F5479	500,000
	SYNERGETIC TECHNOLOGIES GROUP	California	San Dimas	SP075005VF593	28,275
	SYRACUSE RESEARCH CORP	New York	North Syracuse	W15P7705DS205	40,161,803

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	SYSTEM TECHNICAL SUPPORT CORPO	California	Los Angeles	M6700405C0028	224,400	
				SP075001D7143	30,024	
				SP075005V0430	59,400	
				SP075005VB851	28,875	
	SYSTEMES PYROTRONICS INC, LES	CANADA			W8124Q05F0217	117,978
					T&L SALES	Montana
	TACTICAL & SURVIVAL SPECIALTIE	Virginia	Harrisonburg	GS07F8123D	779,717	
					W0124705P0850	87,239
	TACTICAL ASSAULT GEAR	California	Imperial Beach	N0024405P0791	25,245	
	TACTICAL GEAR NOW, INC	Texas	Richardson	GS07F5508R	122,401	
	TAILORED LOGISTICS CORPORATION	Indiana	Fort Wayne	SP075004D0178	331,874	
					SP075005C3582	133,200
					SP075005C3583	146,475
					SP075005C3584	120,960
					SP075005C3585	163,200
					SP075005D5B51	52,470
					SP075005D5D24	31,570
					SP075005D5F81	45,000
					SP075005D5G80	49,400
					SP075005D5L03	77,825
					SP075005D6A21	53,915
					SP075005MG011	98,900
					SP075005VB834	34,100
					SP075005VF826	54,912
	TALLEY DEFENSE SYSTEMS, INC	Arizona	Mesa	N0016403C4814	1,899,771	
					N0016405P2299	61,045
					W52H0904C0245	1,064,874
					W52H0905C0068	492,262
	TAOS INDUSTRIES, INC	Alabama	Madison	W81CRB04D0025	7,753,190	
	TASER INTERNATIONAL, INC	Arizona	Scottsdale	N0016405P1878	73,044	
					W52H0905P0867	65,342
	TAURUS TOOL & MACHINE INC	Wisconsin	Plymouth	W52H0905C0121	39,825	
	TECH-WELD, INC	Illinois	Elburn	W52P1J05P0009	45,444	

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars			
Weapons	TECHNICAL COMMUNITIES, INC	California	San Bruno	GS24F0066M	922,688			
				TECMOTIV (USA), INC	New York	Niagara Falls	W56HZV05P0033	56,341
				TELEDYNE TECHNOLOGIES INC	Tennessee	Lewisburg	W31P4Q05C0047	1,650,997
							W31P4Q05C0069	105,507
							W31P4Q05C0079	108,010
							W31P4Q05D0018	117,347
				W31P4Q05D0022	52,954			
				W31P4Q05P0420	46,779			
	TENEBAEX CORP	Mass	Boston	DAAE3001M1298	317,476			
				W15QKN04C1088	421,006			
	TEXTRON SYSTEMS CORP	Mass	Wilmington	F0883501C0005	370,366			
					F0883503C0022	176,148		
					FA867708C0072	116,153,771		
	TEXTRON SYSTEMS CORPORATION	Mass	Wilmington	FA867708C0072	2,272,126			
	THALES NAVIGATION	California	Santa Clara	GS07F5807R	40,416			
	THE BOEING COMPANY	Alabama	Huntsville	SP074005MLC01	81,280			
		Penn	Ridley Park	DAAH2302D0307	538,071			
				W58RGZ04G0023	38,384,035			
	THE CARLYLE JOHNSON MACHINE CO	Conn	Bolton	W811RQ05P0114	26,400			
	THE DAY & ZIMMERMANN GROUP INC	Texas	Lone Star Army Ammun	DAAA0999G0004	1,914,010			
	THE HANDY TOOL & MFG CO, INC	New York	Woodside	W52H0905P0694	43,750			
	THE MILL-ROSE COMPANY	Ohio	Mentor	SP075003D5501	153,300			
					SP075004D7760	82,295		
					SP075004D7795	68,240		
					SP075005D7682	37,028		
					SP075005M9239	42,857		
					SP076000D7433	166,778		
	THE TIMKEN CORPORATION	Ohio	Canton	W811PT05P0329	57,025			
	THOMAS/EUCLID INDUSTRIES, INC	Indiana	Indianapolis	SP075002D7756	651,704			
	THOR DEFENSE INC	Illinois	Downers Grove Estate	N0024405P2225	67,552			
	TIN-MAR INC	Alabama	Huntsville	W31P4Q05P0305	45,827			

FY 2005, thru Sept. 2005

Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	TIN-MAR INC	Alabama	Huntsville	W52H0905P0197	39,655	
				W52H0905P0668	95,286	
	TITAN MACHINE PRODUCTS, INC	Maine	Windham	DAAE2003D0158	348,070	
				W52H0904P0402	32,991	
	TOTAL CONCEPTS OF DESIGN, INC	Indiana	Scottsburg	DAAE2003D0064	3,815,996	
	TRANSTECHNOLOGY CORPORATION	New Jersey	Union (County)	SP075005MB151	33,175	
				Union (Township of)	W31P4Q05D0012	86,360
				Union (Unionbury)	SP075005MV117	53,566
	TRI-TECHNOLOGIES, INC	New York	Mount Vernon	SP075002D7757	66,292	
				Yonkers	DAAE2001D0027	144,503
				DAAE2003D0059	180,510	
				W52H0904D0002	55,932	
				W52H0904D0022	97,885	
				W52H0904D0123	883,000	
				W52H0904D0173	79,500	
				W52H0905C0027	540,000	
				W52H0905C0150	44,200	
				W52H0905C0207	178,200	
				W52H0905C0282	1,236,600	
				W52H0905D0086	34,000	
				W52H0905D0130	136,800	
				W52H0905D0132	50,375	
				W52H0905D0149	360,000	
				W52H0905D0156	61,991	
				W52H0905D0201	168,100	
				W52H0905D0206	30,000	
				W52H0905D0221	34,944	
				W52H0905D0229	55,000	
				W52H0905D0231	120,216	
				W52H0905D0240	65,100	
				W52H0905D0327	125,000	
	W52H0905D0332	228,500				
	W52H0905D0340	85,350				
	W52H0905P0662	26,250				
	TRIJICON INC	Michigan	Wexford	DAAE3003C1061	2,979,852	
				Wixom	N0016405P0865	27,606

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Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars		
Weapons	TRIJICON INC	Michigan	Wixom	N0016405P1495	39,404		
				FA863005C5191	207,273		
	TRINITY TECHNOLOGY GROUP INC	Virginia	Alexandria				
	TRIUMPH GROUP INC	Conn	Bloomfield	W15QKN05C1248	1,757,225		
	TROY TUBE & MANUFACTURING CO	Michigan	Chesterfield	SP075004D7898	122,985		
	U S CAVALRY STORE, INC	Colorado	Fort Carson	GS07F5623P	67,205		
				W52H0904P0659	412,920		
				W52H0905C0079	7,507,840		
				W52H0905C0229	5,469,200		
				W52H0905P0112	2,371,235		
				W52H0905P0460	193,331		
				W52H0905P0533	165,375		
				W52H0905P0665	46,924		
	U S TACTICAL SUPPLY INC	Oregon	Albany	GS07F0259N	28,850		
				Albany Yard	GS07F0259N	41,370	
					N0024405P3223	49,420	
	U S HARDWARE SUPPLY INC	Florida	Winter Park	N6339405C4006	132,759		
				N6339405P0313	32,427		
				W56HZV04D0230	10,819,584		
				W56HZV05C0156	195,116		
					W911PT05C0002	60,094	
	ULVEN COMPANIES INC, THE	Oregon	Hubbard	W911PT05C0018	413,307		
				W911PT05P0054	41,299		
				W911PT05P0282	26,485		
					DAAB0798DR013	366,726	
	UNICOR FEDERAL PRISON D.C. INDUSTRI	Kentucky	Lexington	W31P4Q05F0020	49,502		
				New Jersey	Fairton	W31P4Q05F0076	68,782
				Illinois	Glenview	DAAE2003D0114	3,275,000
	UNITED STANDARD INDUSTRIES INC			W52H0904P0264	72,146		
				W52H0905C0064	75,726		
				W52H0905D0029	207,184		
				W52H0905D0036	299,000		
W52H0905D0054				237,175			
W52H0905D0171	428,000						

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Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars
Weapons	UNITED STANDARD INDUS	Illinois	Glenview	W52H0905D0204	28,785
				W52H0905D0311	234,205
				W52H0905P0147	74,320
				W52H0905P0286	96,579
				W52H0905P0289	29,580
				W52H0905P0721	36,385
	UNIVERSAL SYSTEMS & TECHNOLOGY	Virginia	Cape Henry Shores	W15QKN05P0631	44,272
	UNIVERSAL TECHNOLOGIES INC	Tennessee	Estill Springs	DAAE2001D0053	16,538,300
	USA SPARES, INC	Penn	Carlisle	SP075004D7790	29,528
	UTM LTD	UNITED KIN		GS07F5749P	137,229
				W15QKN05C1222	147,750
	V I T EVEREST INC	New Jersey	Flanders	HDTRA105P0120	29,999
	V J ENGINEERING INC	California	Garden Grove	SP075002D7755	31,389
				W52H0905C0259	32,145
	VALCOR ENGINEERING CORP	New Jersey	Springfield	N0038301D004B	50,715
	VALWEST TECHNOLGIES, INC	Arizona	Phoenix	SP075004D5F37	39,079
	VANASVERKEN AB	SWEDEN		N0016404D4804	482,080
	VARGA ENTERPRISES, INC	Arizona	Chandler	SP075005M9651	43,040
	VERIDIAN SYSTEMS DIVISION, INC	Virginia	Chantilly	NMA20104C9999	933,552
	VERMONT AEROSPACE MANUFACTURIN	Vermont	Lyndonville	SP074003D7714	83,700
				SP075005MD714	31,290
				SP075005ME021	99,970
				SP075005ME038	63,700
				SP075005ME043	38,715
				SP075005ME092	47,700
	VERTU CORP	Virginia	Manassas	W15QKN05C0456	330,815
	VETERAN EMPLOYMENT ENTERPRISE	Penn	Tionesta	SP075005M9622	51,359
	W & E PLATT PTY LTD	AUSTRALIA		SP075005C3435	349,800
				W56HZV05P0151	76,792
	W AND G MACHINE COMPANY, INC	Conn	Hamden	SP075005MG294	34,897
	W F ENTERPRISES, INC	New York	Albany	W911PTD4A0042	31,988

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Contracts - \$25,000 and Greater

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Title Description	Contractor Name	State / Country	City	Contract Number	Dollars	
Weapons	W MACHINE WORKS	California	Panorama City	W52H0905P0552	83,230	
				W52H0905P0583	49,995	
				W52H0905P0750	68,250	
	WAYNE INTEGRATED TECHNOLOGIES	New York	Brentwood	W52H0905P0623	27,907	
	WECKWORTH MANUFACTURING, INC	Kansas	Wichita	SP075004D7765	34,380	
				SP075005D7674	1,104,106	
				W52H0905P0061	26,970	
	WELLS, ANDREW	Minnesota	Bemidji	W52H0905D0268	29,988	
	WESCO AIRCRAFT HARDWARE CORP	New York	Glen Cove	SP074005D5A35	32,481	
	WEST COAST CONTRACTING	Texas	Kingwood	SP075005M3689	49,988	
	WHELAN MACHINE AND TOOL CO	Kentucky	Louisville	N6339405P0312	31,040	
				N6339405P0786	99,980	
				SPM78005V3371	30,470	
	WILCOX INDUSTRIES CORP	N.H.	Newington	N0016405P1752	40,600	
	WILSON TACTICAL	Arkansas	Berryville	N0016405P1681	122,567	
	WINGATE ALLOYS INC	Ohio	Cleveland	W911PTD4A0034	68,270	
	WPC, INC	Texas	Fort Worth	W911PTD5C0023	104,723	
	YANKEE HILL MACHINE CO INC	Mass	Northampton	SP075001D7364	122,921	
	YORK ELECTRO MECHANICAL CORP	Penn	York	SP075004D7791	81,048	
	Z SYSTEMS CORPORATION	Maryland	Largo	DAAE0700CM021	2,122,204	
	ZIYAX INC	Colorado	Longmont	W52H0905D0092	135,863	
				W52H0905D0114	357,982	
	ZONE SYSTEMS INC	Delaware	Dover	W912PG05P0794	38,180	
						<b>Weapons: 2,627,064,450</b>

Total FY 2005 DoD Weapons Procurement:

\$2,627,064,450

Source: [http://siadapp.dior.whs.mil/procurement/2005\\_data/productsDOD200509.pdf](http://siadapp.dior.whs.mil/procurement/2005_data/productsDOD200509.pdf)

## Appendix F: Weapons Industry Research Links

### Links to U.S. Policy Guidance

- 2006 QDR <http://www.defenselink.mil/pubs/pdfs/QDR20060203.pdf>
- 2006 NSS <http://www.whitehouse.gov/nsc/nss/2006/>
- 2006 NMS to Combat WMD <http://www.defenselink.mil/pdf/NMS-CWMD2006.pdf>
- 2006 Foreign Sources of Supply: Assessment of the U.S. Defense Industrial Base [http://www.acq.osd.mil/ip/docs/fy\\_2005-812\\_report.pdf](http://www.acq.osd.mil/ip/docs/fy_2005-812_report.pdf)
- 2005 NDS <http://www.defenselink.mil/news/Mar2005/d20050318nds1.pdf>
- 2004 NMS <http://www.defenselink.mil/news/Mar2005/d20050318nms.pdf>

### Links to Select Defense Contractors

- [Alliant Techsystems, Inc.](#)
- [Allied Defense Group](#)
- [Boeing](#)
- [General Dynamics](#)
- [Halliburton](#)
- [Hi-Shear Technology Corp.](#)
- [Honeywell, Inc.](#)
- [Hughes](#)
- [Ionatron](#)
- [L-3 Communications Holdings](#)
- [Lockheed Martin](#)
- [Northrop Grumman](#)
- [Raytheon](#)
- [Remington](#)
- [Rockwell](#)
- [Science Applications International Corporation \(SAIC\)](#)
- [TRW](#) (Acquired by Northrop Grumman in Dec 2002)
- [Textron](#)
- [United Technologies](#)

### Links for More General Information

- [Aerospace Industries Association](#)
- [Defense Advanced Research Projects Agency \(DARPA\)](#)
- [Defense Security Cooperation Agency](#)
- [Defense Market Analysis \(Forecast International Website\)](#)
- [Defense News](#)
- [Electronic Industries Alliance](#)
- [Jane's Defence Weekly](#)
- [National Defense Industrial Association](#)
- [U.S. Munitions \(FAS Website\)](#)

## Appendix G: Research Links to Places Visited

### DOMESTIC SITE VISITS

Lockheed Martin Corporation, Center for Innovation <a href="http://www.lockheedmartin.com/wms/findPage.do?dsp=fec&amp;ci=13292&amp;rsbci=14&amp;fti=124&amp;ti=0&amp;sc=400">http://www.lockheedmartin.com/wms/findPage.do?dsp=fec&amp;ci=13292&amp;rsbci=14&amp;fti=124&amp;ti=0&amp;sc=400</a>	Suffolk, VA
JFCOM Joint Requirements and Integration Directorate (J8) <a href="http://www.jfcom.mil/about/abt_j8.htm">http://www.jfcom.mil/about/abt_j8.htm</a>	Suffolk, VA
Special Tactical Services, LLC <a href="http://www.spectacserv.com/index.asp">http://www.spectacserv.com/index.asp</a>	Virginia Beach, VA
Program Executive Office for Weapons, Air Armament Command	Eglin AFB, FL
Air Force Research Laboratory (AFRL) <a href="http://www.munitions.eglin.af.mil/">http://www.munitions.eglin.af.mil/</a>	Eglin AFB, FL
Program Executive Office for Strike Weapons and Unmanned Aviation <a href="http://www.strikenet.js.mil/">http://www.strikenet.js.mil/</a>	Patuxent River, MD
Marine Corps Combat Development Center <a href="https://www.mccdc.usmc.mil/">https://www.mccdc.usmc.mil/</a>	Quantico, VA
Marine Corps Warfighting Lab <a href="http://www.mcwl.usmc.mil/">http://www.mcwl.usmc.mil/</a>	Quantico, VA
Joint Non-Lethal Weapons Directorate <a href="https://www.jnlwp.com/">https://www.jnlwp.com/</a>	Quantico, VA
Raytheon Missile Systems Company <a href="http://www.bmpcoe.org/bestpractices/internal/rmsc/index.html">http://www.bmpcoe.org/bestpractices/internal/rmsc/index.html</a>	Tucson, AZ
Ionatron <a href="http://www.ionatron.com/">http://www.ionatron.com/</a>	Tucson, AZ
Air Force Safety Center <a href="http://afsafety.af.mil/">http://afsafety.af.mil/</a>	Kirtland AFB, NM
McAlester Army Ammunition Plant & Defense Ammunition Center <a href="http://mcalestr-www.army.mil/">http://mcalestr-www.army.mil/</a>	McAlester, OK
USMC Explosive Safety Center <a href="http://www.marcorssyscom.usmc.mil/am/ammunition/PSD/EES_Branch/EES.asp">http://www.marcorssyscom.usmc.mil/am/ammunition/PSD/EES_Branch/EES.asp</a>	Quantico, VA
Navy Explosive Safety Centers <a href="http://www.safetycenter.navy.mil/ashore/explosives/default.htm">http://www.safetycenter.navy.mil/ashore/explosives/default.htm</a>	Norfolk, VA
Institute for Advanced Technology, University of Texas <a href="http://www.iat.utexas.edu/">http://www.iat.utexas.edu/</a>	Austin, TX
Armament Research Development & Engineering Center (ARDEC) <a href="http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/index.asp">http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/index.asp</a>	Picatinny, NJ
FN Manufacturing LLC <a href="http://www.fnmfg.com/">http://www.fnmfg.com/</a>	Columbia, SC

### INTERNATIONAL SITE VISITS

United States Embassy, Singapore <a href="http://singapore.usembassy.gov/">http://singapore.usembassy.gov/</a>	Singapore, Singapore
Office of Defense Cooperation, US Embassy <a href="http://www.odc.org.sg/">http://www.odc.org.sg/</a>	Singapore, Singapore
Republic of Singapore Air Force, Tactical Air Support Command <a href="http://www.mindef.gov.sg/rsaf/main.asp">http://www.mindef.gov.sg/rsaf/main.asp</a>	Singapore, Singapore
Defense Science & Technology Agency (DSTA) <a href="http://www.dsta.gov.sg/home/index.asp">http://www.dsta.gov.sg/home/index.asp</a>	Singapore, Singapore
Singapore Technologies (ST) Kinetics <a href="http://www.stengg.com/home/home.aspx">http://www.stengg.com/home/home.aspx</a>	Singapore, Singapore
United States Embassy, Japan <a href="http://tokyo.usembassy.gov/">http://tokyo.usembassy.gov/</a>	Tokyo, Japan
IHI Marine United <a href="http://www.ihico.jp/ihimu/english/index-e.html">http://www.ihico.jp/ihimu/english/index-e.html</a>	Kanagawa, Japan
Mitsubishi Heavy Industries, Guidance and Propulsion Systems, Komaki Plant <a href="http://www.mhico.jp/indexe.html">http://www.mhico.jp/indexe.html</a> - <a href="http://www.mhi-ir.jp/frmpage/under_e.html">http://www.mhi-ir.jp/frmpage/under_e.html</a>	Nagoya, Japan
Kawasaki Heavy Industries, Aerospace Company <a href="http://www.khico.jp/aero/index_e.html">http://www.khico.jp/aero/index_e.html</a>	Gifu, Japan

**INTERNATIONAL (Continued)**

United States Consulate, Nagoya

<http://nagoya.usconsulate.gov/wwwhmain.html>

Toyota Motor Corporation

[http://www.toyota.co.jp/en/about\\_toyota/index.html](http://www.toyota.co.jp/en/about_toyota/index.html)

Mitsubishi Heavy Industries (MHI), Nagoya Aerospace Systems, Tobishima Plant

<http://www.mhi.co.jp/aero/english/index.htm>

Ministry of Economy, Trade and Industry (METI)

<http://www.meti.go.jp/english/>

Nagoya, Japan

Nagoya, Japan

Nagoya, Japan

Tokyo, Japan

