DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
3030 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3030

JAN 2 9 2007

The Honorable Carl Levin
Chairman, Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Enclosed is the Annual Report on Cooperative Agreements and Other Transactions Entered into during Fiscal Year 2006. This report is submitted in response to 10 U.S.C. §2371, "Research projects: transactions other than contracts and grants." It is a summary of the reportable cooperative agreements and "other transactions" that were entered into by the Department of Defense during Fiscal Year 2006.

A similar letter has been provided to the House Armed Services Committee, the Senate Appropriations Committee and the House Appropriations Committee.

Sincerely,

John J. Young, Jr.

Enclosure:
As stated

cc:
The Honorable John McCain
Ranking Member

DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
3030 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3030

JAN 29 2007

The Honorable Ike Skelton
Chairman, Committee on Armed Services
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Sincerely,

John J. Young, Jr.

Enclosure:
As stated

cc:
The Honorable Duncan Hunter
Ranking Member

DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
3030 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3030

JAN 29 2007

The Honorable Robert C. Byrd
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

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Sincerely,

John J. Young, Jr.

Enclosure:
As stated

cc:
The Honorable Thad Cochran
Ranking Member

DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
3030 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3030

JAN 29 2007

The Honorable David R. Obey
Chairman, Committee on Appropriations
United States House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed is the Annual Report on Cooperative Agreements and Other Transactions Entered into during Fiscal Year 2006. This report is submitted in response to 10 U.S.C. §2371, "Research projects: transactions other than contracts and grants." It is a summary of the reportable cooperative agreements and "other transactions" that were entered into by the Department of Defense during Fiscal Year 2006.

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Sincerely,

John J. Young, Jr.

Enclosure:
As stated

cc:
The Honorable Jerry Lewis
Ranking Member

Department of Defense

Annual Report on Cooperative Agreements and Other Transactions Entered into during Fiscal Year 2006 Under 10 USC 2371

Office of the Director,
Defense Research and Engineering

January 2007

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Cooperative Agreements and Other Transactions Entered for Fiscal Year 2006

INTRODUCTION

This report is provided in accordance with 10 U.S.C. 2371(h) which requires the Secretary of Defense to submit a report annually to the Senate Committee on Armed Services and the House of Representatives Committee on Armed Services on all those transactions entered into under 10 U.S.C. 2371(a) which are not categorized as contracts, cooperative agreements or grants (hereafter referred to as "other transactions") and all cooperative agreements entered into under 10 U.S.C. 2358 which include a section 2371 authorized clause requiring "Recovery of Funds" (i.e., recoupment).

The Secretary of Defense and the Secretary of each military department are authorized by section 2371 to enter into other transactions to carry out basic, applied, and advanced research projects. That same authority also permits certain transactions to include a clause requiring a person or other entity to make repayments of funds to the Department of Defense or any other department or agency of the Federal Government as a condition for receiving support under the agreement or other transaction. The authority of 10 U.S.C. 2371 was extended by Section 845 of Public Law 103-160, as amended, to permit the Director, Defense Advanced Research Projects Agency (DARPA), the Secretary of a military department, and any other official designated by the Secretary of Defense, to enter into other transactions to carry out prototype projects that are directly relevant to weapons or weapon systems proposed to be acquired or developed by the Department of Defense.

The one-page description for each agreement in this report shows the total amount of funds that the Federal Government agreed to provide for the research or prototype project, as well as the amount that non-Federal Government parties agreed to provide. The sum of those amounts is the total value of the agreement over the life of the project. The amount the Federal Government obligated in FY 2006 for agreements included in this report is approximately $131 million for the other transactions for prototypes and $83 million for the research actions.

The reported amounts include research and development investments made by for-profit firms. It is standard business practice for all for-profit firms to recover research and development investments through prices charged to their commercial and Government customers. Thus, firms that do business with the Federal Government may recover a portion of their investments through commercial prices of items sold to the Government or through allocations of Independent Research and Development costs to cost-type Government contracts.

While some of these agreements include clauses requiring recovery of funds, DoD components reported no funds recovered in FY 2006 due to the use of those clauses. Collectively, Army, Navy, Air Force, Defense Advanced Research Projects Agency (DARPA), the National Security Agency (NSA), the Missile Defense Agency (MDA) and the National Geospatial-Intelligence Agency (NGA) submitted 12 reportable research actions and 128 reportable other transactions for prototypes in FY 2006.

This report provides the specific information required by subsection 2371(h)(2):

(A) The Technology Areas in which research projects were conducted under such agreements or other transactions.
(B) The extent of the cost sharing among Federal and non-Federal sources.
(C) The extent to which the use of the cooperative agreements or other transactions
  (i) has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs; and
  (ii) has fostered within the technology and industrial base new relationships and practices that support the national security of the United States.

The final page of the report provides a summary table for new prototype "other transaction" (OT) agreements. This table identifies: the number of new agreements, the breakdown among the three reasons authorized by statute for the use of prototype OT authority and information regarding the extent of participation of non-traditional contractors.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: FA8650-05-2-5506

Type of Agreement: Cooperative Agreement: TIA

Title: Radiation Hardened Cryogenic Read Out Integrated Circuits

Awarding Office: FA8650 DET 1 AFRL PK

Awardee: AMI Semiconductor Inc

Effective Date: 06 Oct 2005

Estimated Completion or Expiration Date: 06 Apr 2007

U.S. Government Dollars: $ 3,327,947

Non-Government Dollars: $ 3,327,947

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The primary goal of this program is to establish a viable, domestic manufacturing capability for commercial production of less than or equal to 0.35 micron, deep sub-micron Complementary Metal Oxide Semiconductor (CMOS) Read Out Integrated Circuits (ROICs) to meet known and evolving military requirements. Envisioned technical objectives for the recipient include:

1) the ability to produce larger physical size devices (greater than or equal to 20 square cm),

2) demonstrated and measurable increases in ROIC production yields, and

3) reduction in ROIC production cycle times resulting in lower costs due to project related improvements.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The recipient of this award has not previously held a contract with the US Government prior to this award. As a result, the recipient does not have a Cost Accounting Standards (CAS) based accounting system that would satisfy the requirements of the cost principles found in the Federal Acquisition Regulation (FAR) Part 31. Also, since the government's share of the award was approximately $3.2 million, it was cost prohibitive to require this company to change it's accounting system to be CAS compliant. TIAs require recipient's accounting systems to be GAAP (Generally Accepted Accounting Principles) compliant which is a lesser standard than CAS. By allowing the recipient to use GAAP, it allowed us to bring on board a company that will provide critically necessary technology for national defense. AMI Semiconductor already maintains an in-house foundry where the ROIC wafers can be produced. What they needed was a little help in creating a new manufacturing line to meet the specific needs of the government while also increasing their production yields and decreasing production cycle time.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The new business partnership formed occurred between AMI Semiconductor and the Federal Government. AMI Semiconductor is a non-traditional contractor/recipient and this was their first award as a prime contractor/recipient.

The agreement fostered this new business relationship by allowing the use of the recipient's current accounting system with some slight modifications. This greatly provided the recipient with an increased ability to perform all the requirements under the TIA while still safeguarding the Government's interests. No other new relationships of any significance were formed on a sub tier level.

Other benefits to the DOD through use of this agreement:
The use of this agreement will allow the recipient to take that first step to becoming a valuable defense contractor for the Federal Government. One of the requirements of the TIA is to perform a strategic business plan and

marketing plan to determine potential customers (both commercial and government) as well as how to market to them. By providing funding, we help to ensure success of this program.

AMI Semiconductor is currently pursuing other government awards and this agreement will be the catalyst that will eventually get them on board with all requirements associated with Federal Acquisition Regulation (FAR) contracts. Defense Contract Audit Agency (DCAA) is heavily involved during this process. The provisions relating to GAAP as well as the use of their current financial system will allow the benefit of bringing a valuable, vitally necessary new defense contractor on board within the next several years. Since FAR contracts require the compliance to more stringent cost principles and TIAs require the use of GAAP, this directly benefited the program.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: FA8650-06-2-5201

Type of Agreement: Cooperative Agreement: TIA

Title: Robust Oxide-Oxide Ceramic Matrix Composites

Awarding Office: FA8650 DET 1 AFRL PK

Awardee: Solar Turbines Incorporated
Chevron USA Inc
Coi Ceramics, Incorporated

Effective Date: 06 Feb 2006

Estimated Completion or Expiration Date: 06 Apr 2009

U.S. Government Dollars: $ 293,488

Non-Government Dollars: $ 293,488

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: To develop a robust fabrication technology for a hybrid oxide Ceramic Matrix Composites (CMC) inner liner and demonstrate its durability in rig and engine field testing.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Sub- recipient Chevron does not normally do business with the Government. Chevron is an industry giant in this technology area as an end user for the expected product. This team and the project will get Chevron involved in the effort as they have a strong interest in the findings and future commercial applications. Chevron rarely bids on research project with the Government due to the specialized knowledge and extra requirements involved. This type of instrument in more similar to commercial practices and the teaming arrangement allows them to be involved more easily.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This effort brought together three team members that had never teamed together before. The lead recipient, Solar Turbines Inc. is the smallest of the recipients and it was them who brought the others together. It is believed that the new relationship will provide a better/improved technology for the future because all three are involved in the technology area at different stages of the process and it makes sense that they work together to research, design, and demonstrate the new process. The overall freedoms of the TIA allows the three to more easily form a relationship and work together without extensive legal red-tape.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: FA8650-06-2-5202

Type of Agreement: Cooperative Agreement: TIA

Title: Advanced Constituents and Processing for Robust CMCs

Awarding Office: FA8650 DET 1 AFRL PK

Awardee: Rockwell Scientific Company, LLC
Coi Ceramics, Incorporated
Siemens Power Generation, Inc.
University Of California

Effective Date: 13 Feb 2006

Estimated Completion or Expiration Date: 13 May 2009

U.S. Government Dollars: $ 475,000

Non-Government Dollars: $ 521,117

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this effort is to demonstrate a robust oxide Ceramic Matrix Composite (CMC) material and process that provides improved CMC interlaminar properties in both a flat plate and a complex shape geometry using novel matrix processing technology.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The team leader, Siemens Power Generation Inc., is the only recipient that normally doesn't contract with the Government. Siemens was so unfamiliar with the process that we had to explain every step of the process as we went, especially the payment process. Siemens is a very important company in this technology area and getting them involved in this effort, especially as the team lead in very beneficial and unusual. They will bring a lot of new ideas and mentality to the project. Siemens responded to our Broad Agency Announcement (BAA) that they would only accept a TIA type arrangement for this effort. The regular FAR type of contract with its regulations and requirements would have scared them away from doing business with the Government.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: Siemens does not normally team with other contractors to work a project, they are used to working alone. This team of 4 recipients has never worked together as a team. This whole project is a new concept for them. As a team they bring a lot to the table in their expertise and manpower. Hopefully the team members will learn from each and all take away something positive. The unique combination of the team members will also be good for future benefits, as we hope to receive a new and innovative solution or research findings. The overall flexibility of the TIA allowed new recipients to get involved and new teams to be formed.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: H98230-06-3-0011

Type of Agreement: Cooperative Agreement: TIA

Title: Pilgrim Shadow

Awarding Office: The Maryland Procurement Office

Awardee: Cray, Incorporated

Effective Date: 30 June 2006

Estimated Completion or Expiration Date: 31 December 2007

U.S. Government Dollars: $11,374,952.00

Non-Government Dollars: $ 0.00

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted:
The Pilgrim Shadow Program is for the development of extreme high performance graph data base server applications. Experiments have shown the exceptional promise of the Cray MTA2 multi-threaded architecture for a graph data base server scaling up to 40 processors. Pilgrim Shadow will provide modifications to the Operating System software to scale up to 256 and 512 processors.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:

Cray's participation provides accessibility to a large amount of previous Cray, Inc. research activity and technologies along with the ability to leverage core competencies of Cray, Inc. in order to tackle the hardest requirements of the Pilgrim Shadow research.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:

This cooperative agreement will strengthen the new relationship among participants at the prime and sub tier levels, among business units within Cray, Inc. and between non-Federal participants and the Federal Government. This new relationship will enable the Department of Defense to obtain better technology in the future that is more affordable and more readily available. The commercialization of massive multithreaded systems will impact positively for both commercial and defense applications.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-3-0009

Type of Agreement: Research TIA: Non-Cooperative Agreement

Title: Avalanche Photodetectors in Silicon Photonics

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Awardee: Intel Corporation

Effective Date: 13 Sep 2006

Estimated Completion or Expiration Date: 13 Sep 2007

U.S. Government Dollars: $ 289,600

Non-Government Dollars: $ 536,500

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort is to determine the feasibility of a Ge/Si Separate Absorption and Multiplication (SAM) avalanche photodetector (APD), and if viable, to develop an APD with competitive specifications that can be monolithically integrated with other optical devices and longer term possibly with electronic circuitry.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction facilitates Intel to participate in critical technology development for advances in silicon photonics technology. As a commercial company, its internal systems, including accounting systems, are not in compliance with regulations imposed by the Federal Acquisition Regulation (FAR), therefore, the company objects to accepting a FAR compliant contract and wants to use its commercial practices. If not for an other transaction, it would not have participated under a procurement contract. The principal purpose of this agreement is to support and stimulate the contractor in accomplishing the technical objective, which is in the general interest of the advanced lithography industry and the public, not solely the U.S. Government. The principal purpose of the agreement is not to acquire goods or services for the direct benefit of the government; therefore, a procurement contract is not appropriate. Substantial involvement is expected by the agency in carrying out the contemplated activities; therefore, a grant is not appropriate. The performing organization requires greater rights in patents than may be granted under a cooperative agreement, which is governed by the Bayh-Dole Act; therefore, an other transaction is appropriate.

As a result of the technology developments under this program, the military and commercial industry will have access to low cost, high volume sensors to be manufactured in silicon which will impact all areas from communications to sensors to biotechnologies for lab on a chip. This technological capability is not currently available.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement brings a U. S. commercial company to investigate the feasibility if developing a Ge/Si Separate Absorption and Multiplication (SAM) avalanche photodetector (APD). The commercial applications to be developed will benefit Intel and ultimately benefit the United States. This technology also has vast commercial applications in that high performance detectors can be used in areas from charge-coupled device (CCD) imaging and sensors (night vision), both Infrared (IR), communications and very sensitive bio-technology applications. Further, military transmitters currently cost tens of thousands of dollars a piece and have inherent reliability and temperature performance disadvantages to silicon photonic technology. Success in this program could save the military significant money due to the availability of much cheaper APD arrays and communication components, allow a much larger deployment of high capacity links throughout the world, enable a military with better information capability, and do so with less dependence on manufacturers outside of the United States. Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), and intellectual property

rights (Bayh-Dole) were important to Intel. These required additional negotiation and flexibility in the provisions ultimately agreed upon between the parties. This flexibility and tailoring was possible only with the use of an other transaction.

Other benefits to the DOD through use of this agreement:
The use of an other transaction for research agreement under the authority of 10 U.S.C. § 2371 allows commercial companies to use existing commercial accounting practices, alleviating the requirement and avoiding the cost of setting up Government accounting systems. Intel also will provide cost share in this program to determine the feasibility of avalanche photodetectors in silicon photonics for military use. The Government obtains the benefit of these practices by leveraging commercial investment to support military systems.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-3-0003

Type of Agreement: Research TIA: Non-Cooperative Agreement

Title: Structural Amorphous Aluminum Alloys for Aerospace Applications

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Awardee: United Technologies Corporation, Pratt & Whitney Division

Effective Date: 28 Jun 2006

Estimated Completion or Expiration Date: 30 Jun 2008

U.S. Government Dollars: $ 4,674,017

Non-Government Dollars: $ 2,569,308

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objectives of this program are to further the development of glassy aluminum alloys and bring this technology from the laboratory to production ready status. The program will address the major issues and obstacles involved in taking this material from laboratory ribbon-sized samples to billets that can be processed and machined to yield viable parts. Structural amorphous aluminums will provide lighter weight, lower cost materials for use in future Department of Defense aerospace systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The major commercial firm involved in this effort is Pratt & Whitney; it's involvement provides significant benefits to the Department of Defense (DOD) by allowing DOD access to their commercial acumen and technical expertise. Pratt and Whitney will lead the supply chain that will be developed to produce this new and revolutionary material. Companies in this supply chain include DWA Composites (Chatsworth, CA), General Magnaplate (Linden, NJ), KB Alloys (Robards, KY), Metal Improvement Co LLC (Windsor, CT), Precision Components International Inc (Columbus, GA), SAPA Inc (Portland, OR), UCT Coatings (Stuart, FL) and Valimet Inc (Stockton, CA). Exercising the other transaction ensured that all of the commercial companies in this supply chain participate in this effort much more efficiently than would be the case with a Federal Acquisition Regulation (FAR) contract. The use of the other transaction has facilitated their participation since many are small businesses or companies that would not normally participate in government contracts and they all bring unique and extensive intellectual property to the program. Incorporation of the entire supply chain as full participants in the program will ensure their intellectual buy-in and ownership of the technology. The Department of Defense will be able to take advantage of this collaboration as it will ensure that the technology is ready and available for incorporation into weapons systems in an efficient and timely manner.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This other transaction under the authority of 10 U.S.C. 2371 has allowed the Government to create new relationships among for-profit firms at the prime or subtier levels, among divisions of the same firm, or between firms and nonprofit performers that will help the Government get better technology in the future. In particular, it has enabled an active collaboration between a large industrial company (Pratt and Whitney) and a many small businesses, DWA Composites (Chatsworth, CA), General Magnaplate (Linden, NJ), KB Alloys (Robards, KY), Metal Improvement Co LLC (Windsor, CT), UCT Coatings (Stuart, FL) and Valimet Inc (Stockton, CA)] and also other large technology firms, Precision Components International Inc (Columbus, GA) and SAPA Inc (Portland, OR). Furthermore, it has also allowed participation of a non-profit-GOCO (Ames Laboratory) and several universities (Case Western Reserve University, New Mexico Institute of Mining and Technology University of Missouri-Rolla). The close collaboration that is enabled by the other transaction between these various entities will enable rapid transition of innovative research to products of interest to the Department of Defense. The availability of this new technology can only be assured if there is a robust domestic supply chain. The other transaction has facilitated the cooperation of these organizations as they merge their various intellectual property sets to enable a viable production

sequence. Such close collaboration would not be possible if the traditional OEM/supplier relationship inherent in other contracting instruments had been used. The use of this other transaction under the authority of 10 U.S.C. 2371 has ensured that this technology will be developed in an efficient and timely fashion and be available for use in Department of Defense products.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-3-0007

Type of Agreement: Research TIA: Non-Cooperative Agreement

Title: Initiative in Titanium

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Awardee: Materials & Electrochemical Research (MER) Corp

Effective Date: 17 Aug 2006

Estimated Completion or Expiration Date: 16 Aug 2008

U.S. Government Dollars: $ 5,700,000

Non-Government Dollars: $ 3,850,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of this program is to demonstrate low cost titanium refining methods consistent with the needs of the Department of Defense. Specifically, electrochemical reduction of titanium dioxide in alkali-metal molten salts will be used to more efficiently produce titanium metal. This approach will consume less total energy and result in lower cost raw material for future Department of Defense systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The commercial firm involved is DuPont, one of two members of the Consortium. DuPont's involvement provides significant benefits to the Department of Defense by allowing the Government access to the commercial acumen, technical expertise and facilities of a large scale producer of precursor materials. DuPont is the world's largest producer of titanium dioxide for the pigment industry. As such, its economies of scale dwarf the titanium metal industry. DuPont was once the primary producer of titanium in the U.S., but it has not commercially produced the metal in more than 40 years. Its large potential production capacity, combined with the novel refinement methods from MER, should result in less expensive titanium for high performance systems. Exercising the other transaction authority provides access to the commercial company much more efficiently than a Federal Acquisition Regulation (FAR) contract. DuPont rarely accepts government support for technology development. The use of the other transaction has facilitated DuPont’s participation by bringing an extensive intellectual property position especially in the thermo-mechanical consolidation of titanium particulate that will be produced during electrochemical refinement.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The other transaction has fostered collaboration between a large industrial company (DuPont) and a small research and development company (MER) and will enable rapid transition of innovative research to products of interest to the Department of Defense. It is crucial that a robust domestic supply of affordable titanium be assured since every service requires this high performance structural material. This will be greatly enhanced if advanced processing/refinement methods are implemented by U.S. industry. The other transaction has facilitated the cooperation of these companies as they merge their various intellectual property sets to enable a viable production sequence. Flexibility in intellectual property was required. Efficient electrochemical refinement followed by direct particulate consolidation will provide the Department of Defense with the lowest possible cost for advanced titanium products.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-3-0008

Modification Number: None

Type of Agreement: Research TIA: Non-Cooperative Agreement

Title: Reflective Electron-Beam Lithography (REBL) Feasibility Study

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Awardee: KLA-Tencor Corporation

Effective Date: 20 Jun 2006

Estimated Completion or Expiration Date: 20 Dec 2006

U.S. Government Dollars: $ 5,444,441

Non-Government Dollars: $ 5,444,441

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are to investigate the feasibility of various key requirements required to successfully develop reflective electron beam lithography technology.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction facilitates KLA-Tencor to participate in critical technology development for advances in lithography technology. As a commercial company and although its internal systems are partially in compliance with regulations imposed by the Federal Acquisition Regulation (FAR), the company objects to accepting a FAR compliant contract and wants to use its commercial practices. The primary objection is that the company's accounting system is not Cost Accounting Standards (CAS) compliant. If not for an other transaction, it would not have participated under a procurement contract. The principal purpose of this agreement is to support and stimulate the contractor in accomplishing the technical objective, which is in the general interest of the advanced lithography industry and the public, not solely the U.S. Government. The principal purpose of the agreement is not to acquire goods or services for the direct benefit of the government; therefore, a procurement contract is not appropriate. Substantial involvement is expected by the agency in carrying out the contemplated activities; therefore, a grant is not appropriate. The performing organization requires greater rights in patents than may be granted under a cooperative agreement, which is governed by the Bayh-Dole Act; therefore, an other transaction is appropriate.

As a result of the technology developments under this program, the military will have access to an economical, U. S. based direct-write lithography solution for military semiconductor applications, in which all the design data stays within U. S. technology and products at all times. Commercial industry will has access to a main-stream solution of the worldwide semiconductor industry, which will provide maintenance and service for military applications at economical levels. This technological capability is not currently available.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement brings a U. S. commercial company to investigate the feasibility of developing a prototype of a commercially viable, reflective electron beam lithography (REBL) writing technology capable of producing 45 nm lines and spaces at a minimum rate of five 300mm wafers per hour. The commercial applications to be developed will benefit KLA-Tencor and ultimately benefit the United States. This technology is a potential mainstream technology for the semiconductor industry for the 32nm node and below and as an enabling electron-beam direct-write (EBDW) technology for semiconductors used in U. S. military applications in the future, for the 45nm node and below. Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), and intellectual property rights (Bayh-Dole) were important to KLA-Tencor. These required additional negotiation and flexibility in the provisions ultimately agreed upon between the parties. This flexibility and tailoring was possible only with the use of an other transaction.

Other benefits to the DOD through use of this agreement:
The use of an other transaction for research agreement under the authority of 10 U.S.C. § 2371 allows commercial companies to use existing commercial accounting practices, alleviating the requirement and avoiding the cost of setting up Government accounting systems. KLA-Tencor also will provide cost share in this program to determine the feasibility of REBL technology for military use. The Government obtains the benefit of these practices by leveraging commercial investment to support military systems.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-3-0001

Type of Agreement: Other Non-Acquisition Transaction (not a grant/cooperative agreement)

Title: Bailment Agreement

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Awardee: NIVEK R&D, LLC

Effective Date: 16 Feb 2006

Estimated Completion or Expiration Date: 10 Jun 2006

U.S. Government Dollars: $ 0

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The purpose of this Bailment Agreement is to provide for a no-charge bailment of one V-6 engine, serial number NIV-0001, the product of DARPA Contract No. MDA972-03-C-0063, for the purpose of further performance testing.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The primary goal of the proposed Agreement is allow the Bailee, NIVEK R&D, LLC., to provide further testing services on the V-6 engine that will ultimately benefit the Department of Defense. This Agreement is not for the acquisition of goods and services for the direct benefit of the Federal Government; therefore, a contract is not the appropriate instrument. Grants should be used to reflect a relationship between the Federal Government and a recipient whenever the principal purpose of the relationship is the transfer of a thing of value to the recipient in order to accomplish a public purpose of support or stimulation authorized by a Federal statute, rather than by acquisition, purchase, lease, or barter of property or services for the direct benefit or use of the Federal Government; and substantial involvement by an agency of the Federal Government is not expected. A Federal grant is not the appropriate instrument here since there will be no transfer of a thing of value to the recipient. Selection of the appropriate type of research support instrument has taken into account statutory requirements, the performer and/or recipients, the nature of the proposed research effort, the manner in which it will be performed and the nature and extent of expected interaction between DARPA and the performer. The nature of this arrangement is a bailment involving the lending of equipment for testing. It does not support use of a standard contract or grant instrument. Therefore, an Other Transaction, under the authority of 10 U.S.C. 2371, is determined to be the most appropriate instrument for achieving the common interests of all participants to this transaction.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This Agreement allows the Government to obtain testing results on the engine at no cost while providing NIVEK important commercial benefits from its experience providing these testing services.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-3-0002

Type of Agreement: Other Non-Acquisition Transaction (not a grant/cooperative agreement)

Title: Bailment Agreement

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Awardee: Discovery Science Center of Orange County

Effective Date: 23 Feb 2006

Estimated Completion or Expiration Date: 31 Aug 2006

U.S. Government Dollars: $ 0

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The purpose of this Bailment Agreement is to allow Discovery Science Center of Orange County (DSC) to exhibit Defense Advanced Research Projects Agency (DARPA) program equipment, 'Cooling Glove' (Development sponsored by DARPA Defense Sciences Office; Owned by U.S. Government), Model of 'Integrated Sensor is Structure' airship and DVD of movie Near Space and ISIS movie (Development sponsored by DARPA Special Projects Office, Owned by U.S. Government), and Model of 'Orbital Express' satellite (Development sponsored by DARPA Tactical Technology Office, Owned by U.S. Government), at its museum for the term of the Agreement. It is the intent of the Agreement that by allowing the exhibition of such equipment, it will encourage interest and education in science, mathematics and engineering that may ultimately benefit the Department of Defense. DARPA intends that the bailment of such program equipment to DSC is an educational event under the authority of 10 U.S.C. 2192.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The primary goal of the proposed Agreement is allow the Bailee, DSC, to exhibit specified DARPA program equipment at its museum in order to encourage interest and education in science, mathematics and engineering that may ultimately benefit the Department of Defense. This Agreement is not for the acquisition of goods and services for the direct benefit of the Federal Government; therefore, a contract is not the appropriate instrument. Grants should be used to reflect a relationship between the Federal Government and a recipient whenever the principal purpose of the relationship is the transfer of a thing of value to the recipient in order to accomplish a public purpose of support or stimulation authorized by a Federal statute, rather than by acquisition, purchase, lease, or barter of property or services for the direct benefit or use of the Federal Government; and substantial involvement by an agency of the Federal Government is not expected. A Federal grant is not the appropriate instrument here since there will be no transfer of a thing of value to the recipient.

Selection of the appropriate type of research support instrument has taken into account statutory requirements, the performer and/or recipients, the nature of the proposed research effort, the manner in which it will be performed and the nature and extent of expected interaction between DARPA and the performer. The nature of this arrangement is a bailment involving the lending or borrowing of equipment for use as an educational event. It does not support use of a standard contract or grant instrument. Therefore, an Other Transaction, under the authority of 10 U.S.C. 2371 and 10 U.S.C. 2192, is determined to be the most appropriate instrument for achieving the common interests of all participants to this transaction.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
DSC, a non-profit organization in Santa Ana, California, operates a museum that lists its mission as dedicated to educating young minds, assisting teachers and increasing public understanding of science, math and technology through interactive exhibits and programs. DSC requested Defense Advanced Research Projects Agency (DARPA) program equipment to be provided on a temporary basis to showcase as part of its museum exhibits.

Section 3-211, Logistics Support of Non-federal Entity Events in DoD 5500.7-R, Joint Ethics Regulation (August 1998), provides that the head of a DoD Component command or organization may provide the use of DoD facilities and equipment as logistical support of an event sponsored by a non-Federal entity, except for fundraising and membership drive events, when the head of the DoD command or organization provides an affirmative determination.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: N00421-06-3-0002

Type of Agreement: Other Non-Acquisition Transaction (not a grant/cooperative agreement)

Title: Advanced Domestic Mask Inspection Tools and Technology (ADMITT) Program

Awarding Office: NAVAL AIR WARFARE CENTER AIR DIV

Awardee: KLA-Tencor Corporation

Effective Date: 18 Sep 2006

Estimated Completion or Expiration Date: 17 Sep 2007

U.S. Government Dollars: $ 2,999,649

Non-Government Dollars: $ 2,999,650

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of the Domestic Mask Initiative is to develop commercial tooling, materials and process technology needed to fabricate masks used for manufacturing trusted critical components for defense and security systems using leading edge integrated circuits and other components. This technology would also have future applications for nanotechnology products requiring lithographic processes in the 45 nanometer and below regime.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This other transaction (OT) agreement will maintain a domestic photomask industry infrastructure necessary to meet the future defense requirements for critical integrated circuits (classified applications). Specifically, the OT will provide for the development of next generation photomask inspection tool technology and tools. Aforementioned technology has been identified by the Advanced Mask Inspection Tools and Technology (ADMITT) Program as critical to defense and security applications. This development initiative expands and builds upon analysis initiated between the US Government and KLA-Tencor under the auspices of the Domestic Mask Manufacturing Program Title III Agreement Number FA8650-06-2-5502 .

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This project has both military and commercial applications of mutual benefit to the Government and recipient ("dual-use technology"). KLA-Tencor is a commercial/non-traditional defense contractor and the use of the OT will facilitate cost sharing (50% or more by KLA-Tencor), protection of intellectual properties, and dual-use of commercial technology. As a commercial developer and supplier of mask inspection tools, KLA-Tencor's accounting system uses commercial accounting. KLA-Tencor is especially sensitive to maintaining commercial rights to their intellectual property. This industry is highly competitive on the world market; KLA-Tencor does not want to risk insight into their proprietary information and losing their edge. Nor does the Government desire the patent or data rights to any of the tools developed under this transaction. The Government's interest are in stimulating and sustaining the photomask infrastructure. This can best be accomplished by having the flexibility to negotiate rights to any patents and intellectual property. This will encourage KLA-Tencor to more freely bring to bear their resources and expertise to commercialize and bring to market the advanced photomask tools. A standard Federal Acquisition Regulation (FAR) type contract, grant, or cooperative agreement would restrict this flexibility and would impede achievement of the above-described goals.

Other benefits to the DOD through use of this agreement:
ADMITT is a continuance of required technology developments and demonstrations identified by KLA-Tencor, a leading-edge domestic supplier of mask inspection tools, during its Title III study. Other Domestic Mask Manufacturing Initiative efforts may continue other Title III work with suppliers of mask patterning tools, mask repair tools, mask materials suppliers, mask manufacturing, and others necessary to maintaining a viable source of

critical tools and technology needed to assure a reliable domestic source for leading-edge masks used in the manufacturing of integrated circuits, photonic integrated circuits, microelectromechanical (MEM) components, and other leading-edge items used in critical defense and security applications. These efforts shall be collaborative to the extent permitted by law or by the needs of the contractors to protect intellectual property and trade secrets.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W911NF-06-3-0001

Type of Agreement: Other Non-Acquisition Transaction (not a grant/cooperative agreement)

Title: Network and Information Sciences International Technology Alliance

Awarding Office: XR W2DF RDECOM ACQ CTR DURHAM

Awardee: International Business Machines Corporation

Effective Date: 12 May 2006

Estimated Completion or Expiration Date: 11 Jan 2011

U.S. Government Dollars: $ 58,199,969

Non-Government Dollars: $ 8,359,233

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this program will be to illustrate the application of the synergistic combination of the four technical areas-Network Theory; Security across a System of Systems; Sensor Information Processing and Delivery; and Distributed Coalition Planning and Decision Making - to network centric warfare and network enabling capabilities in support of all missions required of today's military forces including humanitarian support, peacekeeping, and full combat operations in any terrain, but especially in complex and urban terrain.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) allowed the US Army access to firms and universities from the United Kingdom such as: IBM UK Limited, Cambridge University, Cranfield University, Imperial College of Science, Technology, and Medicine, Logical CMG UK Ltd Roke Mannor Research Limited, Royal Holloway and Bedford New College, Systems Engineering and Assessment Ltd. University of Aberdeen, University of Southampton, University of York. The expected benefit is extensive and never before initiated collaboration and synergy of US and UK commercial firms, US and UK Universities, and US and UK Government scientists in order to progress the network sciences. The UK firms would not have participated if another agreement had been used as we could not have allowed the usage of a non-Defense Fiinance and Accounting Service (DFAS) payment office for foreign entities, nor non-DCAA audit requirements for European Firms.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New relationships were formed between all consortium members as many of them have not worked together prior to this agreement. The new relationships are especially relevant at the international level as many US and UK firms have not previously been able to work on Government related projects with Universities outside of the US or UK. The relationships will bring together the best capabilities of industry and academia in each country to work on high priority technical areas that both the DoD and UK Ministry of Defence (MoD) recognize. The OT is written so that is in compliance with both US and UK's audit systems and requirements and with both countries' business, science, and intellectual property models. This could not have been accomplished with a grant, contract, or cooperative agreement. Traditional DoD contractors were able to use a more flexible funding instrument which allows them to work in close cooperation with other US and UK universities and business. The DoD and the MoD will obtain access to unique research opportunities and the intellectual property rights to further develop these research areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0026

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Process Development for Warhead Fabrication, Load & Test

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: American Ordnance LLC

Effective Date: 26 Apr 2004

Estimated Completion or Expiration Date: 26 Apr 2007

U.S. Government Dollars: $ 1,457,238

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The overall objective of this effort is to design, develop and use cost efficient processes for procuring parts, fabrication and testing high performance shaped charge warheads. During the 36 month period of performance seventy-two warheads will be fabricated, loaded and tested to verify the chosen processes.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This task order sub-agreement broadens the technology and industrial base by allowing small companies and universities without range facilities to test prototype warheads against standard targets without incurring the cost of building and maintaining a warhead range facility. It encourages non traditional Defense Contractors to enter the warhead business by providing a low cost test option with a level playing field that includes standard targets and processes for testing.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The result of this task order sub-agreement will be to build and test early prototype warhead designs from all members of the Defense Ordnance Technology Consortium (DOTC) against uniform targets and under standard conditions. This allows small companies and universities that are DOTC members to obtain test data normally available to only large companies with their own ranges and assembly equipment. This agreement has organization structure provisions for information sharing that allow all the Consortium members to be briefed on the status and results of this effort.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0037

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Fabrication and Testing of Warhead Prototypes

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Day & Zimmermann (DZI), Inc.-Ks Div.

Effective Date: 29 Jun 2005

Estimated Completion or Expiration Date: 29 Jun 2008

U.S. Government Dollars: $ 1,841,386

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The overall technical objective of this effort is to create a prototype process that will reduce the cost of designing and developing shaped charge warhead. This reduction will be achieved through the development of cost efficient processes for procuring parts, fabrication and testing high performance shaped charge warheads.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This task order sub-agreement (TOSA) broadens the DoD Warhead Research and Industrial Base by developing a prototype cost reduction process for the fabrication, loading and testing of advanced shape charge warheads. In addition, the awardee is a new company entering the shaped charge warhead arena and this will add new capabilities to the warhead development community and increases the capacity for design, development and testing of new and novel shaped charge designs.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This TOSA fosters new relationships by bringing Day & Zimmerman Inc. (DZI) into the shaped charge warhead development community. DZI, as a new player, will interact with both government and industry members of the Defense Ordnance Technology Consortium (DOTC) in developing cost efficient and, thereby, increase DoD's capacity designing and developing shaped charge warheads.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0063

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of Advanced Multi-purpose Warheads

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: General Dynamics O T S (Niceville), Inc

Effective Date: 07 Dec 2005

Estimated Completion or Expiration Date: 07 Dec 2008

U.S. Government Dollars: $ 4,983,029

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This project is to increase the lethality of its existing advanced chemical energy (shaped charge) warheads against armor, personnel, and urban targets by incorporating critical technologies that make these warheads more multipurpose (hardened blast/fragmentation/anti-armor) while remaining compact devices. The specific technology areas proposed as candidates for future research and development and their technical benefits are such system applications as Joint Common Missile (JCM), Medium Range Munitions (MRM), and Non-Line-of-Sight System (NLOS-LS).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the OT was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

In order to provide maximum flexibility to DoD, GD-OTS has structured a program to advance key warhead technologies on an iterative basis to permit more abbreviated or extensive development commensurate with schedule requirements and available funds. Multiple design/fabrication/test iterations occurring over a multiple year program are scheduled. A representative mix of warhead sizes (120mm MRM, 150mmj JCM, 175mm NLOS-LS) and test types (jet characteristic, RHA performance, ERA, Military Operations On Urban Terrain) are assumed in order to investigate selected technology areas. Based on results between test iterations, effort can be redirected to focus more on concepts that prove promising during the down selection process. The unique organization under this agreement allows the sharing of technology between service laboratories and industry partners. This broadens both the technology and industrial bases.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
GD-OTS has been in the forefront in developing short compact charges, such as the K-Charges, that have increased or maintained penetration while reducing the required volume and weight. At the same time, they have developed shaped charges that have pushed the penetration performance envelope.. As this new technology is developed, the new information and test results will be shared with the Government, industry and academia under the unique relationships fostered by the agreement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0064

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Fabrication, Explosive Loading and Testing of Advanced Warheads

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: American Ordnance LLC

Effective Date: 25 May 2006

Estimated Completion or Expiration Date: 25 May 2009

U.S. Government Dollars: $ 1,542,890

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The overall objective of this effort is to procure prototype parts, load, fabricate, and test high performance warheads and other munitions items to support the Defense Ordnance Technology Consortium (DOTC) research and development effort. It is anticipated that a minimum of twenty-four warheads will be fabricated, loaded, and tested per year (seventy-two warheads over three years).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this Other Transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

The results of the prototype development and testing effort will support technology for future generation of warheads that will meet the future target requirements. The prototype testing protocols developed will broaden the technology base by proliferating the protocols throughout DOTC so that apples to apples comparisons can be made by all 120 government, industry and academia partners. This consistency of results will broaden the base by allowing individual test sites to compare data.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New technology will be shared throughout the 120 members of the DOTC for applications in all warhead areas. New relationships will be developed between these 120 members as the prototype test protocols and techniques are proliferated between the DOTC members through the unique sharing relationships of the master other transaction agreement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0065

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Synthesis Research Development & Scale-Up of Insensitive Energetic Materials and Other Critical Ingredients at Holston Army Ammunition Plant

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Ordnance Systems Inc

Effective Date: 24 Jan 2006

Estimated Completion or Expiration Date: 24 Jan 2008

U.S. Government Dollars: $ 2,734,352

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this program is to optimize PAX-34 to be used as a common Insensitive Munitions (IM) explosive fill for 60mm, 81mm, and 120mm mortar cartridges. The work will be completed in a four phase effort to facilitate incremental funding and to provide logical decision-making milestone. Phase I will involve small scale development work and testing of formulations to be performed entirely by OSI. Deliverables will include samples of each formulation supplied to Armament Research, Development and Engineering Center (ARDEC) for evaluation, as well as a Contrast Summary Report. Phase II involves the manufacture at OSI o production scale batches of up to two different formulations down-selected from Phase I. The explosive(s) will be loaded into 120mm Government Furnished Material mortar bodies at Kansas AAP and tested for IM Properties by NTS in Camden, AR. A second Contract Summary report will be completed at the close of this phase including all IM and performance test results. Phase III will comprise an engineering study to further optimize the production process for the final formulation. Manufactured product will be made available for any further testing and a third Contract Summary Report will encompass all findings from the first three phases. Phase IV is a follow-on effort to research synthesis methodologies for future energetic materials. It will include a formal scale up of any new materials and will be completed over a period of up to two years.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Explosive formulations are an integral component to the performance and safety of weapon systems, especially to the Army's Future Combat Systems efforts. Research focused on explosive materials and formulations that provide baseline/enhanced energetic performance while offering improved sensitivity is critical to the continued mission success and safety of the U.S. Warfighters. Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee has historically been the major supplier of explosive materials (especially RDX and HMX based explosives) to the U.S. Department of Defense (DOD). BAE SYSTEMS Ordinance System Inc. (OSI), the operating contractor at HSAAP, specializes in the development, scale-up, and manufacture of explosive formulations. These products include melt-cast and pressable formulations and coated explosive materials used in the processing of cast-cured formulations. Currently there is a need for common mortar explosive that exhibits Insensitive Munitions (IM) properties. PAX-34 has demonstrated good performance as a possible replacement to the current mortar fill; Composition B. OSI has demonstrated capabilities to optimize the current PAX-34 formula to improve the IM properties without losing the performance.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Cooperative Agreements and Other Transactions Entered for Fiscal Year 2006

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Holston Army Ammunition Plant (HSAAP) in Kingsport, Tennessee has historically been the major supplier of explosive materials (especially RDX and HMX based explosives) to the U.S. Department of Defense (DOD). BAE SYSTEMS Ordnance System Inc. (OSI), the operating contractor at HSAAP, specializes in the development, scale-up, and manufacture of explosive formulations. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0066

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advanced Fragment Warheads

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Aerojet-General Corporation

Effective Date: 17 Mar 2006

Estimated Completion or Expiration Date: 16 Mar 2007

U.S. Government Dollars: $ 696,232

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Aerojet proposes a two-year effort to develop a 7-inch diameter advanced fragment warhead that would provide kill capability against light to medium targets.

Aerojet will develop an advanced fragment warhead that would fulfill the kill requirements in a unique design concept while remaining robust and cost effective. The proposed warhead concept consists of an axi-symmetric geometry that utilizes the combination of blast/frag and multiple explosively formed penetrator (MEFP) technology.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Modern missile systems continue to require that a single warhead defeat a variety of targets. These targets tend to range from armored personnel carriers and light armor trucks to unarmored personnel. For a single warhead to satisfy kill requirements for a wide array of targets as mentioned, unique approaches to design must be analyzed and developed. This unique warhead will allow all single purpose weapon systems with in the target set to be multipurpose. The development of an advanced fragment warhead will broaden the technology base by providing a cost effective multipurpose warhead which can be shared with service laboratories and industry partners.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Initially new relationships will be between Aerojet engineers and Government personnel. As the technical objectives are achieved the information will be shared with industry, government labs and academia under the unique relationships in the Defense Ordnance Technology Consortium.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0067

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: General Dynamics OTS

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: St. Marks Powder, Inc.

Effective Date: 10 May 2006

Estimated Completion or Expiration Date: 10 Apr 2007

U.S. Government Dollars: $ 590,546

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This program will have four primary tasks that will culminate in the qualification of hybrid propellant in 105mm M900 ammunition as a direct replacement for the currently fielded M43 propellant. These are: 1) Complete development of HYBRID propellant for 105mm M900 ammunition optimized for temperature performance, 2) Perform a barrel wear assessment on the HYBRID propulsion charge, 3) Perform a complete IM assessment on the 105mm M900 ammunition with HYBRID propellant, and 4) Perform a full qualification test of the 105mm M900 ammunition with HYBRID propellant. The first three tasks will be done concurrently with the fourth as a follow on to task one.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This work will culminate in the replacement of M43 propellant with a HYBRID propellant that has improved vulnerability properties, better ballistic performance, and lower gun barrel erosion. The HYBRID propellant will be loose loaded granular that can easily be put into existing ammunition like 105mm M900 rounds as a direct replacement. It will be made from conventional low cost ingredients and thus serve as an economical solution to improving 105mm M900 ammunition. Along with the performance advantages of HYBRID propellant no new load assembly and pack (LAP) technology will be necessary, minimizing the cost to incorporate HYBRID propulsion over other propellant technologies.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This proposal calls for utilizing the resources of a number of facilities of both General Dynamics and the U.S. Army and Navy... It is proposed that propellant development and manufacture will be performed at General Dynamics St. Marks Powder with systems engineering support from other General Dynamics locations and ARDEC. Ballistic testing will take place at U.S. Army and Navy facilities. Barrel erosion and IM testing will be performed at Army, Navy, BAE and General Dynamics facilities. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0068

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advance Fragment Warheads

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Aerojet-General Corporation

Effective Date: 16 Feb 2006

Estimated Completion or Expiration Date: 16 Feb 2008

U.S. Government Dollars: $ 2,292,829

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Aerojet proposes a three year effort to fabricate, load, and test (FLT) compact (<120 mm diameter explosive charge) explosively formed penetrator (EFP) warheads. Projected scope of work will include a total of fourteen design iterations per year in each year of the three year period of performance. The EFP warhead computational design data for each warhead design iteration is to be government furnished. Detailed warhead design documentation will be prepared and released by Aerojet for each warhead design furnished. The compact EFP warhead designs are grouped into four categories:

1. Enhanced Single Liner (ESL) warhead

2. Enhanced Single Liner multi-point initiated (ESLP) warhead

3. Combined Efforts Warhead (CEW)

4. Multiple Explosively Formed Penetrator (MEFP) warhead

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Technology will be developed to fabricate, load, and test explosively formed penetrator (EFP) warheads. This will broaden the technology and industrial base as the government shares its warhead designs with industry and together they test and document the areas of improvement for the next iteration of design, fab, load and test.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Explosively formed penetrator (EFP) warheads foster new relationships because of their many uses in military weapons systems. The new technology will be shared throughout the Defense Ordinance Technology Consortium for applications in new areas under the unique information sharing arrangements in the master other transaction agreement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0069

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Launch Activated Battery

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Eaglepicher Technologies (EPT), LLC

Effective Date: 31 Mar 2006

Estimated Completion or Expiration Date: 30 Nov 2006

U.S. Government Dollars: $ 275,889

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The primary objective of the proposed development is to advance the XM-80 reserve battery technology to meet the requirements of a 40 mm air burst fuze. The proposed prototype battery is a state of the art, Lithium/Oxyhalide reserve battery being developed for the XM-80 program. The battery has the potential to provide high power for small projectile fuze proximity type functions in addition to self-destruct functions. The XM-80 battery was only required to operate at moderately low temperatures (-10 ^{o}C) and only required a moderately fast voltage rise on setback. This proposed development will focus on improvements in the technology to meet the requirements of a 40 mm voltage rise time on setback at low temperature requirements (-40 ^{o}C) and operate at high power for proximity functions.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The technology and industrial base will be broadened as the prototype becomes a robust specialty battery for the military and aerospace use. A small prototype battery with high power at low temperature will create an expanding market in the commercial and government sectors.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
EPT will team with Armament Research, Development ad Engineering Center (ARDEC) Fuze Division / Adelphi, MD to integrate the battery design with the 40 mm air burst fuze requirements. Additionally new relationships will be formed as the technology is briefed to members of the Defense Ordnance Technology Consortium and information is shared under the unique provisions of the master other transaction agreement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0070

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Cast Cure Explosive process and Pressed Explosive process.

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Ensign-Bickford Aerospace & Defense Co (EBA&D)

Effective Date: 07 Jun 2006

Estimated Completion or Expiration Date: 06 Dec 2007

U.S. Government Dollars: $ 516,464

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The scope for this effort is for the design, development fabrication, load and test of advanced energetics, advanced formulations, nano energetics, nano materials, micro energetics or novel materials for metal accelerating formulations, that include pressed and cast-cured formulations, replacement for blast explosives, development of advanced energetics, multi purpose explosives, novel energetics material and replacement for current explosives that are more survivable. Support the development of system technology in passing munitions tests as defined in MIL STD 2105B.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The formulations, development and demonstration of enhanced blast explosives and/or new explosives with up to 50% or higher energy and reduced sensitivity than current explosives, which are environmentally friendly, are easy to demilitarize, and producible at a reduced cost. Specifically, the development, test and demonstration of multi purpose explosives with enhanced performance, enhanced blast, and reduced sensitivity that includes thermo baric and thermo baric-like materials. With reduced environmental impacts and reduced sensitivity, these explosives will be manufactured in plants and factories with reduced restrictions. Manufacture can be done in commercial factories and not restricted to government plants.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
EBA&D has a history of growth in the Plastic Bonded Explosive (PBX) product market. PBX sheet explosive formulations, extrusion capability, and analysis of the new product line were all developed through focused Independent Research and Development efforts. The PBX plant capacity was tripled in 1994 with the addition of two new horizontal extruders, a new mixer, and a 6,000 square foot pack-out facility. In 1995, EBA&D purchased the PBX product line assets of the DuPont Company further increasing the product line and manufacturing capabilities. The unique organization of Defense Ordnance Technology Consortium and the structure of the agreement allow the sharing of information between and among Government, industry and academia. As new formulations are developed for new uses, the new relationships will form to exploit the advantages of the new materials and manufacturing environments.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0071

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype S&A Fuze Components

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Pennsylvania State University, The

Effective Date: 10 Mar 2006

Estimated Completion or Expiration Date: 09 Mar 2008

U.S. Government Dollars: $ 352,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
In this effort, Penn State will produce Prototype Safe & Arm Frames, covers, and bases that require small feature size and economically scaleable costs. This technique is a high yield and low cost technique. Component price using this process is $0.50-1.50 each versus $10.00 for other processes. Tooling will be fabricated using both X-ray Lithographie, Galvanoformung and Abformung (LIGA) for extreme detailed components and using micro EDM for the less detailed features of the cover and bases. The goals are to refine the experimental protocols, establish repeatability and replication data, design and procure tooling, develop process to manufacture components and refine existing techniques. The outcome will greatly accelerate development of low cost high resolution micro-miniature devices specifically for military, automotive and space/aviation applications.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The research for the prototype Micro-Electro-Mechanical Systems Safe and Armed (MEMS S&A) Fuze components using micro EDM and LIGA will broaden the Technology and Industrial Base by introducing cost effective manufacturing technology that will apply to military, automotive and space/aviation hardware. This will broaden the base and reduce the acquisition cost for the Department of Defense.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This prototype effort will foster new relationships as the technology is adopted for different products in the military, automotive and space/aviation applications. The low cost and light weight of the new prototypes will expand in the commercial sector and foster new relationships between the government and commercial sectors. Penn State will transition the technology to an industrial partner for scale up and qualification prior to production. The technology will also be shared through the unique relationships fostered by Defense Ordnance Technology Consortium.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0072

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Fuzing Multipoint Initiation

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: KDI Precision Products Inc

Effective Date: 26 Apr 2006

Estimated Completion or Expiration Date: 26 Apr 2007

U.S. Government Dollars: $ 231,815

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The next generation of warheads will offer increased lethality through the use of explosively formed projectiles and shape charges. Successful implementation of such warheads requires the development of fuzes capable of providing selectable and controllable initiation at multiple points. The existing approaches use critical components that are either too large, too expensive, or both. Improved warheads will only become a reality if components of sufficiently small size and cost are utilized. Conventional components used in present day Electronic Safe and Arm Device (ESAD) designs are not capable of implementing 16-point initiation capability at reasonable cost. This prototype approach using discrete detonators offers a technically feasible solution that addresses both cost and size. The proposed solution is based on recent detonator placement technology that is sufficiently mature to meet the requirements in a timely manner.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
A broadening of the technology and industrial base will be realized as a direct result of cooperation between the proposed industry partners and the government. The use of precise placement technology for the detonators allows lower cost components to be used in place of the larger ESADs that require more power. This new technology will allow components to improve over time and still be integrated into the system.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Efficient execution of the proposed program will involve participation by parties other than KDI. KDI will serve as the coordinator and administrator of the program and will manage three other industry partners: Reynolds, Nova Capacitor and Milcom, Inc. KDI also includes the active involvement of NAWCWD China Lake. Armament Research, Development and Engineering Center (ARDEC) is also considered a team member in an advisory capacity due to their involvement in a previous development. Each party provides a particular set of capabilities and area of expertise that is critical to the success of the program. These new relationships will be expanded as the new technology is shared with Defense Ordnance Technology Consortium partners.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0073

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of MEMS-Based FUZING

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: AXSUN Technologies Inc

Effective Date: 03 Apr 2006

Estimated Completion or Expiration Date: 02 Apr 2009

U.S. Government Dollars: $ 1,187,640

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
AXSUN Technologies will develop micro-system technologies and manufacturing techniques to enable small, low cost, smart fuze systems. AXSUN also will use these enhanced X-ray **Li**thographie, **G**alvanoformung and **A**bformung (LIGA) technologies, many of which have been developed to the current state of the art, as the basis for production of components.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The Micro-Electro-Mechanical Systems (MEMS) prototype devices produced under this proposal will be used for safe & arm and sensing functions, and the MEMS fuze systems will provide performance, size and cost capabilities that will enable enhanced warhead lethality in combination with multi-point initiation, and will result in reduced UXO by enabling low cost reliable fuzes. As the Mechanical portion of the Fuze industrial base continues to shrink the new MEMS components will allow other manufacturers using the LIGA process to enter the Fuze Industrial Base

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The LIGA foundry of AXSUN Technologies, Inc fabricates highly precise MEMS-scale metal components used in diverse, rapidly growing markets including smart munitions, wireless and fiber optic communications, enhanced resolution mammography, and tools for hot embossing and injection molding. In-depth knowledge and strict control of processes by means of statistical process control (SPC), metrology, and micro analytical techniques, such as tensile testing, results in a high yield of parts with consistent and predictable mechanical performance characteristics. As the commercial market for these MEMS devices grows more non-traditional companies, such as AXSUN, will be able to compete for production contracts. As the technical objectives are achieved and new technologies are developed, sharing of information between Government, industry, and academia will be pursued through the unique relationships within the Defense Ordnance Technology Consortium.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0074

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Fuze Enabling Technologies

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: University Of Florida

Effective Date: 30 May 2006

Estimated Completion or Expiration Date: 30 May 2010

U.S. Government Dollars: $ 1,755,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The University of Florida proposes research in four important areas: II.F.3 Advanced Fuze Sensors, II.F.6 Advanced Algorithms and Electronics, II.F.8 Electronic Safe and Arm, and II.F.11 Fuze Enabling Technologies. The proposed research is based on a close teaming liaison with the U. S. Army/Armament Research Development and Engineering Center (ARDEC) Fuze Division, demonstrated in the included letter of support and commitment. Each team member provides unique strengths to the team. The University of Florida has extensive experience in fuzing systems and subsystems, analog and digital signal processing and processors, and fuze simulation, analysis and testing. The ARDEC Fuze Division provides technical and programmatic leadership in Army fuzing technology based on decades of experience.

They propose one task under each of the previously mentioned RPP subparagraphs. Task 1 will focus on the development of advanced digital fuze sensors and concepts. The architecture of the digital LCATS-MOFA signal processor will be advanced to improve fuze sensor performance and flexibility. Task 2 will investigate novel waveform and processing schemes. This task will explore novel signal processor architectures and waveforms for larger payoff potential. Task 3 will involve development of robust safe/arm munitions sensors. A new, optimized second environment sensor for fuzing systems will be developed. Task 4 will investigate improvements to current fuze sensors and new fuze sensor designs using enabling technologies. This will include tests and improvements for the Mortar and Low Cow Advanced Target Sensor-Multi-Option Fuze for Artillery (LCATS-MOFA) Fuzes, autonomous sensors for counter-munitions and direct fire applications, and investigation, design, and development of new advanced fuze sensors and signal processor concepts.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This project will result in both near- and long-term benefits to the Government through the advancement of current and next-generation fuze sensor technology with applicability in numbers of munitions platforms. The project will result in performance improvement of the current digital fuze architecture based on LCATS-MOFA with optimized references, scenario specific parameter selection, and adaptive system technology. The project will advance next-generation fuze systems with development of novel waveform generation and processing schemes. Additional efforts will result in a robust second environment sensor for safe/arm in munitions. Finally, the project will address transition of fuzing sensor technology to smaller, lower cost munitions platforms with development of a reduced complexity fuzing architecture, as well as improvements to existing designs. These tasks will provide technical benefit to current and future fuzing systems having new and demanding requirements beyond those currently envisioned. The technology developed will broaden the base by allowing digital upgrades as digital technology continues to develop in the commercial market sector.

Extent to which the cooperative agreement or other transaction has fostered within the technology and

industrial base new relationships and practices that support the national security of the USA:
The UF/ECL has conducted sensor and fuze-related research and development for the Army for over 50 years and has broad analytical and experimental experience in proximity fuzing, radar, and electronic counter/counter measures (ECM/ECCM techniques). Over 200 papers, reports, and publications have resulted from this research since 1966. The UF/ECL has had extensive experience in experimental and analytical evaluations of fuzing systems of all types and has developed analytical and laboratory techniques which allow these evaluations to be conducted efficiently. In recent years, the ECL has conducted research on advanced weapon systems such as guidance integrated fuzing (Patriot), Follow-On To Lance (FOTL), self contained munitions (SCM), and the multiple option fuze for artillery (MOFA). Parallel analyses, computer simulation, and laboratory testing of fuze systems and components in fuze test stations are used by the ECL to evaluate sensor and fuzing system performance. UF/ECL research has investigated coded modulations and frequency hopping techniques which considerably increase ECM resistance. Some of the architectures examined by the UF/ECL are simple to implement, have robust performance characteristics, and may be applicable to a variety of fuzing scenarios. UF/ECL has performed significant research on fuzing for ground and area target applications. Other research related to guidance integrated fuzing for air targets provides the UF/ECL with expertise needed for determination of the accuracy required for parameter estimation for advanced fuzing systems.

All of the fuzing-related research at the UF/ECL has been closely coupled to the needs and interests of the Department of Defense. For almost two decades this work has been performed with guidance and review by scientists and engineers at the ARDEC Fuze Division, Adelphi, MD. Accordingly, the proposed research for the Defense Ordnance Technology Consortium program will be performed by formally teaming with ARDEC to maximize the strengths of the UF/ECL and the Department of Defense. This teaming is expected to result in new and important fuzing innovations and will ensure relevance of the results. Additionally new relationships will be formed as the new technology moves to Low Rate Initial Production, Qualification and Production as team members will be competitively chosen from Industry.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0075

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advanced Warhead Development

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 17 Mar 2006

Estimated Completion or Expiration Date: 17 Mar 2008

U.S. Government Dollars: $ 1,365,758

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
A broad based program aimed at carrying out mathematical modeling in support of advanced warhead design and testing, and the development of miniaturized initiating components is proposed. SAIC personnel, will work with the warheads group, have hands on experience with various prototype computational packages in modeling and simulation of warheads and bring several years of experience in fabrication of warhead test fixtures.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

SAIC shall conduct an investigation into the development of new energetic formulations based on the EDF production process. These formulations will be used as components in the detonation train of micro initiators and MEMS-based Safe & Arm devices, as well as in multi-point initiation, and other explosive logic circuits. All components of the detonation train will be developed and their detonation performance will be demonstrated both singly and in a full detonation train. SAIC will use commercially available binder systems and investigate the use of, but is not limited to, CL-20, HMX, RDX, TNAZ, and PETN, lead azide, lead styphanate, basic lead styphanate, NOL-130, or other energetic materials, as identified by the customer, in the new formulations. All components of the formulation will be commercially available materials (binders, defoamers, plasticizers, surface wetting agent, biocides.) The use of commercial off the shelf materials will broaden the industrial base to include the commercial suppliers.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
SAIC is a new member of Defense Ordnance Technology Consortium (DOTC) and the proposed SAIC team will work closely with government personnel on modeling, simulation and testing of advanced warhead design and testing. Combining the programmatic knowledge, facilities, and testing and evaluation capabilities of government personnel with SAIC scientist's expertise in mathematical modeling and testing is the key to the success of this program. As a new member of DOTC, the new relationships will be between SAIC scientists and Government scientists of all services.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0076

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Plasma Ordnance Demilitarization System

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: MSE Inc

Effective Date: 06 Mar 2006

Estimated Completion or Expiration Date: 05 Mar 2007

U.S. Government Dollars: $ 833,449

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this project is to design, fabricate, install, and conduct initial start-up testing of the prototype Plasma Ordnance Demilitarization System (PODS). Start-up testing of the PODS at the Hawthorne Army Depot (HWAD) with ordnance is organized into three distinct segments: preliminary testing (PT), Performance Verification Testing (PVT), and Comprehensive Performance Testing (CPT).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This project broadens the technology base and industrial base by increasing the ways available for the DOD to demil ammunition is a safe and environmentally friendly way. This technology will allow DOD to continue demil operations when open burning and open detonation are no longer permitted.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The technical objectives and broadening of technology will be conducted in collaboration with ARDEC, the Defense Ammunition Center and PM Demil. New relationships have already been formed by this project between MSE, Day & Zimmerman, the Environmental Protection Agency, the Nevada Dept of Environmental Protection, and Hawthorne Army Depot. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in other areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0077

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of MEMs-Based Fuzing

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation

Effective Date: 17 Mar 2006

Estimated Completion or Expiration Date: 17 Mar 2008

U.S. Government Dollars: $ 983,650

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this agreement is to significantly improve fuzing to achieve the performance enhancements for the next generation munitions to meet applications such as defeat of hard and deeply buried targets, military operations on urban terrain (MOUT) targets, and thermo barics.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This broad based program aimed at designing novel explosive formulations and loading technologies for novel fuze and initiating systems will replace the current mechanical fuzing devices. These miniaturized fuze components will broaden the technology and industrial base by allowing the many MEMS foundries to compete in providing the MEMS components for military fuzes.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
SAIC, a new member of Defense Ordnance Technology Consortium will work closely with Armament Research, Development and Engineering Center personnel on the formulation and processing of energetic materials. SAIC scientists will carry out the initial formulation and development work of the outline programs. All materials produced by newly developed processes will be submitted for safety and performance testing. The new relationships will be between SAIC scientists and Government personnel of all services.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0078

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Active Protection System MEPF Warhead Fabrication, Loading & Test

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Aerojet-General Corporation

Effective Date: 24 Mar 2006

Estimated Completion or Expiration Date: 06 Apr 2009

U.S. Government Dollars: $ 3,007,721

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The scope of work is fabrication, loading, and testing by Aerojet of 3 each Active Protection System (APS) Multiple Explosively Formed Penetrator (MEFP) Lethality Optimization warheads, 3 each APS MEFP IM Alternative Explosive warheads, 2 each APS MEFP Alternate Liner Material warheads, and 5 each Dynamic Threat Performance Verification warheads. All of the APS MEFP warhead design concepts are to be provided by ARDEC.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
At the completion of the warhead design study phases in each year, it is projected that an optimized APS MEFP warhead design will be selected and fabricated for testing against representative dynamically fired threats. Loaded warheads will be tested with the instrumentation required in the Armament Research, Development and Engineering Center furnished test plans including flash radiography, collection of MEFP pattern data, penetration data and when required, threat interaction data. Aerojet's Socorro Operations in New Mexico will conduct testing according to the plans provided by ARDEC. Aerjojet will use EMRTC, an affiliate of New Mexico State University, personnel to conduct warhead tests. The APS will allow lighter combat vehicles that can be manufactured in light truck or SUV factories rather than government owned tank plants. This will broaden the industrial base as these combat vehicles will be able to be assembled in commercial factories.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Over the years Aerojet has been in the forefront of warhead development and production. Aerojet's warhead experience base includes a wide range of warhead types such as blast/fragmentation, hemispherical, shaped charge, and explosively formed penetrator (EFP) warheads. Some of the programs Aerojet has worked on are WASPM, STAFF, XM-74 Mine, Hellfire, Chicken Little II Warheads, MPIM, AAWS-M, SADARM, TOW2B, TOW2A, SRAW, Predator, APS Warhead, and Warhead Optimization for FSAP. Aerojet's success on these programs has promoted the understanding of advanced warhead technologies in all functional disciplines design, manufacturing, lading, and testing. In addition to an in depth understanding of warhead technologies, Aerojet's capabilities include personnel, facilities, and equipment available for the proposed APS MEFP Warhead Fabrication, Load, and Test Program. There fore, Aerojet possesses strong capability to perform tasks. The Government, industry and academia team on this project have already formed new relationships. When successful, this new design will foster many new relationships as new manufacturers are able to compete for production of the new lightweight vehicles.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: NA

Task Number: 0079

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Wafer Level Fabrication of MEMS Impact Switches

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Ht Microanalytical Inc

Effective Date: 19 Apr 2006

Estimated Completion or Expiration Date: 19 Aug 2006

U.S. Government Dollars: $ 155,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This project is a coordinated research and development program to develop prototype Wafer level fabrication of Micro-Electro-Mechanical Systems (MEMS) impact switches. The objective is to develop a X-ray Lithographie, Galvanoformung and Abformung (LIGA) based set of prototype manufacturing processes that provide a high aspect ratio metal structure and permit the wafer level assembly and packaging of the micro fabricated components

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

The technology and industrial base will both be broadened as the initial x-ray lithography for the mold form patterning is transitioned to lower cost future fabrication techniques such as lower cost hot embossed mold forming. The prototype manufacturing processes are expected to be adopted by commercial industry as well as government contractors because the in situ fabrication wafer level techniques will minimize or eliminate post fabrication assembly of micro parts which is a major cost driver.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New technology will be shared throughout the Defense Ordnance Technology Consortium (DOTC) for applications in new technology areas that utilize MEMS components. The new relationships will be established between HT Micro and all of the 120 DOTC members that have an interest in MEMS components.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0080

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Green Manufacturing of Prototype Advanced Technical Light Weight Armament Systems

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Technikon, LLC

Effective Date: 22 Aug 2006

Estimated Completion or Expiration Date: 22 Nov 2007

U.S. Government Dollars: $ 855,127

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective is to develop light weight prototype armament structures to demonstrate that new manufacturing technology and environmentally improved processes can supply light weight castings that can be utilized in gun structures and armament to reduce weight and life cycle costs. Use of titanium and magnesium castings will demonstrate that complex shapes can be manufactured while making the parts corrosive resistant and eliminate welding.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This project broadens the technology and industrial bases by providing another material for the designers to consider when developing weapon systems. This technology is less expensive and more environmentally friendly than welding. This should be adopted by commercial industry and allow the government to use advances in this technology from the commercial sector.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New Relationships have already been formed between the DoD's Casting Emissions Reduction Program (CERP), Tehnikon, Ford Motor company, General Motors, Daimler Chrysler, Armament Research, Development and Engineering Center and the American Foundry Association. Currently an Army initiative, successful use of the technology may be broadened to the other Services. Results of these prototype tests will be briefed to all 120 members of the Defense Ordnance Technology Consortium for further teaming.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0081

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Synthesis, Scale-Up and Process Development of New And Existing Energetic Materials

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 06 Apr 2006

Estimated Completion or Expiration Date: 06 Apr 2010

U.S. Government Dollars: $ 4,991,151

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
A broad based five year program aimed at evaluating existing materials and designing new materials as high explosives ingredients in novel formulations for various explosive and propellant applications will be Pursued. Scale-up and optimization of known and novel ingredients will be carried out.

SAIC will design and execute the synthesis of novel energetic will include high nitrogen compounds; polynitro compounds; acyclic, cyclic and polycyclic nitramines; nitro and/or amino substituted aromatic and heteroaromatic compounds; highly sensitive heavy metal free compounds useful as green primaries; replacement candidates for TNT, RDX, AP and other currently used materials in DoD applications; novel oxidizers including difluoroamino compounds and their precursors. In addition, they will design and execute the synthesis of novel polyazides and polyacetylenes and explore their cycloaddition chemistry for curing applications.

SAIC will design and execute the synthesis of novel energetic and non-energetic ionic liquids.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Synthesis of new high nitrogen compounds; synthesis of linear nitramines; and synthesis of novel polyazides and investigation of their cylcoaddition chemistry will broaden technology and industrial base. SAIC will conduct process development and optimization studies on compounds of interest to DoD. Alternate processes will be designed and evaluated. Scale-up studies will be conducted to prepare material for testing. Process plans will be written and SAIC will assist in the transition of processes to commercial or government facilities. Since SAIC is not a manufacturer of energetic materials all new materials and technology will be transitioned to other industrial partners in the DOTC on a competitive basis.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense ontractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
As an incumbent contractor at Armament Research, Development and Engineering Center in energetic materials research, development, engineering, and testing; weapons system development; chemical and physical analysis of materials; environmental technology; and demilitarization, SAIC is thoroughly familiar with the technical areas described in the technical objectives. As this new technology is developed the information and test results will be shared with the Government, Industry, and Academia. New relationships will be created as the new materials are transitioned to industry for scale up, Low Rate Initial Production and Qualification prior to Production.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0082

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Novel Nanoenergetics Applications and Microelectromechanical Devices

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Missouri System, University Of

Effective Date: 01 Jun 2006

Estimated Completion or Expiration Date: 01 Jun 2009

U.S. Government Dollars: $ 4,798,351

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective is to synthesize novel nanoenergetic thermites, propellants and explosives with tunable burn rate, pressure and temperature. These nanoengineered energetic materials will be modified with polymers in nanoscale to realize their applications in many different areas. These nanoenenergetic materials in combination with various Micro-Electro-Mechanical Systems (MEMS) will be used for the fabrication of multipoint initiators, microdetonators, safe and arming devices and pulsed power devices.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This project broadens the technology and industrial bases by providing a new class of materials with phenomenal blast wave velocity. It will allow technology breakthroughs in many technology areas.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New relationships have already been formed between Armament Research, Development and Engineering Center, University of Missouri, and PM-CAS. Currently an Army initiative, successful use of the technology may be broadened to the other Services. Results of these prototype tests will be briefed to all 120 members of the Defense Ordnance Technology Consortium.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0083

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Study of Flame Spreading & Combustion Phenomena of Layered Propellants

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Pennsylvania State University, The

Effective Date: 10 Jul 2006

Estimated Completion or Expiration Date: 10 Oct 2007

U.S. Government Dollars: $ 310,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Perform a study entitled 'Consideration of Nano-Energetic Materials and High-Nitrogen Compounds on the Formulation and Performance of New Gun Propellants' for Armament Research, Development and Engineering Center. An important problem that is being looked at extensively is the development of new generation high-energy propellants that can be used in fast-core propellant configurations. These configurations are attractive because the attempt to achieve high propellant loading-densities while maintaining moderate gun chamber pressures. The fast-core propellant charge places a slow burning propellant at the initially exposed surfaces of the propulsive charge. At the beginning of the ballistic cycle, the combustion is associated primarily with this slow burning propellant with a small amount of fast-burning propellant on the edge of the propellant disk. This situation remains unchanged until the chamber pressure has reached an elevated level. At this point the slow burning propellant is largely consumed and the main portion of the fast burning propellant is exposed to the hot combustion products. This fast burning propellant can further increase and sustain the chamber pressure for a prolonged period while the projectile is moving down the barrel. In some cases, the combustion process can even result in a second pressure peak in the P-t trace. This design hinges on the existence of a propellant combination that supports a high burn-rate ratio (~3:1) between fast and slow burning propellants.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Recent propellant ingredients developments in the field of energetic materials have shown the potential for significant performance advancements beyond conventionally utilized modified double-base propellants, such as JA2. These developments in energetic materials include the synthesis of high-energy oxidizers, energetic thermoplastic elastomer (TPE) binders, nano-sized metal additives (aluminum), and high-nitrogen compounds ($DAATO_{3.5}$ and TAGzT). It is clear that these materials have the potential to improve the energy content and burning rate over existing gun propellants. Recent studies performed by the proposers and their coworkers has shown that by using the high-energy HNF combination (with impetus of 1,229 J/g) can be made that will satisfy a burn rate ratio of approximately 3:1 with an average flame temperature of 3,380K. Their measured burning rate data for the advanced high-energy (AHE) and advanced moderate-energy (AME) propellants for a broad range of pressures and the burning-rate ratio are known. The impact sensitivities of these advanced propellants have also been measured. The results show that addition of hydrazinium nitroformate (HNF) and nano-sized aluminum exhibited improved impact sensitivity at levels that can be considered acceptable for deployment. It is also believed that by replacing the HNF with ADN in the AHE formulation, the pressure exponent of the burning rate expression could be reduced while maintaining the high burning rate of the propellant. These new energetic materials will replace Nitro glycerin and nitro cellulose and will allow new commercial manufacturers to compete with Cold War Era GOCO Ammunition plants

Cooperative Agreements and Other Transactions Entered for Fiscal Year 2006

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Penn State University is a state-related institution of higher education and is a federal demonstration project participant. The unique organization of Defense Ordnance Technology Consortium (DOTC) and the structure of the other transaction agreements allow the sharing of information between and among Government, Industry, and Academia. As new formulations are developed for new uses, the new relationships will form to exploit the advantages of the new gun propellants. Penn State and DOTC will form new relationships as it transitions the new materials to commercial companies for Low Rate Initial Production, Qualification and Production of the new materials.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0084

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Production of ETPE Gun Propellant Containing Nano Aluminum For Large Caliber Testing

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: ATK Thiokol Inc.

Effective Date: 23 May 2006

Estimated Completion or Expiration Date: 23 May 2007

U.S. Government Dollars: $ 326,555

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective is to design and develop prototype energetic thermoplastic elastomer (ETPE) based large caliber propellant using nanoaluminum as an additive. This project will deliver enough propellant for 30mm gun testing and subsequently enough propellant for 120 mm gun testing. The project includes prototype manufacturing development to make the propellant using a twin screw extruder.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This project broadens the technology and industrial bases by providing a new propellant manufactured on twin screw technology already in use by the candy and cosmetic commercial sector. New improvements for this technology can be gained from the commercial sector as develop.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New relationships have already been formed between Armament Research, Development and Engineering Center, ATK, and PM-MAS. Currently an Army initiative, successful use of the technology may be broadened to the other Services. Results of these prototype tests will be briefed to all 120 members of the Defense Ordnance Technology Consortium for further collaboration.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0085

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Devel / Demo of Sub-millimeter Scale Micro Initiative

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Tanner Research Inc

Effective Date: 19 Apr 2006

Estimated Completion or Expiration Date: 19 Apr 2007

U.S. Government Dollars: $ 170,706

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Development/Demonstration of sub-millimeter scale micro-initiator and train for Micro-Electro-Mechanical Systems (MEMS)-based Safe & Arm. Implement micro-scale initiators at lower cost by developing a methodology to mass fabricate micro-scale initiators on PC-board material that is potentially less expensive and more producible and develop a manufacturing plan to address the implementation of the mass fabrication methodology in order to support recurring requirements of about 3 million initiator devices per year. This will require adapting the existing micro-initiator design for a more generic use in a variety of munitions-based applications all centered around variations in the army-developed MEMS-based S&A device. This development will be overlaid with the goal of continuing to achieve a low-cost of fabrication.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The army now has a very real need to begin to transition to smart munitions being developed for use against high-value tactical targets into the capable hands of the modern battlefield Warfighter. The advanced technology embedded in smart munitions requires considerable real estate occupying space previously taken by the energetics-based lethal mechanism. The use of micro-scale components such as MEMS-based S&A and initiators actually facilitates the insertion of most embedded components. In recognition of the financial realities facing the military today, the Contractor has proposed a unique mass fabrication approach for use in implementing the micro-scale initiator needed for use within the MEMS-based S&A device. Based on integrating low-cost high yield PC-board fabrication techniques pioneered at Tanner for Armament Research, Development and Engineering Center (ARDEC), the contractor proposes to use a similar methodology to further reduce cost while enhancing the overall Productivity of the micro-initiator device. The contractor's mass fabrication scheme provides a logical technology development path to achieve the low-cost needed in today's financially constrained acquisition environment. By using PC Board material and processes the technology and production bases will be broadened by allowing commercial non traditional companies to compete for designing and manufacturing DOD Fuze components.

Cooperative Agreements and Other Transactions Entered for Fiscal Year 2006

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Tanner proposes the use of a loading subcontractor to load energetic materials into the initiator boards fabricated in accordance with any requirements detailed in TACOM-ARDEC drawing entitled Initiator Board Explosive ASM, DC-6. Tanner will ensure the loading subcontractor conducts a pre-production function test to prove quality of the explosive load and explosive/bridge interface. Tanner will subcontract to either of Stressal, Ensign-Brickford, or Action to perform the lead styphnate spot charging and loading of colloidal lead azide into the micro-scale charge cavities. These new relationships will be expanded to other commercial companies as the new technology enters production and qualification testing. New technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0086

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Warhead Engineering

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation

Effective Date: 21 Sep 2006

Estimated Completion or Expiration Date: 21 Sep 2010

U.S. Government Dollars: $ 4,830,731

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of the proposed program is to develop a prototype production process to rework the projectile body, fuze adapter and fuze joint of the 60mm M720A1/M768 High Explosive Mortar Cartridges to prevent loosening during rough handling, transportation vibration, and field use while retaining the ability of the cartridge to meet performance requirements and insensitive munitions requirements IAW MIL-STD 2105C. In addition, the proposed program will develop a prototype 61/81/120mm High Explosive mortar cartridge to meet insensitive munitions requirements IAW MIL-STD 2105C through the design of warheads and conduct packaging studies.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This Prototype Production Process will broaden the Industrial Base by developing new manufacturing techniques for Insensitive Mortar Munitions. These techniques will be applicable to Artillery and Tank Ammunition both in GOCO and COCO Ammunition Plants.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New relationships have already been formed between Armament Research, Development and Engineering Center, Naval Surface Warfare Center Indian Head, AOT and MECAR Corporation. The new technology will be shared throughout the Defense Ordinance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0087

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Fuzing Development and Improvement

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Alliant Techsystems Inc.

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 27 Sep 2007

U.S. Government Dollars: $ 676,896

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective is to design, develop and test prototype Micro-Electro-Mechanical Systems (MEMS) Safe and Arm Devices for Military Fuzing of Future Systems. The MEMS devices will be packaged to optimally use the space available.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This design and development effort will focus on increased functionality, improved survivability, cost reduction, and technologies that can be universally applied to several military fuze applications. This will broaden the technology base and once in production will broaden the industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
As new ideas and concepts become available during the design, ATK Ordnance Systems will utilize them to advance the state of the art and keep the Government on the leading edge of fuzing technology. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas. One new relationship that has already been established is the teaming of ATK and Tessara, Inc.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0088

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Manufacture of an Environmentally Friendly IM Propellant for the M793 and M788 Medium Calier Training Rounds

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Alliant Techsystems Inc.

Effective Date: 21 Aug 2006

Estimated Completion or Expiration Date: 20 Aug 2007

U.S. Government Dollars: $ 198,662

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this project is to investigate the concept of producing solventless propellant formulations for medium caliber ammunition. Current single base propellants contain diphenylamine (DPA), an ingredient on the chemical watch list, and are manufactured using solvents (ether/alcohol) as a processing aid. Removal of solvents from the processing not only reduces the emission of volatile organic compounds to the atmosphere; it also produces a more mechanically robust propellant. Improved mechanical properties translate into improved IM characteristics.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This project broadens the technology and industrial bases by developing an on-shore source for solventless Med Caliber Propellant. This environmentally friendly prototype manufacturing process may have application to other propellants. The industrial base will be broadened as the propellant enters production.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The technical objectives and broadening of technology will be conducted in collaboration with Armament, Research, Development and Engineering Center, PEO-AMMO, and ATK. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas of propellant technology.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0089

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: R&D Projects in Support of the Dolc FY 06 R&D Effort

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation

Effective Date: 21 Sep 2006

Estimated Completion or Expiration Date: 21 Sep 2010

U.S. Government Dollars: $ 4,899,501

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Develop the next generation of pyrotechnic countermeasures, signals and flares. This will include the development of new pyrotechnic pilot production processes component designs, subsystem designs, full up system designs, test and evaluation techniques, improved material characterization methods and systems integration to improve the capability, performance, safety and reliability of these next generation pyrotechnic countermeasures, signals and flares.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The effort represents a broadening of the pyrotechnic technology base for novel countermeasures, including a fresh look at the problem area from fundamental physical, chemical, functional and thermodynamic properties.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This project has already formed new relationships between Armament Research, Development and Engineering Center, PM CAS, NSWC Indian Head and AOT. The results of this project will be shared among the 120 members of Defense Ordnance Technology Consortium for further teaming arrangements.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0090

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: R&D Projects in Support of the DOTC FY 06 R&D Effort

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 21 Sep 2006

Estimated Completion or Expiration Date: 21 Sep 2010

U.S. Government Dollars: $ 4,890,887

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this proposed program is to develop the next generation of Pyrotechnic Battle Field Effects Simulators (BES), primers, tracers, and pyrotechnic components.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This program will include the development of new pyrotechnic pilot production process, component designs, sub system designs, full up system designs, test and evaluation techniques, improved material characterization methods, and systems integration to improve the capability, performance, safety, and reliability of these next generation pyrotechnic Battle Field Effects Simulators (BES), primers, tracers, and pyrotechnic components. These new technologies will broaden the technology base and as they are transitioned to production they will broaden the Industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
SAIC/AOT proposes a strategic partnership with the Naval Surface Warfare Center/Indian Head Division and the Allied Defense Group/MECAR S.A., MERCER USA, Inc. PTC LLC, and Unique Technologies, Inc. to offer technical excellence, depth of experience, versatile facilities, and effective technical project management to provide superior prototype products, services, and cost efficiencies in support of Armament Research, Development and Engineering Center and the Defense Ordinance Technology Consortium R&D objectives. The new technology will be shared throughout the Defense Ordinance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0092

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Environmental Technology

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: General Dynamics O T S (Niceville), Inc

Effective Date: 16 Jun 2006

Estimated Completion or Expiration Date: 16 Jun 2007

U.S. Government Dollars: $ 1,909,600

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The contractor shall perform research, development, and engineering of sustainable technologies for the life cycle of weapons and munitions. This includes acquisition, analysis, pollution prevention; recovery; recycling, and reuse of munitions, munitions components, and environmental samples; range design, transformation, management, clean-up and sustainability; heavy metal and depleted uranium management; regulatory and policy integration technology transfer including business and strategy development; and health and ecotoxicity technology efforts related to the organic and inorganic hazardous materials used in weapons and munitions.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The Army's primary objective for the environment is to apply a mission-oriented, systems approach to managing environmental issues. The prescribed strategy seeks to integrate improved practices based on the principles of sustainability across all Army functional areas. The Army's goals will be achieved through the development, demonstration and transition of innovative technology solutions for the environmental, safety and occupational health (ESOH) challenges associated with the life-cycle management of weapons and munitions. The scope of Armament Research, Development and Engineering Center‘s ESOH technology solutions include all life-cycle phases of weapons and munitions including manufacturing, testing, and demilitarization facilities and operations.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The contractor shall conduct literature, patent, and technology searches on environmental technologies, energetic materials, and related elements. Systematic study and evaluation of the information in the searches will be conducted. These evaluations will be used to identify potential users, design of original, new, or improved pathways to synthesis, manufacture production and upscale specific technologies. The contractor shall evaluate the feasibility of emerging technology concepts for pollution prevention in the Army's industrial base. This includes the detection and remediation energetic materials and bulk chemical warfare agents in soil and groundwater, etc. and the decontamination of energetic materials and chemical and biological agents in weapon systems. New technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0093

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Systhesis and Characterization of Advanced Energetic Thermoplastic Elastomer with Improved Low Temperature Properties

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Aerojet - General Corporation

Effective Date: 06 Jul 2006

Estimated Completion or Expiration Date: 06 Dec 2006

U.S. Government Dollars: $ 471,858

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The contractor shall synthesize the energetic thermoplastic elastomer (ETPE) bis-azidomethyloxetane (BAMO) and nitratomethylmethyloxetane (NMMO) develop prototype manufacturing processes for the slow and fast burning propellant molding powder. There is a need to tailor the burn rate of the fast burning formulation to improve the burn rate differential between the fast and the slow burning propellant formulations. To achieve this objective, 5% nano-aluminum made by Nanotechnology shall be added to the fast burning formulation. Recent laboratory experiments have shown that a 20 to 30% increase in burn rate of the fast burning formulation can be achieved.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This new technology for Gun propellant will broaden the technology base by introducing a new family of propellant with improved properties. It will broaden the Industrial Base because it can manufactured using a twin screw extruder that is used commercially in the candy and cosmetic industries. The government will be able to apply new technology as it is developed in the commercial market place for this type of manufacturing process.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This effort will scale up these results and co-layered propellants will be manufactured at Armament Research, Development and Engineering Center (ARDEC) to demonstrate this improvement in the 60mm ETC gun at the BAE gun test fixture located at Minnesota. ARDEC, AEROJET and Nanotechnology, Inc have already established new relationships. The new technology will be shared throughout the Defense Ordnance Technology Consortium..

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0094

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Hybrid & Energetic Material Advanced Fuel Cells

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: New Jersey Institute Of Technology (NJIT)

Effective Date: 19 May 2006

Estimated Completion or Expiration Date: 19 Nov 2007

U.S. Government Dollars: $ 4,899,954

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort entails the development of a direct methanol/energetic material fuel cell using carbon nanotube electrodes and a ceramic nanocomposite membrane. While fuel cell technologies have been under development for decades, this is a novel approach to the general problem of achieving higher energy and power densities, which are needed to move fuel cells closer to a common and inexpensive power source technology. The effort also involves the massive screening of a multitude of candidate materials using a conceptual technique inspired by the pharmaceutical industry.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
If successful this effort will build upon prior fuel cell work while broadening the technology into using energetic materials, heretofore not seen. The use of energetic materials to power fuel cells on the battle field will broaden the technology base and provide additional sources of power.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This effort has fostered new relationships between the Army, industry and academia with the partnership of NJIT and subcontractor Nanodiscovery Corporation of Wyoming. This novel fuel cell approach has broad applicability to all services and civilian industry and the potential for additional relationships is great.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0095

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Unitary Warheads and Other Optional Loads

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: General Dynamics O T S (Niceville), Inc

Effective Date: 27 Jun 2006

Estimated Completion or Expiration Date: 27 Jun 2007

U.S. Government Dollars: $ 4,871,282

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Improve unitary warheads and other optional lethal loads as follows: K-charge improvement excursion; M-charge improvements; improve the long stand-off warhead (LSOW); improve the multi-purpose blast/fragmentation warhead; develop other lethal system loads for warhead effects.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium. K-charge, M-charge, LSOW, penetrating blast fragmentation warheads, and other lethal system loads for warhead effects. Data will be reviewed and design improvements will be evaluated by hydrocode calculations. After review, the selected concept will be formulated as a detailed design which will be fabricated and tested. The data will be reduced, analyzed and reported. The smaller and more powerful warheads allow them to be used on smaller caliber weapons and lighter platforms. This broadens the base by making the warhead technology available to both handheld and air launched weapons.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The technical objectives and broadening of technology will be conducted in collaboration with Picatinny Arsenal. The new technology that will be developed is applicable to both shoulder and air launched weapons. The new technology will be shared throughout the Defense Ordnance Technology Consortium, for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0096

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Highly Integrated Transceiver Refinements for Production

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: M/A-Com Inc

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 27 Sep 2008

U.S. Government Dollars: $ 245,595

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
To refine the design of the Transceiver Monolithic Microwave Integrated Circuits (MMIC)s developed under Defense Ordnance Technology Consortium (DOTC) contract DAAE30-01-9-0800-0040 such that the performance goals for the MMICs are more closely met. Under DOTC contract DAAE30-01-9-0800-0040, M/A-COM is developing Transceiver MMICs 3.3V and 5V mW Transceivers and 5V transceiver with higher output power. This Phase 1 Iteration 1 design activity is planned to be complete on or before 31 March 2006. The work started with two mW Transceiver MMICs (3.3V and 5V) to be designed, fabricated, packaged, and evaluation samples delivered. During the execution of the design of the mW Transceiver MMIC, a third, higher output power Transceiver MMIC design was added to the scope of work. All of these MMIC designs are expected to require minor modifications to refine their performance prior to being released as approved production products and establishing M/A-COM as a source for fuzing Transceiver components.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This prototype design project will broaden the industrial base by providing an on-shore source for Highly Integrated Transceiver MMICs that meet the needs for military fuzing applications.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New relationships will be established between this new on-shore source and the commercial interested in this technology avionics and sensors. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0097

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advanced Energy Weapon Systems & Materials

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 27 Jun 2006

Estimated Completion or Expiration Date: 27 Jun 2007

U.S. Government Dollars: $ 2,190,807

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Perform research, development, engineering, and testing for design, development, fabrication, manufacture, surveillance, and demilitarization of advanced energy weapon systems, sub-systems and components incorporating energetic materials including propellants, pyrotechnics, explosives, and high energy elements including high power: laser, radio frequency (RF), pulse power, and acoustic technology applications. In addition, provide input as requested by the government to create work directives, schedule, hours and cost projections.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

The threats our military personnel face are changing from typical force-on-force setting to Military Operations in Urban Terrain (MOUT) engagement, terrorism, suicide bombers, improvised explosive devices, hostage situations, police action, and humanitarian missions. The need arises for equipment and methods to detect anti-personnel devices, including explosives, and for weapon systems with capability to either incapacitate (Non-Lethal effects for crown control, hostage rescue, etc) or be capable of deadly force in MOUT or other special operation scenarios when critical to mission success. This requires a contractor to perform research, development, engineering, and testing for design, development, fabrication, manufacture, surveillance, and demilitarization of detection and advanced weapon systems, including lethal and less-than-lethal weapon systems, sub-systems and components, using energetic materials including: propellants, pyrotechnics, explosives and high energy elements including, but not limited to, high power: laser, radio frequency (RF), pulse power, and acoustic technology applications

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
SAIC personnel will conduct literature, patent, and technology searches on advanced energy weapon systems related elements including: energetic materials, lasers, RF and Pulse Power components, sub-systems, systems and combined or distributed systems and their related devices and delivery systems. Objectives of literature and technical searches, synthesis and testing will be directed in subject areas such as identification of critical high energy technology/components, synthesis, formulation, generation, propagation, counter measures, counter countermeasures, component compatibility, hazards, vulnerability, storage, stability, characterization, testing, performance, Department of Transportation (DOT) hazard classification, shipment, manufacturing, packaging, and DOT safety requirements.

Systematic study and evaluation of the information in the searches will be conducted. These evaluations will be used to identify potential CRADA or Cooperative R&D Project Partners interested in the design of original, new, or improved pathways to synthesis, manufacture production and upscale of specific advanced energy weapon bench level effects to the tactical level, identification of scaleable effects, chemicals or classes of chemicals or high energy switching, control or storage devices or systems. SAIC personnel will provide technical editing and formatting of these documents in support of the organizational marketing strategy efforts.

New technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0098

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Energetic Materials Formulations

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 26 Jun 2006

Estimated Completion or Expiration Date: 26 Jun 2007

U.S. Government Dollars: $ 2,041,050

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Develop an improved red phosphorus pellet formation for the M819 mortar that has a reduced tendency to form phosphine, yet maintains ballistic performance, smoke generation, burn rate, burn time, and minimal residual unburned materials.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

An M819 smoke round cartridge, containing red phosphorus, caught fire in a thermal test at 145^{o}F. A malfunction investigation was initiated as a result of the fire. The investigation concluded that the fire was caused by the generation and spontaneous ignition of phosphine gas. Phosphine is produced by the reaction of red phosphorus and moisture. Phosphine is highly phosphoric, toxic to humans, and corrosive to metal components of the weapon. Modification of existing stockpiled 819 rounds is underway to minimize the formation of phosphine gas. Elimination or minimization of phosphine gas will reduce corrosion in the round minimize the possibility of spontaneous fire, and reduce the health hazard for personnel working with and around red phosphorus containing weapons. For new manufacture of smoke rounds containing red phosphorus, the Army requires redesign of the round and reformulation of the phosphorus pellets to minimize or eliminate formation of phosphine and reduce the possibility of fire while maintaining acceptable smoke generating ability. New materials and components must be designed to meet these goals while at the same time considering ultimate demilitarization of the weapon. The new materials and components will broaden the technology base by phasing out the Cold War Era hazardous materials and implementing safer and less hazardous materials.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
SAIC develops technology but does not manufacture energetic materials. New relationships will be established for the transition to production, qualification and production of the new materials. SAIC will establish new relationships identifying concepts, procedures, and plans for the organized transfer of commercially useful materials, devices, processes, manufacturing methods, techniques, know-how, and related critical technologies developed under this effort as follows:

a. collect and analyze data on the full range of Armament Research, Development and Engineering Center organizational responsibilities and existing program features to develop processes for identifying, prioritizing,

integrating, tracking, and analyzing major issues of concern to program management teams for the transition of this technology.

b. identify recommendations for establishment of policies/mechanisms for technology transfer to occur and for inter-agency funding to be promoted through the use of a variety of tools to include venture capital, counter trade, and other unique funding opportunities to allow for further migration of DOD-generated technology within the private sector.

c. identify potential partners for these technologies based upon: technology capability, and business considerations, including commercialization probability; capacity to implement in Army products; and funding requirements to include prioritizing potential partnerships.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0099

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Improvement of Energetic Thermoplastic Elastomer Based Gun Propellant

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: ATK Thiokol Inc.

Effective Date: 18 Jul 2006

Estimated Completion or Expiration Date: 17 Jul 2007

U.S. Government Dollars: $ 177,329

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The work planned for this effort has been divided into the following tasks:

Propellant Formulation Optimization and Continued Deterrent Coating Study, Grain Optimization for M793 (25 mm) Ammunition, 5-gallon Scale-Up for Production of Deliverables, Best-Candidate Testing and Case Loading, and finally Propellant Delivery.

The current funded project is aimed at producing a competitive propellant for M793 round. This program will further investigate production of small, deterred grains. The objective of the proposed work will be further development of the manufacturing process, and refinement of the propellant formulation and geometry. Larger quantities of propellant will be manufactured and delivered to Army Research Laboratory (ARL) for a more extensive ballistics study.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This project will broaden the technology by adding a second on-shore source for medium caliber propellant at a lower cost to the government. The industrial base will be broadened as the propellant enters production.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The project has already resulted in new relationships between ATK, ARL and Armament Research, Development and Engineering Center. The New Technology will be shared throughout the 120 members of Defense Ordnance Technology Consortium..

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0100

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of Advanced Target Detection Sensors / Fuzes

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Electronics Development Corp (EDC)

Effective Date: 29 Jun 2006

Estimated Completion or Expiration Date: 29 Jun 2007

U.S. Government Dollars: $ 570,791

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort shall include task and subtasks for the design and fabrication of data acquisition hardware, a telemetry system, and a test vehicle that will be used to collect target signatures to support development of a 40mm proximity sensor. The effort shall include the design and fabrication of hardware for signature collection and the design and fabrication prototype proximity sensors and fuzes to replace the obsolete M74 proximity sensor. The effort shall include design the development of advanced proximity fuze sensors for various applications.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This advanced sensor effort will broaden the technology base by advancing the state of the art in proximity sensors. The industrial base will be broadened as the new technology transitions to production and it is applied to the automotive industry for collision avoidance sensors.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
EDC has already formed a team with L3 Com/KDI for environmental testing, production design, and explosive handling. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0102

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Demilitarization of Energetic Materials & Weapons

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 16 Jun 2006

Estimated Completion or Expiration Date: 16 Jun 2007

U.S. Government Dollars: $ 2,364,082

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
A broad based program for the research, development, and implementation of novel technologies for the testing, recovery, recycle, reuse, treatment and disposal of hazardous materials, including energetic materials and weapon systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Historically, standard techniques of removal, disassembly, incineration, or open burning/open detonation (OB/OD) were viewed as both safe and efficient. As environmental awareness increased and potential health and safety risks became known, a requirement for alternative destructive technologies and enhanced resource recovery processes began to emerge. However, since demilitarization has not been a major component of munitions development and acquisition life cycle, there have been limited opportunities to support an increase in new technology development. Most new work has been done as process improvements or operations support within the guidelines of the Army's Ammunition Peculiar Equipment (APE) Program. More recently related projects have also been invested in by the Department's broader environmental science and technology programs of the military Services, the Strategic Environmental Research and Development Program (SERDP), and the Environmental Security Technology Certification Program (ESTCP).

The rationale for pursuing demilitarization technologies is driven by a variety of issues. For example, there are over 1,000 energetic fillers in the current resource recovery and disposition (RRD) inventory. The geographic dispersion and installation specific capabilities within the safety and environmental regulatory framework also drive requirements, as does the simple need to provide operators with modern safe, efficient, and economic processes.

This program emphasizes the pursuit of environmentally compliant technologies to enhance existing methods for munitions R3 and treatment and seeks alternatives over that of open burning/open detonation (OB/OD).

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
SAIC personnel will research methods to link non-profit organization activities at the State and Federal level to funding streams that will allow for technology transition. This will include other tools in venture capital, counter

trade, and other unique funding opportunities to allow for further migration of DOD-generated technology. SAIC personnel will identify recommendations for establishment of policies/mechanisms for technology transfer to occur and for inter-agency funding to be promoted.

SAIC personnel will identify potential partners for Armament Research, Development and Engineering Center (ARDCE), based upon: technology capability, and business considerations, including commercialization probability; capacity to implement in Army products; and funding requirements and prioritize potential partnerships together with ARDEC personnel, based upon criteria and guidance provided by ARDEC. The development of a strategy for execution of partnerships, identifying: partner(s), Army interest area, technologies, capabilities, funding requirements, and optimal organizational structure is needed.

SAIC personnel will collect and analyze data on the full range of ARDEC organizational responsibilities and existing program features to develop processes for identifying, prioritizing, integrating, tracking, and analyzing major issues of concern to program management teams. Studies will be conducted to determine plans and procedures for establishing Centers of Excellence where appropriate. This could include the implementation of a government, commercial, university consortium and Other Transaction Agreement to support programs under a Consortium. Operation procedures and management structure of the Center will be recommended. SAIC will provide all necessary resources to operate Center once established.

SAIC personnel will prepare input for the establishment of new partnership agreements for Other Government Agencies (OGA), industry, academia and other federal agencies. These agreements will include the Cooperative Research and Development Agreement (CRADA), Memorandum of Understanding (MOU), Education Partnership Agreement (EPA) and others as identified.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0103

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of Synthesis Methodologies and Manufacturing Processes for Energetic Materials at Holston Army Ammunition Plant

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Ordnance Systems Inc

Effective Date: 17 Aug 2006

Estimated Completion or Expiration Date: 17 Aug 2008

U.S. Government Dollars: $ 3,028,325

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this element of the program is to conduct synthesis research focused on the development and scale-up of robust, cost effective manufacturing processes for select energetic materials, formulate new formulations and other critical ingredients needed to support DOD programs.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The technology base will be broadened in the areas of insensitive munitions and performance as new melt-pour ingredients are synthesized and developed. The new synthesis routes will allow other manufacturers to compete with Government Owned Contractor Operated ammunition plants and broaden the industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The new ingredients synthesized in this project will result in new relationships between the Government laboratories, industry, and new emerging companies that will supply these new materials. The new technology will be shared throughout the Defense Ordnance Technology Consortium for applications in new areas.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Task Number: 0104

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advanced Warheads Development

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Talley Defense Systems, Inc

Effective Date: 14 Sep 2006

Estimated Completion or Expiration Date: 14 Feb 2007

U.S. Government Dollars: $ 716,595

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Develop a process for cast loading insensitive munitions compliant explosive into advanced warheads, integrate fuze concepts into advanced warheads, assemble advanced warheads and fuzes into production and advanced weapons systems, and demonstrate technologies for achieving fully compliant advanced, Insensitive Munitions (IM) compliant, multipurpose warheads for use in a range of weapons. The technology program presented herein is applicable to Shaped Charge (SC), hardened SC, compact/multipurpose, blast, fragmentation and other novel and unique warheads in calibers ranging from roughly 60 mm to 150 mm. The products benefiting from the application of these technologies will be capable of meeting or exceeding the current requirements for neutralizing or collapsing urban rooms and fortified earthen bunkers, penetrating armor, or breaching reinforced concrete walls, offering the user increased engagement options and flexibility with reduced risk from exposure to unfriendly fire.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This effort broadens the applicability of Insensitive Munitions technologies into a gamut of warhead technologies that includes Shaped Charge, hardened Shaped Charge, compact/multipurpose, blast/frag and other novel and unique concepts. Because the warheads can be produced at a smaller scale (66-83mm) and tested with production launch systems, expenses for components, explosives, and tests are greatly reduced. This ability allows a more cost efficient way to test new applications of the IM technology.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium."

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The effort fosters dialog and cooperation between the Army, Navy and Marine Corps munitions development community due to the broad Insensitive Munitions requirement and the commonality in shoulder-fired warhead/projectile designs that has Talley at its intersection.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0105

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Rugged Palm-Held Chemical Identifier

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Ahura Corp

Effective Date: 21 Sep 2006

Estimated Completion or Expiration Date: 21 Jan 2008

U.S. Government Dollars: $ 4,863,501

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Development of a rugged Raman spectroscopy -based chemical identifier that is palm-held. The proposed development will realize the functionality of Ahura's existing Commercial Off The Shelf (COTS) FirstDefender product in a nearly 8x lighter palm-held.

The rapid identification of potentially hazardous materials such as explosives, chemical weapons, narcotics, or toxic industrial chemicals is becoming increasingly critical for war fighters, civil support teams, emergency response and forensic teams, covert reconnaissance teams, and other homeland security operations. Most deployed identification techniques are only man-portable and many require actually sampling or handling of the material of interest. Many of these tools are far from the ruggedness and robustness needed in the field.

Raman spectroscopy is a technique that has been validated as a useful tool for rapid identification of chemicals, explosives, and narcotics.

The COTS FirstDefender system is an ergonomic handheld system that weighs <4 lbs which can definitively identify unknown (solid, liquid, powder) samples in tens of seconds in a nondestructive manner. This effort is to leverage this existing and substantial development to create the proposed palm-held system.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This technology will broaden the technology base by injecting state of the art miniaturized sensors into the US Tech Base. This effort will result in a product that is far more readily deployable and functional than existing systems. Also, contracting through the Defense Ordnance Technology Consortium (DOTC) puts this Homeland Security oriented effort in the eyes of the Services, which could result in adoption for in-theater applications.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The effort fosters dialog and cooperation Homeland Security personnel and inter-service military representatives. The results of this effort will be briefed to the 120 members of DOTC.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0106

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Fab, Load and Testing of Advanced Warheads

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Ensign-Bickford Aerospace & Defense Co

Effective Date: 26 Sep 2006

Estimated Completion or Expiration Date: 26 Sep 2007

U.S. Government Dollars: $ 512,650

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Provide design, development, fabrication, load and test of warhead technology for a future generation of warheads. Technologies utilizing explosively formed penetrators, shaped charge, compact/multipurpose warheads, blast/fragmentation warheads and other unique concepts that provide increased lethality against armor, personnel, and urban targets. Develop concepts that include, but are not limited to, thermo barics, advanced fragmentation and reactive materials. Support new project development and demonstration of full and scalable warheads technologies with the goal to deliver up to twice the performance, are half the size, and have multipurpose capabilities over a wide range of target types. Support the development of system technology in passing munitions tests as defined in MIL STD 2105B.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This project broadens the technology base by providing new technology that is applicable to a whole range of warheads. This effort will result in unique designs applied to existing and emerging lethality technologies that address the general goal of enhanced lethality against vehicles and enemy combatants.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The effort fosters new relationships as the new technologies are applied to new and existing weapon systems. The results of this project will be shared among the 120 members of the Defense Ordnance Technology Consortium .

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0108

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Intergrated Technology-Based Approach to Enhance Sustainability Across Army Functional/Range Training Areas Phase 1

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: AMEC Earth & Environmental Inc

Effective Date: 21 Sep 2006

Estimated Completion or Expiration Date: 17 Jul 2007

U.S. Government Dollars: $ 4,274,726

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Develop and demonstrate a prototype hybrid soil washing approach which combines a high efficiency dry screening with traditional water based density separation. The ranges used to test the prototype are located within Diamond Head Crater State Monument, HI and FT Dix, NJ. The debris collected and analyzed from these sites will provide the Heavy Metals Office and the PEO Ammo with information for future ammunition designs.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This project will broaden the technology base by providing methods to recover ammunition residue for analysis with the least harm to the environment. The technology will be available for other ranges.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The effort fosters new relationships between industry, the active Army and the National Guard. This technology will be shared among all 120 members of Defense Ordnance Technology Consortium.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0109

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: New Army Materiel for Propellant Based on Boron Nanotubes

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: New Jersey Institute Of Technology (NJIT)

Effective Date: 07 Sep 2006

Estimated Completion or Expiration Date: 07 Sep 2009

U.S. Government Dollars: $ 468,609

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Solid material Boron-based nanotubes will be developed for propellant. Experimental set-up will be constructed and technology for growth of Boron-based nanotubes will be developed. The obtained Boron Nanotubes (BNTs) solid material will be characterized, evaluated and tested. The potential benefits from using BNTs in propellant include enhanced burning rate and improved mechanical properties.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This effort broadens the applicability of nanotechnology technology base to propellant. Nanotechnology based propellants have shown both results and further promise to enhance the energy for a given mass of propellant. The industrial base will be broadened as the propellant reaches production.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
In addition to providing cutting edge nanotechnology work, this effort involves the participation of NJIT graduate student, who are potential DoD employees. This increases the awareness and involvement of potential DoD scientists and engineers in the DoD's high tech initiatives. The results of this project will be shared among the 120 members of Defense Ordnance Technology Consortium leading to further teaming arrangements.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0110

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Mobile Plasma Systemmobile Plasma System Prototype Demonstration & Val

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: MSE Inc

Effective Date: 22 Aug 2006

Estimated Completion or Expiration Date: 22 Aug 2007

U.S. Government Dollars: $ 1,196,987

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Implement process design improvements and enhancements on a prototype Mobile Plasma Treatment System that is already installed at the Talon Manufacturing Co. in West Virginia. Talon is a DoD contractor with onsite storage of energetic munitions components. Plasma treatment breaks down energetics using an extreme high temperature.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This Demilitarization System is mobile and broadens the technology and industrial base by allowing sensitive munitions to be destroyed on site without dangerous and expensive transportation. Successful sustained use of this technology brings a new method of energetic treatment to bear on the US stockpile of energetic munitions and munitions components to the DoD demilitarization effort.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
New Relationships have already been formed between MSE, Talon, PM-Demil and Armament Research, Development and Engineering Center. Currently an Army initiative, successful use of the technology may be broadened to the other Services. Results of these prototype tests will be briefed to all 120 members of the Defense Ordnance Technology Consortium for further teaming.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0111

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of A Full Scale All-Up Modified Mk 182 Ke-Et Round

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Veritay Technology, Inc

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 27 Jun 2007

U.S. Government Dollars: $ 460,224

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Develop the technologies required to create a kinetic energy round for the Navy's 5-inch gun that will deploy numerous non-energetic penetrators in the forward direction as the round approaches its target. The existing kinetic energy round, Mk 182 KE-ET, expels the payload of tungsten alloy BBs in the rearward direction. By pushing the payload out the front, the kinetic energy will be increased by a factor of 2-5 times compared to rearward expulsion, thereby substantially increasing the lethality of the round.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This project broadens the technology base by increasing the kinetic energy of the payload in a simple fashion that has applicability to other ammunition types. This approach results in the enhanced lethality of an existing Navy round, which leverages the existing technology.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This project has already formed new relationships between Veritay, Naval Surface Warfare Center Indian Head and NSWC Dahlgren. The Navy technology is potentially applicable to many Army and Navy rounds. The results of the testing will be briefed to all Defense Ordnance Technology Consortium members for further collaboration.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0112

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development Testing & Research Assistance Of Explosives

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: General Dynamics O T S (Niceville), Inc

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 27 Sep 2009

U.S. Government Dollars: $ 3,297,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Design (through computational analysis) and fabricate test fixtures, with mechanical and thermal response characteristics, common to potential developmental munitions. The final result of the GD-OTS efforts will provide the data necessary for consideration when new projects are looking for the best explosive solution.

The methodology is to conduct system type interface design and performance testing of Government Furnished Explosives (GFE) developmental explosives. GD-OTS will be able to present the explosive end user with a product that has proven to be successful (ergo less risk) while addressing his requirements. The GD-OTS association with the end item providers will allow access of new ideas and approaches in explosive performance and processing to reach the customer before the initial down select of explosive candidates.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

The approach allows for early testing to be conducted in a fashion more closely aligned with the configuration of end items. This provides a stronger and more confident predictor of actual performance and is a more efficient approach to testing future technology. The technology base will be broadened as the prototype explosives are characterized, tested and modeled which will allow superior formulations to be expedited through development. The industrial base will be broadened as the new explosive materials are accelerated into Low Rate Initial Production (LRIP) and Full Production.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The approach allows for early testing to be conducted in a fashion more closely aligned with the configuration of end items. This provides a stronger and more confident predictor of actual performance and is a more efficient approach to testing future technology. The technology base will be broadened as the prototype explosives are characterized, tested and modeled which will allow superior formulations to be expedited through development. The industrial base will be broadened as the new explosive materials are accelerated into LRIP and Full Production.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0113

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: MEMS S&A Micro Firetrain Development Support Effort

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Reynolds Systems Inc (RSI)

Effective Date: 25 Sep 2006

Estimated Completion or Expiration Date: 25 Sep 2009

U.S. Government Dollars: $ 589,339

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective is the development of novel explosive components for use in micro-scale firetrain application for safe-arm devices for military fuzes. This effort will produce RSI-007 explosive components for Government evaluation for their specific micro firetrain applications. The prototype manufacturing process will include the development of iterative tooling designs to manufacture a variety of shapes and sizes of explosive pellets for prototype testing. In addition to examining press load techniques is an investigation of a new production method for the laser machining of pellets.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The technology and industrial bases will be broadened as the manufacturing of micro scale pellets is proven and adopted by commercial industry. This effort seeks to broaden the base by introducing a new manufacturing technique, laser machining for micro scale detonator pellets. The Femptosecond Laser Machining Technology will be transitioned to industry for the first time from a Department of Energy laboratory. This transition will inject state of the art technology into a current military production problem and will be available for commercial industry.

All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The laser machining technology is to be tech-transferred from the Lawrence Livermore National Laboratory to RSI, fostering new relationship between and Army. This will foster new relationships between RSI, LLNL and the other 118 members of the Defense Ordnance Technology Consortium who are interested in micro scale firetrain applications for military fuzing.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0117

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: MEMS Safe & Arming S&A Chip Package

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: The Bennington Microtechnology Center Corp

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 31 Jan 2007

U.S. Government Dollars: $ 81,840

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort details the specifications of the Micro-Electro-Mechanical Systems (MEMS) Safety and Arming (S&A) die and package for the Indian Head Division of the Naval Surface Warfare Center. The specification provides details of the components of the S&A MEMS package and the interfaces between the various components that compromise the package.

A reliable manufacturing process for S&A was developed using automation techniques for the accurate placement of the MEMS die in the carrier package and the associated bonding, sealing methods to meet various functional military specifications. A design change will require some additional development of the manufacturing process to accommodate the new carrier package.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This effort represents innovation in analyzing packaging requirements for MEMS fuzing devices and is broadly applicable to the DoD munitions fuzing efforts. Micro-Electro-Mechanical Systems (MEMS) have found widespread applications in a variety of fields ranging from simple sensors to complex systems that require the integration of movable structures and active circuitry. Among the challenges associated with transitioning MEMS from the laboratory to the marketplace is the packaging. When successful this technology will be adopted by the commercial sector and the government will be able to apply new improvements from the commercial sector.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This project has already formed new relationships between Bennington, Naval Surface Warfare Center (NSWC) Indian Head and Armament Research Development and Engineering Center (ARDEC). This Navy effort is applicable to the Army and Air Force. The results of this project will be shared among the 120 members of Defense Ordnance Technology Consortium (DOTC) for further team building.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0118

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advanced Energy Materials And Weapon Systems

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: MSE Inc

Effective Date: 26 Sep 2006

Estimated Completion or Expiration Date: 26 Nov 2006

U.S. Government Dollars: $ 4,999,822

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The prototype Cryofracture/Plasma Demilitarization System (CPDS) is a unique system that incorporates a cryofracture pre-treatment system upstream of a plasma thermal unit for the treatment of obsolete munitions and wastes. The objective of the CPDS project is to design, fabricate, install, and demonstrate the prototype CPDS at a DOD site to be determined. The integrated process will provide a safe, cost effective, environmentally compliant flexible methodology to handle difficult demilitarization problems such as destruction/R3 of sub-munitions in improved conventional units (ICMs) and cluster bomb units (CBUs) (bomblet munitions) as well as provide the ability to demilitarize a variety of found-on-post items.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the agreement was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

The technology and industrial bases will be broadened by the use of the cryofracture pretreatment, since it represents an extension of the plasma treatment technology. Successful sustained use of this technology brings a new method of energetic treatment to bear on the US stockpile of energetic munitions and munitions components to the DoD demilitarization effort.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This project has already formed new relationships between MSE, the Defense Ammunition Center, PM Demil and Armament Research Development and Engineering Center (ARDEC). Currently, an Army initiative, successful use of the technology may be broadened to the other Services and would be shared through the provisions of the Consortium Member Agreement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: DAAE30-01-9-0800

Modification Number: N/A

Task Number: 0119

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Development of Biofuel Waste-To-Energy Process to Eliminate Plastic Packaging Waste

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: General Atomics

Effective Date: 22 Sep 2006

Estimated Completion or Expiration Date: 22 Sep 2007

U.S. Government Dollars: $ 3,005,969

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Battlefield clutter including the munitions packaging and other plastic waste is a growing problem for base logistics. The objective of this project is the development of a prototype reactor system to dispose of battlefield clutter accumulated on forward bases using a unique process that improves the autonomy and self-sufficiency of the bases by using plastics in biofuel for diesel generator operation. The proposed effort will research the biofuel process, determine conditions required for plastic dissolution in biofuel, and determine diesel engine operating parameters with various biofuel/plastic solutions.

Biofuel plastic recycle is a new process that uses biofuel and plastic waste to generate power in a protoype engine-generator set. The technology is ideal for forward bases because it is simple, cost-effective, and recovers the full-energy content of the plastic packaging waste to reduce the base fuel requirement. A simple reactor system will receive the plastic waste, filter out non-plastic components, and prepare the fuel for feed to modified generator systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
All task orders issued against this other transaction include participation by members of the National Warheads & Energetic Consortium (NWEC) which was determined to be a non-traditional defense contractor at the time the OT was awarded. Therefore cost-sharing by the recipients is not mandatory as non-traditional defense contractors participate in the consortium.

This project broadens the technology base by providing an alternative fuel source to petroleum. In addition to providing benefits in fuel production and environmental improvement, the technology is applicable to nonmilitary environmental cleanup and recycling. Thus, in addition to benefiting the Defense Ordnance Technology Consortium (DOTC) members, this technology may be transferred to commercial industry.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This project has already developed new relationships between MSE, the Defense Ammunition Center and Armament Research Development and Engineering Center (ARDEC). There is a very large potential for building relationships with the broad civilian sector using this technology. The results of this project will be shared among the 120 members of DOTC for further collaboration.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HDTRA1-06-9-0001

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Concept Feasibility Analysis - Project Diagonal Pass

Awarding Office: DEFENSE THREAT REDUCTION AGENCY

Awardee: Directed Technologies Inc

Effective Date: 27 Jun 2006

Estimated Completion or Expiration Date: 12 Feb 2007

U.S. Government Dollars: $ 2,629,974

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Elements of this acquisition are classified. Hence, many of the data fields in this report must remain blank.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Elements of this acquisition are classified. Hence, many of the data fields in this report must remain blank.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of the other transaction agreement allows for a relationship with Nontraditional performers that will allow access to unique technologies.

Other benefits to the DOD through use of this agreement:
Elements of this acquisition are classified. Hence, many of the data fields in this report must remain blank.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HQ0006-04-9-0001

Modification Number: P00006

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Design & Risk Reduction for High Altitude Airship (HAA) ACTD

Awarding Office: MISSILE DEFENSE AGENCY

Awardee: Lockheed Martin Corporation

Effective Date: 07-Mar-05

Estimated Completion or Expiration Date: 31-Mar-05

U.S. Government Dollars: $ 1,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
MDA/AS was designated as the Program Manager for the HAA-ACTD and is chartered to execute and manage the design, development and demonstration of an unmanned, untethered, lighter than air, airship capable of operating autonomously in the stratosphere for sustained, long endurance operations as a stable, geostationary communications and sensor platform. To achieve this objective, MDA has teamed with Lockheed Martin to design, develop, integrate, test, and demonstrate an unmanned, untethered, lighter than air, airship technologies, payload capabilities and methods of employment. Innovative Government and industry enterprise integration and acquisition methods will focus on the rapid acquisition of threshold capability while enabling growth as technologies mature, threats adapt, and organizations mature within new operational constructs. This program will focus on the need for key promising technologies and techniques in areas such as airship design, construct and station keeping; power generation, distribution and storage; command and control; payload monitoring and instrumentation and payload possibilities.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction agreement has contributed to the broadening of the technology and industrial base available for meeting Department of Defense needs by introducing participation of non-traditional contractors. Lockheed Martin's team includes non-traditional defense contractors such as Warwick Mills, Hydrogenics, AeroVehicles, and Physical Sciences Laboratory. Under this agreement, each non-traditional defense contractor will make the following significant contributions to the prototype project:

- Warwick Mills – Hull Laminates and Fabric Engineering
- Hydrogenics – Fuel Cell Stacks and Engineering
- AeroVehicles – Power/System Engineering
- Physical Sciences Laboratory – Thermal/System Engineering

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The work under this agreement will result in the demonstration of an unmanned, untethered, lighter than air airship capable of operating autonomously in the stratosphere for sustained, long endurance operations as a stable, geostationary communications and sensor platform. The use of an other transaction agreement was approved by the MDA Senior Procurement Executive based on the use of non-traditional defense contractors, as well as, establishing innovative business arrangements and structures that would not be feasible or appropriate under a procurement contract. The OTA allows industry to reap the benefits of the use of the airship and its associated technologies in the commercial arena without the strict limitation imposed by the Federal Acquisition Regulation/Defense Federal Acquisition Regulation Supplement (FAR/DFARS) concerning intellectual property, data rights, and royalties. The Government and contractor were able to negotiate terms and conditions focused specifically for this effort rather

than the standard FAR/DFARS clauses. This business construct provided for a “teaming structure” in which there was a collaborative effort to promote defense objectives.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HQ0006-06-9-0001

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Mass Spectrometer Microprobe for Warhead Typing

Awarding Office: MISSILE DEFENSE AGENCY

Awardee: Microsaic System Ltd

Effective Date: 26 Apr 2006

Estimated Completion or Expiration Date: 31 Jan 2007

U.S. Government Dollars: $ 210,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort is to develop, demonstrate and deploy mass spectrometer microprobes based on ionchip technology, which are capable of positively identifying the chemical composition of an intercepted warhead. This effort will analyze how multiple, coke-can sized microprobes (or other 0.3L packages) could be deployed for accurate analysis of residual gases after impact. The goal of this effort is to design a test-bed mass spectrometer system, based on ionchip technology, which can emulate the performance of the mass spectrometer microprobe (MSM). The technology areas in which the project is being conducted are the physics and chemistry technology area, as well as the Battle Management/Command and Control technology area under Lethality Assessment Technologies.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Microsaic Systems, Ltd is a small business firm based out of the United Kingdom. Microsaic Systems, Ltd falls under the definition of a non-traditional defense contractor. Microsaic has not had any previous U.S. Government procurement contracts, and has done business only through other transactions or contracts for commercial items. MDA can tap into research and development being accomplished by nontraditional defense contractors, and pursue commercial solutions to defense requirements. Microsaic Systems has developed the world's first, chip-based mass spectrometer known as Ionchip®. Mass spectrometer systems based on ionchip technology are an order of magnitude smaller and lighter than comparable laboratory systems. Modeling, carried out with the assistance of UK Ministry of Defence scientists, suggests that it may be feasible to develop a microprobe using Microsaic's ionchip technology, which could analyze post impact products.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Approval of an other transaction agreement was signed by the Missile Defense Agency (MDA) Senior Procurement Executive based on the fact that Microsaic is a non-traditional defense contractor, as well as, establishing innovative business arrangements and structures that would not be feasible or appropriate under a procurement contract. The Government and contractor were able to negotiate terms and conditions focused specifically for this effort rather than the standard FAR/DFARS clauses. The use of an other transaction agreement allowed the Government to plan for this project in four phases, awarding only one phase of work at a time without having to price-out option periods.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-04-9-0016

Modification Number: P00004

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: FALCON Phase II, Design and Development.

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Airlaunch LLC

Effective Date: 28 Oct 2005

Estimated Completion or Expiration Date: 13 Jul 2007

U.S. Government Dollars: $ 17,800,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
DARPA and the Air Force share a vision of a new transformational capability that would launch small satellites, experimental packages and other payloads into low-earth orbit in a responsive, low-cost manner. The DARPA/Air Force team also intends to use the new launch vehicle resulting from this effort as a low-cost means of performing endo-atmospheric flight-testing of experimental hypersonic vehicles and associated technologies under the Task 2 - Hypersonic Technology Vehicle portion of the FALCON program. The small satellite and endo-atmospheric flight-test missions, taken together, provide a significant spiral in the development of an Operationally Responsive Spacelift (ORS) capability for the Air Force. The technology area is low cost space launch capability.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Although the lead performer on this task is a traditional defense contractor, a significant participant in the effort is Orion Propulsion, a non-traditional defense contractor. This commercial contractor is providing test and integration support for the propulsion system and operation of ground support equipment for the newly developed pressurization approach. The use of an other transaction gave DoD access to this firm by providing relief from standard accounting, pricing and cost reporting requirements, thereby broadening the technology base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The other transaction process has encouraged traditional defense contractors to seek out teaming partners from the small business and non-traditional defense business sectors. The commercial firm, Orion Propulsion, will use its normal operating practices, without being forced into standardized government systems and procedures, for accounting, reporting, and making changes. This flexibility will contribute to innovative pursuit of technical accomplishment.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-05-9-0004

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Digital and RF CMOS EPIC Technology

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Luxtera Inc

Effective Date: 15 Dec 2004

Estimated Completion or Expiration Date: 14 Jun 2006

U.S. Government Dollars: $ 10,164,885

Non-Government Dollars: $ 5,213,669

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are to develop and deliver a Link-Enhanced Performance Implanted CMOS (EPIC) transceiver, an application-specific EPIC chip prototype. In Phase I (18 months), the Basic agreement, Luxtera will fabricate, develop and deliver a first-generation device library, stand-alone Ge waveguide photo detector prototypes and the Link-EPIC Chip Prototype 1, as well as define a second-generation device library. In Phase II (Option 1), Luxtera will demonstrate a stand-alone co-packageable optical source prototype as well as develop and fabricate a second-generation device library and Link-EPIC Chip Prototype 2. In Phase III (Option 2), Luxtera will develop, fabricate and deliver Link-EPIC Chip Prototype 3 and deliver the second generation device library. In Option 3 (to run concurrent with Option 1/Phase II), IBM, subcontractor to Luxtera, will fabricate and deliver stand-alone antenna-coupled tunnel junction (ACTJ) detectors on top of LuxEPIC waveguides provided by Luxtera to simplify the fabrication of LuxEPIC devices in other complimentary metal oxide semiconductor (CMOS) processes. In keeping with the DARPA legacy of technical and operational innovation, DARPA is pushing to conduct demonstrations to validate technical feasibility, operational utility, military value, and affordability of the transceiver for military use in FY 2009.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The recipient of this award is a nontraditional performer. As a small, purely commercial company unable to meet the requirements of a federal procurement contract, Luxtera is not disposed to accept the regulations and restrictions that accompany Federal Acquisition Regulation (FAR)-based procurement contracts. An other transaction is far more attractive to Luxtera, because it can quickly respond to DoD needs, without being burdened with layers of acquisition rules or changes to its accounting systems. As a result, the use of an other transaction has broadened the technology base by providing access to a nontraditional defense supplier.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This program brings a nontraditional, commercial company into defense contracting to foster innovative research in the area of EPIC technology. The outcome of this program will help the military meet its urgent application requirements including dynamically reconfigurable high-bandwidth interconnections for intelligence, surveillance and reconnaissance (ISR) platforms with massive phase arrays of high bandwidth sensors, and Link-EPIC will also serve as an interconnect for multiprocessor clusters, where it can achieve size, weight and power (SWAP) and very high bit rates and size not realizable in any current or foreseeable technology. The use of an other transaction allowed this commercial firm to use its existing commercial accounting practices, alleviating the requirement of setting up a government-approved system. On this effort, the Government is making payments based upon the accomplishment of milestones.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0001

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Unmanned Combat Air Systems Bridge

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Northrop Grumman Systems Corporation

Effective Date: 01 Nov 2005

Estimated Completion or Expiration Date: 30 Sep 2006

U.S. Government Dollars: $ 56,485,853

Non-Government Dollars: $ 28,243,427

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
To continue work on the X-47B Joint Unmanned Combat Air Systems program and implement a revised program plan that includes full carrier suitability testing and mission functionality demonstrations including ESM and multi-ship operations. This agreement replaces the agreement awarded August 18, 2004, and covers the X-47B program as it transitions to Air Force management.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Use of the other transaction (OT) will not result in nontraditional defense contractors participating to a significant extent in the prototype project that would not have otherwise participated. Furthermore, use of this OT is not anticipated to result in the DoD gaining access to technology areas or commercial products that would not have been possible under a procurement contract. There are no other benefits of the use of this OT that helped the DoD broaden the technology or industrial base available to the DoD.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
At least one third of the total funds of the prototype project are to be provided by a non-federal source, and this is the reason the OT authority was used. One-third of the total funds of the prototype project are to be provided by Northrop Grumman. The use of this OT is not anticipated to result in the establishment of new relationships between the government and industry or among for-profit business units, among business units of the same firm, or between business units and nonprofit performers that will help the government get better technology in the future. The use of this OT permits Northrop Grumman (NG) to use new business practices in the execution of the prototype project to help the DoD get better technology, quicker and/or less expensively. It does this by allowing NG to avoid the rigors of some documentation mandated by FAR based contracts. One example of this is that NG is not required to administer and maintain Government Property in accordance with Federal Acquisition Regulation (FAR) procedures, thus saving time and money. Further, NG is not required to produce certified cost and pricing data. This allows them to save time in executing contract actions and avoid costs that would be passed onto the Government.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0002

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Combat Search and Rescue Vertical Takeoff and Landing High-Speed Gyrodyne Demonstrator Aircraft

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Groen Brothers Aviation, Inc

Effective Date: 31 Oct 2005

Estimated Completion or Expiration Date: 31 Jan 2007

U.S. Government Dollars: $ 6,413,314

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of the Heliplane program is to design, develop, integrate and flight test a Vertical Takeoff and Landing (VTOL) air vehicle with greater than 2x improvement in forward flight characteristics over conventional helicopters. The Heliplane demonstrator aircraft will be tailored to a Combat Search and Rescue (CSAR) mission with a 400 mph cruise speed, a 1000 lb payload, and an unrefueled range of 1000 nm.Phase 1 is focused on system trade studies, key risk reduction demonstrations, and the preliminary design of the rotor system. In Phase 1, a combination of analysis and experiments will be completed to provide a foundation for the development and test of a full-scale rotor in Phase 2. Risk reduction experiments include full scale rotor blade section wind tunnel tests; tip-jet performance and noise suppression concept tests; vertical download testing; subscale fuselage/hub drag wind tunnel testing; and rotor blade structural testing. Data from these risk reduction demonstrations along with results from system trade studies will be used to validate Heliplane system performance and to define subsystem requirements. Phase 1 will culminate in a Preliminary Design Review (PDR) of the integrated rotor/tip-jet system, and a Systems Requirements Review (SRR) of the Heliplane system.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Groen Brothers Aviation, Incorporated (GBA) is currently a non-traditional, small business, contractor and would only participate in the Heliplane research program if awarded as an other transaction agreement. As a non-traditional defense contractor, GBA has focused solely on the commercial market sector and has not implemented, or been bound by the types of cost accounting and other restrictive federal government contracting terms and conditions typically required of a traditional defense contractor. It is for this very reason that GBA is able to provide this critical research to the Department of Defense (DoD) at what is considered an extremely reasonable fixed-price amount and a considerably aggressive schedule. As it is DARPA's belief that advancement of the subject technology is considerably more likely with the participation of small, non-traditional companies such as GBA, use of such an award vehicle was an absolute necessity and is in the best interests of the DoD. If not for an other transaction, GBA would not have participated with DARPA under a procurement contract.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The GBA Heliplane agreement brings together the DoD with an emerging commercial small business which has made a name for itself in the field of autorotative flight, primarily development and sale of experimental aircraft such as the Hawk 4 and SparrowHawk gyroplanes. Besides the obvious benefits to the DoD from the advancement in the technology above and beyond the current state-of-the-art, this agreement serves as a launching point from which both parties (DoD and GBA) can establish a business relationship with each other. If the Heliplane research project is successful, from a both a business and technological perspective, there is a greater likelihood of GBA and the DoD partnering in the future on other research endeavors. As a small commercial business, GBA does not yet have in place the type of accounting/financial systems that are required in order to receive a standard Federal Acquisition Regulation (FAR)-based research contract. As such, the flexibility made available through use of an other transaction was a necessity in order to make award to GBA for the Heliplane research project.

Other benefits to the DOD through use of this agreement:
The use of an other transaction for research agreement under the authority of 10 U.S.C. 2371 allows commercial companies to use existing commercial accounting practices, alleviating the requirement and avoiding the cost of setting up Government accounting systems. Additionally, although not recognized as "cost-share" as it is traditionally interpreted, the Heliplane agreement was negotiated using heavily discounted commercial labor and indirect rates. The Government obtains the benefit of such commercial discounts/practices by leveraging commercial investment to support the advancement of technologies critical to the future protection of US military systems.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0003

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: A Light-Pulse, Atom-Interference-Based Precision Inertial Navigation System Development Program (LPA-PINS)

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: AOSense, Inc

Effective Date: 07 Feb 2006

Estimated Completion or Expiration Date: 15 Apr 2007

U.S. Government Dollars: $ 2,317,533

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The LPA-PINS (light-pulse atom) Phase 2/3 effort seeks to build upon the knowledge gained during Phase 1 to aggressively mature LPA-PINS sensor technology for use in high-accuracy inertial navigation platforms. The LPA-PINS effort is driven by the vision that LPA sensors and integrated systems offer revolutionary gains for inertial navigation systems. Maturation of the LPA-PINS technology will require significant efforts in component integration, sensor development and system level testing. This other transaction seeks the maturation of LPA-PINS technology. Due to the flexibility in LPA-PINS sensors architecture it is believed that LPA-PINS sensors can support a wide spectrum of future DoD maritime, airborne, geodesy and space navigation needs. Specifically, in Phase 2 the contractor shall design, build and test a high-accuracy synchronous single-axis atom optic (AO) accelerometer/gyroscope/gradiometer. In Phase 3 (Option 1, if exercised) the contractor shall design, build and test a high-accuracy synchronous INS with three-axis accelerometer and three-axis gyroscope outputs as well as gravity gradiometer outputs. This INS shall meet the PINS 5 m/h performance goal for navigation on an RV platform.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
AOSense, Inc. is a non-traditional contractor who has not previously held a Government contract (their participation under Phase 1 occurred as a sub-grantee to Stanford University). At the time of other transaction award, the company consisted of six (6) employees. By not requiring the submission of certified cost and pricing data and by waiving the requirement for a Defense Contract Audit Agency (DCAA) approved accounting system, both of which are required to enter into Federal Acquisition Regulation (FAR)-based, cost type contracts of the type typically used for research and development efforts, this other transaction significantly reduces the cost of doing business with the Government. The FAR requirements mentioned above are expensive to implement for small businesses that do not have previous experience with Government contracts. Without the elimination of these costs, small businesses like AOSense, Inc. might elect not to provide their services to the Government because doing so would be cost prohibitive.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
AOSense, Inc. is the world leader in mechanical isolation systems. Use of the other transaction allows them to bring this expertise to bear for the purpose of strengthening national security.

Other benefits to the DOD through use of this agreement:
AOSense proposed the use of cost-plus-fixed-fee subcontract with CSA Engineering. At the time of award, they too did not have a DCAA approved cost accounting system. Use of an other transaction allows them time to implement such a system should they choose to pursue Government contracts in the future.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0004

Modification Number: P00001

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: RealWorld Rapid Mission Rehearsal Program

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Total Immersion Software

Effective Date: 05 Apr 2006

Estimated Completion or Expiration Date: 31 Mar 2008

U.S. Government Dollars: $ 18,500,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Total Immersion Software is building a rapid mission rehearsal system for the military. The program is leveraging investments made by Microsoft and others to allow 250+ soldiers to rehearse missions in geo-specific virtual worlds. A key piece of this program is to empower the end-user and make them less dependent on software engineers to customize the product to their needs. Simply put, as MS Word is to documents and PowerPoint is to slides, this program will be to mission rehearsal. The idea is for any soldier to be able to create his/her own mission rehearsal scenario rapidly and run it on a standard laptop computer. The program will be leveraging breakthroughs and R&D from a vast number of companies. Topics include, without limitation, rapid terrain creation, compression, massively multiplayer worlds, physics software, artificial intelligence software, rendering software, audio playback, etc.

In Phase IB Total Immersion Software is developing the first generation rapid mission rehearsal prototype for delivery to the Government.

In Phase IA, Total Immersion Software is developing its program production plan, including detailed milestone schedule.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction allows multiple commercial game companies and other small software providers to participate, most notably, Total Immersion Software, Inc., Savage Entertainment, and Milestone Zero. Total Immersion Software is bringing multi-million dollar technology to the table and giving the government a royalty free license to use it for Government purposes; typically software of this quality would command a $1M per use license fee, and the savings over the course of the program will be in the tens of millions.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Successful game companies have little interest in doing business with the Government. The contracting mechanisms are onerous and complex, fee percentages are too low by commercial standards, and building software for the Government to own is not in their traditional business model. Many large game companies have specific policies that automatically reject doing business for the Government. This program allows the Government to tap into commercial expertise, allowing these commercial companies to use commercial accounting and contracting standards.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0004

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: RealWorld Rapid Mission Rehearsal Program

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Total Immersion Software

Effective Date: 25 Jan 2006

Estimated Completion or Expiration Date: 24 Jan 2008

U.S. Government Dollars: $ 1,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Total Immersion Software is building a rapid mission rehearsal system for the military. The program is leveraging investments made by Microsoft and others to allow 250+ soldiers to rehearse missions in geo-specific virtual worlds. A key piece of this program is to empower the end-user and make them less dependent on software engineers to customize the product to their needs. Simply put, as MS Word is to documents and PowerPoint is to slides, this program will be to mission rehearsal. The idea is for any soldier to be able to create his/her own mission rehearsal scenario rapidly and run it on a standard laptop computer. The program will be leveraging breakthroughs from a vast number of companies. Topics include, without limitation, rapid terrain creation, compression, massively multiplayer worlds, physics software, artificial intelligence software, rendering software, audio playback, etc.

In Phase IA, Total Immersion Software is developing its program production plan, including detailed milestone schedule.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction allows multiple commercial game companies and other small software providers to participate, most notably, Total Immersion Software, Inc., Savage Entertainment, and Milestone Zero. Total Immersion Software is bringing multi-million dollar technology to the table and giving the government a royalty free license to use it for Government purposes; typically software of this quality would command a $1M per use license fee, and the savings over the course of the program will be in the tens of millions.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Successful game companies have little interest in doing business with the Government. The contracting mechanisms are onerous and complex, fee percentages are too low by commercial standards, and building software for the Government to own is not in their traditional business model. Many large game companies have specific policies that automatically reject doing business for the Government. This program allows the Government to tap into commercial expertise, allowing these commercial companies to use commercial accounting and contracting standards.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0005

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Oblique Flying Wing (OFW) Program

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Northrop Grumman Systems Corporation

Effective Date: 06 Mar 2006

Estimated Completion or Expiration Date: 01 Nov 2007

U.S. Government Dollars: $ 6,809,613

Non-Government Dollars: $ 3,485,980

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to expand the design space for future aircraft concepts, particularly for those missions that demand both supersonic speed and long endurance. The OFW program seeks to tackle the most daunting problems in aerodynamic control and aero-structural design with a large-scale X-Plane demonstrator.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The envisioned program will establish for the first time a credible basis for the inclusion of supersonic, tailless, variable sweep OFW concepts as potential future operational aircraft that meets the Department of Defense and United States Air Force calls for air power with persistence, responsiveness (speed), and long range.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This program offers extraordinary operational impact and versatility with unprecedented aerodynamic efficiency across the subsonic and supersonic speed regimes. Northrop Grumman has a broad background in innovative approaches to both strike aircraft and ISR systems. Its product lines, such as B-2 Spirit and RQ-4A Global Hawk, represent the current state-of-the-art in USAF inventory. Ongoing studies of advanced systems, such as USAF Next Generation Bomber and Air Force Research Laboratory (AFRL) SensorCraft, provide direct insight into the technology development that will enable enhanced military utility in the coming years. The OFW concept offers the potential to combine the persistence of low speed operation with the responsiveness of high speed operation, concurrently. An air vehicle of this type will have the ability to perform effectively in both areas, either subsonic for long endurance or supersonic for rapid response. The oblique flying wing operational vehicle is designed to perform both ISR and bombing missions. Additionally, the aircraft is intended to meet future survivability and user operational requirements, including capability for tailless flight and buried engine installations. These requirements will substantially impact the resulting aircraft and further require design consideration in the platform and other aspects of the vehicle.

Other benefits to the DOD through use of this agreement:
The flexibility inherent with the use of this award instrument ensures minimal administrative difficulties and a focus on the important technological research goals of this effort which are of critical importance. The ability to negotiated non-standard Intellectual Property terms and conditions and tailor other articles of the agreement that are of mutual benefit to both parties leads to a cooperative and collaborative relationship that contributes to the success of this research effort in responding to vital DoD mission needs.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0006

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Surface -emitting Distributed Feedback Laser for ADHELS

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Alfalight Inc

Effective Date: 29 Mar 2006

Estimated Completion or Expiration Date: 29 Sep 2007

U.S. Government Dollars: $ 4,743,718

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to spectrally combine the output beams from an array of independent high power, carved grating, surface-emitting DFB lasers using a combination of high-performance gratings and Fabry-Perot etalons. The technology area is architecture for diode high energy laser systems (ADHELS).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The recipient of this award is a nontraditional performer. As a small business and a purely commercial company, unable to meet the requirements of a federal procurement contract, Alfalight stated that it will not agree to the terms of the Federal Acquisition Regulation. Also, the principal purpose of this non-procurement instrument is the acquisition of a prototype for the direct benefit of the Federal Government.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This program brings together a non-traditional, commercial company into defense contracting to foster innovative research in the area of architecture for diode high energy laser systems. SE-DFB lasers and arrays will have a pervasive impact on a wide variety of industrial and military applications pertaining to defense systems. For example, a direct-diode, high-brightness kilowatt-class laser would revolutionize a major segment of the industrial laser market due to its low cost, smaller form-factor and weight and higher efficiency compared to the current technologies based on diode-pumped solid state lasers (DPSSLs), fiber laser or the emerging disk laser. Many of the applications now served by variety of these DPSSLs can be replaced by spectral beam combined SE-DFB arrays. For applications requiring fiber lasers, the SE-DFB lasers and arrays are very suitable for pumping them since brightness is higher than that of an edge emitter and the wavelength stability is unparalleled. Some key areas of defense systems that can take advantage of this device include: terminal guidance for actively tracking fast-moving air-borne targets such as missiles, topographical mapping of terrain from air-borne vehicles using imaging laser radar systems, ranging systems, target designation systems and illumination applications can also take advantage of these devices, and optical communication applications as a pump source or even as transmitters. Certain rights pertaining to obligation and payment (accounting systems) and intellectual property rights (Bayh-Dole) were important to Alfalight. These issues required additional negotiation and flexibility in the provisions ultimately agreed upon between the parties. This flexibility and tailoring was possible only with the use of an other transaction.

Other benefits to the DOD through use of this agreement:
The use of an other transaction/other agreement under the authority of 10 U.S.C. § 2371 allows Alfalight to use existing accounting practices, which is necessary for this purely commercial company to do in order to conduct business with the Government.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0007

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: CROSSHAIRS: Sensor System Development and Demonstration

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Bae Systems Information And Electronic Systems Integration

Effective Date: 13 Jun 2006

Estimated Completion or Expiration Date: 12 Dec 2006

U.S. Government Dollars: $ 378,815

Non-Government Dollars: $ 362,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The overall objective of the CROSSHAIRS program is to develop a complete and affordable next-generation sensor system with the capability to detect, localize, and respond to a range of threats including bullets, rocket propelled grenades (RPGs), direct fire mortars, and anti-tank guided missiles (ATGMs). The specific effort encompassed within this Other Transaction is the Demonstration Phase where BAE will construct and demonstrate RADAR and UV subsystems. The result will be a 80° by 60° RADAR segment capable of threat range, range rate, and bearing estimates supported by a 360° by 80° UV sensor.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This other transaction is not being performed by any non-traditional defense contractors. Instead, this other transaction includes a 49% cost share by BAE and its subcontracted teammates. Nearly two-thirds of the total effort is being performed by BAE's teammates, M/A COM of Lowell, MA and Remote Reality of Westborough, MA. M/A COM is providing a detailed design and fabrication of a RPG, Mortar, and ATGM detection Radar RF Assembly, and Remote Reality is providing Optical Collection/Concentration Assembly prototypes to be incorporated into the CROSSHAIRS system.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
BAE is cost sharing 49% of the CROSSHAIRS effort. If the Government had issued a Federal Acquisition Regulation (FAR) contract that only included the effort paid for by the government or had BAE performed these efforts outside of a contractual arrangement, BAE would be able to segregate out several of the key technologies and claim limited rights in them. Because of the flexibility afforded by the other transaction, the Government was able to craft data rights language that provides Government Purpose Rights in all data including preexisting data and developed under the other transaction regardless of the source of funding. Also, because BAE is cost sharing such a significant portion of the effort, the other transaction afforded the flexibility to include bi-lateral termination procedures.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0008

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Hardwire Armor Phase II DARPA Program – Continuous Processes for Lightweight Multifunctional HD Armor Systems

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Hardwire LLC

Effective Date: 12 Jun 2006

Estimated Completion or Expiration Date: 12 Dec 2007

U.S. Government Dollars: $ 14,856,346

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The goal of the program is to demonstrate and validate performance from a new family of materials designed to offer both ballistic and blast protection at superior economics, weight, and manufacturing scalability. The program specifically targets to further improve the performance of the armor technologies developed on a previous DARPA contract and to develop and engineer the manufacturing technologies necessary to scale the developed armor technologies to commercial levels such that the promise of low-unit-cost composite armor can be achieved.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of the other transaction has enabled an accelerated development cycle for a new family of materials suitable for armor applications due to increased collaboration between Government and industry. The other transaction will provide the DoD with targeted development such that the products of the research will specifically address DoD needs. The technologies developed using this other transaction will broaden the technology base by providing the DoD with an expanded palette of materials to use in the design of armor systems. By using the authority of 10 U.S.C. 2371, research and development is being conducted by firms that are outside the normal industrial base traditionally utilized by the DoD in this area. The prime contractor, Hardwire,LLC , is a commercial supplier of steel wire tape to the composites and infrastructure markets. The proposed manufacturing technology would involve the pultrusion industry, currently involved in the high volume production of fiber reinforced plastics to various markets. Finally, this other transaction allows for Hardwire to make use of Government facilities that are absolutely necessary for them to be successful.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Under this other transaction, Hardwire has fostered new partnerships between the various material suppliers and government labs to enhance the performance of the proposed armor system. Typically, the entities involved participate in very different markets and would not interact. The Hardwire team consists of: CoorsTek,, a supplier of Ceramic tile; Applied Poleremic, Inc., a small resin supplier; Composites One and DSM, suppliers of polymer fibers; Aptek, a supplier of industrial adhesives; Saint Gobain, a supplier of glass fibers; Stronghold, a supplier of pultrusion manufacturing services; Bekart, a supplier of steel wire to the tire industry; Boedeker, a supplier of thermoplastics; and Metalman, a supplier of metal plate. The ability to bring this diverse set of material suppliers and focus them on a single integrated product will enable new insight into how these materials interact. The relationships that Hardwire has formed allows for the participants to select the areas where they can best contribute to the success of the program. This other transaction has allowed Hardwire to engage Government facilities that lend credibility to the results and approach that Hardwire has taken, which has enabled Hardwire to build the team for this other transaction..

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0010

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Demonstration and Validation of Hardwire Shape Charge (Hardwire Sc) Armor System

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Hardwire LLC

Effective Date: 12 Jul 2006

Estimated Completion or Expiration Date: 12 Apr 2007

U.S. Government Dollars: $ 939,761

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Hardwire LLC is a new small company that brings a rapid technology insertion pathway for advanced lightweight armor. The use of the other transaction has enabled extremely fast technology development based on achievement of significant milestones such as unique configurations, low cost, low weight and high performance. Through the use of the other transaction, the Government is able to access Hardwire and its commercial suppliers, none of which are established DoD contractors, and have no mechanism to accept Federal Acquisition Regulation (FAR)-based contracts; therefore, the Government can access technology, facilities and expertise that would normally not be easily or rapidly available to the DOD. This means that improved armor solutions can be made available to the military services in a short time.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This other transaction has fostered the relationship between automotive-supplier-chain companies and a new company directly supporting the DoD mission. These companies are able to produce large volume armor materials within short product cycles so that as new threats emerge in the future new armor designs can be quickly evaluated and incorporated into military platforms. This is not easily achievable in the traditional DoD contractor base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Under this other transaction, Hardwire has fostered new partnerships with companies that do not traditionally accept Government procurements. Typically, the entities involved participate in very different markets and would not interact. The ability to bring this diverse set of material suppliers and focus them on a single integrated product will enable new insight into how these materials interact. The relationships that Hardwire has formed allows for the participants to select the areas where they can best contribute to the success of the program. An other transaction has allowed Hardwire to engage government facilities that lend credibility to the results and approach that Hardwire has taken. This has enabled Hardwire to build the team for this other transaction. This other transaction has also enabled the participants to evaluate commercial opportunities for the technology in civil infrastructure.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0011

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Urban Challenge Program

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Honeywell International Inc

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 31 Dec 2007

U.S. Government Dollars: $ 663,219

Non-Government Dollars: $ 331,610

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of the Urban Challenge program is to demonstrate an autonomous vehicle capable of operating safely in an urban area. The vehicle must operate entirely independently, without external control or communications except for Global Positioning System (GPS), and will safely negotiate traffic in intersections, traffic circles, and merges.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Participants in the Urban Challenge come from a diverse set of backgrounds, including organizations that are non-traditional DoD contractors and in many cases are unable to accept a Federal Acquisition Regulation (FAR) contract. In additional, the other transaction has created an incentive for traditional performers to seek out smaller organizations in subcontractor and teaming arrangements. The other transaction capability has allowed larger DoD contractors to team effectively with major automotive industry organizations, for example, to participate in the program. Honeywell has attracted Ford and Delphi as teaming partners who will fund their own participation.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The national security is strengthened as more segments of the US industrial base are exposed to DoD problems and challenges and pre-positioned to address these challenges when the need arises. The Honeywell-Ford-Delphi team, funded by DARPA with a cost-share from the performers, is an example where the automotive industry is engaged at an early stage in the problem of autonomous vehicle navigation. DoD requirements are discussed early in the development cycle before the radical cost reduction necessary for widespread introduction of these technologies. DoD may have more options in the future in terms of leveraging automotive industry technology as a result.

Other benefits to the DOD through use of this agreement:
For the Urban Challenge, the primary advantage is in allowing novel teaming arrangements, attracting performers from outside the DoD community, and more flexibility negotiating intellectual property rights. Under this teaming arrangement, Ford and Delphi are funding their own participation outside the other transaction. Honeywell did not request to be considered a nontraditional contract even though it is using nontraditional defense contractors to a significant extent. Honeywell also provided the one-third cost share to the $1M maximum proposed amount as a Traditional Defense Contractor.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0012

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Urban Challenge Program

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Raytheon Missile Systems Company

Effective Date: 27 Sep 2007

Estimated Completion or Expiration Date: 31 Dec 2007

U.S. Government Dollars: $ 1,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of the Urban Challenge program is to demonstrate an autonomous vehicle capable of operating safely in an urban area. The vehicle must operate entirely independently, without external control or communications except for Global Positioning System (GPS), and will safely negotiate traffic in intersections, traffic circles, and merges.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Participants in the Urban Challenge program come from a diverse set of backgrounds, including organizations that are non-traditional DoD contractors and in many cases are unable to accept a Federal Acquisition Regulation (FAR) contract. In additional, the other transaction has created an incentive for traditional performers to seek out smaller organizations in subcontractor and teaming arrangements. The other transaction capability has allowed larger DoD contractors to team effectively with major automotive industry organizations, for example, to participate in the program.

Raytheon Company has selected a team comprised of three (3) nontraditional Defense contractors: Precision Chassis Fabrication, Tucson Embedded Systems and the University of Arizona to propose this effort for the Urban Challenge prototype project. Raytheon meets the compliance requirement by having nontraditional Defense contractors significantly participating on its team and that this project is directly relevant to weapons or weapons systems. Therefore, Raytheon has elected not to incorporate a cost share contract. Section 845(d) will be met by the Raytheon team as follows:

1. Criticality of the technology being contributed: The nontraditional Defense contractors are providing the vehicle for autonomous operation that meets the vehicle requirements as provided in the Statement of Objectives, the processing and algorithms needed for remote/autonomous vehicle maneuvering and control, and the modeling and simulation of the autonomous algorithms in an urban traffic simulation.

2. Role of the nontraditional Defense contractors in the development process. Tucson Embedded Systems - Vehicle Computer and Control. University of Arizona - Modeling and Simulation. Precision Chassis Fabrication - Vehicle Chassis Manufacturing and Integration.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The national security is strengthened as more segments of the US industrial bases are exposed to DoD problems and challenges, and pre-positioned to address these challenges when the need arises. Raytheon's team (including the three non-Traditional Defense contractors) and their donated resources have fostered new relationships that broaden the technology base available to DoD. DoD requirements are discussed early in the development cycle before the radical cost reduction necessary for widespread introduction of these technologies. DoD may have more options in the future in terms of leveraging the broader technology base as a result.

Other benefits to the DOD through use of this agreement:

For the Urban Challenge program, the primary advantage is in allowing novel teaming arrangements, attracting performers from outside the DoD community with more flexibility negotiating intellectual property rights. Under this teaming arrangement, Raytheon’s three nontraditional teammates have committed combined resources of approximately $800K to fund their own participation outside the other transaction. Based on Raytheon's use of at least one nontraditional Defense contractor in its team participating to a significant extent, it was not required to provide formal cost share to this prototype agreement. Nevertheless, Raytheon's proposal indicated is/was providing $3.7M of private funding above the $1M provided by DARPA to compete in this project.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0013

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Urban Challenge Program

Awarding Office: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Virginia Polytechnic Institute & State University

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 31 Dec 2007

U.S. Government Dollars: $ 999,274

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of the Urban Challenge program is to demonstrate an autonomous vehicle capable of operating safely in an urban area. The vehicle must operate entirely independently, without external control or communications except for GPS, and will safely negotiate traffic in intersections, traffic circles, and merges.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Participants in the Urban Challenge come from a diverse set of backgrounds, including organizations that are non-traditional DoD contractors and in many cases are unable to accept a Federal Acquisition Regulation (FAR) contract. In additional, the other transaction has created an incentive for traditional performers to seek out smaller organizations in subcontractor and teaming arrangements. The other transaction capability has allowed larger DoD contractors to team effectively with major automotive industry organizations, for example, to participate in the program.

Virginia Tech teamed with TORC Technologies for this project. Virginia Tech has asserted that TORC Technologies qualifies as a nontraditional Defense contractor in accordance with Section 845(d) and under this teaming arrangement with Virginia Tech will make a significant contribution to the efforts. As a subcontractor to Virginia Tech, TORC Technologies will devote 4 full time engineers and one half-time project manager for deliverables/tasks including 3-D simulation environment for conducting software-in-the-loop testing, traffic path prediction algorithms for multi-lane multi-car scenarios, advanced localization filtering algorithms in Global Positioning System (GPS) loss scenarios, motion planning algorithms for an Ackerman steering vehicle, driving behavior algorithms for multi-lane multi-car scenarios, situation classifier algorithms for multi-lane multi-car scenarios, and software architecture based on Joint Architecture for Unmanned Systems (JAUS) for algorithm implementation. In addition, the subcontract is valued at $485,000, which is a significant portion of the overall other transaction value.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The national security is strengthened as more segments of the US industrial bases are exposed to DoD problems and challenges, and pre-positioned to address these challenges when the need arises. Virginia Tech's team (including its one non-Traditional Defense contractor) has fostered new relationships that broaden the technology base available to DoD. DoD requirements are discussed early in the development cycle before the radical cost reduction necessary for widespread introduction of these technologies. DoD may have more options in the future in terms of leveraging the broader technology base as a result.

Other benefits to the DOD through use of this agreement:
For the Urban Challenge program, the primary advantage is in allowing novel teaming arrangements, attracting performers from outside the DoD community with more flexibility negotiating intellectual property rights. Under this teaming arrangement, Virginia Tech's nontraditional teammate TORC will be receiving a $485K subcontract

(48.5% of the total award) to participate in this other transaction. Based on Virginia Tech's use of one nontraditional Defense contractor in its team participating to a significant extent, it was not required to provide formal cost share to this prototype agreement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: HR0011-06-9-0014

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Urban Challenge Program

Awarding Office: DEFENSE ADVANCE RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Golem Group LLC

Effective Date: 27 Sep 2006

Estimated Completion or Expiration Date: 31 Dec 2007

U.S. Government Dollars: $ 1,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of the Urban Challenge program is to demonstrate an autonomous vehicle capable of operating safely in an urban area. The vehicle must operate entirely independently, without external control or communications except for Global Positioning System (GPS), and will safely negotiate traffic in intersections, traffic circles, and merges.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Participants in the Urban Challenge program come from a diverse set of backgrounds, including organizations that are non-traditional DoD contractors and in many cases are unable to accept a FAR contract. In additional, the other transaction has created an incentive for traditional performers to seek out smaller organizations in subcontractor and teaming arrangements. The other transaction capability has allowed larger DoD contractors to team effectively with major automotive industry organizations, for example, to participate in the program.

Golem has asserted the following in its proposal: As a new business entity and a non-traditional defense contractor, the Golem Group LLC meets the criteria for applying for DARPA funds under an other transaction agreement. Specifically, the Golem Group LLC affirms that it has not, for a period of at least 1 year prior to the date of the proposed other transaction agreement, entered into or performed on (1) any contract that is subject to full coverage under the cost accounting standards prescribed pursuant to section 26 of the Office of Federal Procurement Policy Act (41 U.S.C. 422) and the regulations implementing such section; or (2) any other contract in excess of $500,000 to carry out prototype projects or to perform basic, applied, or advanced research projects for a Federal agency, that is subject to the Federal Acquisition Regulation (FAR). . Based on this information, Golem's team qualifies as a non-traditional Defense contractor under this program; therefore, there is no cost-share requirement.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The national security is strengthened as more segments of the US industrial base are exposed to DoD problems and challenges, and pre-positioned to address these challenges when the need arises. Since The Golem Groupaditional is a nontraditional Defense contractor, this other transaction has fostered new relationships that broaden the technology base available to DoD. DoD requirements are discussed early in the development cycle before the radical cost reduction necessary for widespread introduction of these technologies. DoD may have more options in the future in terms of leveraging the broader technology base as a result.

Other benefits to the DOD through use of this agreement:
For the Urban Challenge program, the primary advantage is in allowing novel teaming arrangements, attracting performers from outside the DoD community, and more flexibility negotiating intellectual property rights. The Golem Group has not proposed any subcontracts under the other transaction. Based on The Golem Group's status as a nontraditional Defense contractor, participating to a significant extent in the program, they are not required to provide any cost share under this prototype other transaction.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: MDA972-01-9-0019

Modification Number: P00025

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Wolfpack Phase V: Miniaturization Improvements

Awarding Office: DEFENSE ADVANCE RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Bae Systems Information And Electronic Systems Integration

Effective Date: 31 Jan 2006

Estimated Completion or Expiration Date: 30 Jan 2008

U.S. Government Dollars: $9,652,130

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are to continue the development of key technologies already demonstrated in Phase IV, Option 3 efforts. This task focuses on hardware miniaturization and maturation as well as improvements in power management software and signal processing techniques. Phase V will focus on the development and demonstration of a WolfPack based on the miniaturized WolfNode whose cost is $500 in quantities of 25,000 per year.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The program will enable the development of low cost, disposable devices that will help DARPA explore an innovative method of electronic warfare in which the operative platform is not a single device or vehicle, but a network of simple nodes that are densely dispersed in the target areas.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Under this effort, BAE Systems will continue with the development of the WolfPack hardware and software leading to transition into US Army and DoD Electronic Warfare systems. BAE Systems will identify military scenarios and use cases in which the miniaturized Wolf will have a unique military utility compared to utility of a stand-off sensor.

Other benefits to the DOD through use of this agreement:
The flexibility inherent with the use of this award instrument ensures minimal administrative difficulties and a focus on the important technological research goals of this effort which are of critical importance. The ability to negotiated non-standard Intellectual Property terms and conditions and tailor other articles of the agreement that are of mutual benefit to both parties leads to a cooperative and collaborative relationship that contributes to the success of this research effort in responding to vital DoD mission needs.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: MDA972-03-9-0001

Modification Number: P00018

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Research and Development Experimental Collaboration (RDEC) System

Awarding Office: DEFENSE ADVANCE RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Science Applications International Corporation (SAIC)

Effective Date: 30 Dec 2004

Estimated Completion or Expiration Date: 31 Dec 2005

U.S. Government Dollars: $ 17,750,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective is to take a functionally driven approach to building experimental platforms at multiple locations that exploit three continuous and concurrent tasks: technology exploration; system architecture definition and integration; and, experiment platform activities. As the architecture is being formed, potentially relevant technologies will be aligned with key functional needs. These technologies will form (complete or partial) components and will be integrated into target prototype configurations using dynamically composable system architecture. These configurations and components that exceed threshold effectiveness measures will then be migrated over time, to form an end-to-end prototype system deployed at multiple locations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The performing organization, Science Applications International Corporation (formerly Hicks and Associates)., is a traditional defense contractor; however, 13 subcontractors, Acxion Corporation, Groove Corporation, Brilliant Media, CSIS, SSS, Fund For Peace, Context Mediaton Technology, ISA, Altarum, Global Velocity, Evolving Logic, HNC Software, and Potomac Institute are nontraditional defense contractors. The use of an other transaction provided access to these commercial firms by allowing relief from the normal intellectual property regime, accounting requirements and flow-down requirements of standard government contracts. Access to these firms broadened the technology base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an other transaction has allowed SAIC to tap into the technical resources of many different companies referred to as Tailgaters in a timely and efficient manner. Rather than being required to follow the stringent subcontractor approval requirements under the Federal Acquisition Regulation (FAR)
, an other transaction permits SAIC the flexibility to pursue additional Tailgaters that will provide significant benefits to the program without having to delay the program for time consuming approvals. The extreme complexity and time pressure of this program make the flexibility and streamlining available under an other transaction essential to technical success.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: MDA972-03-9-0001

Modification Number: P00032

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Research and Development Experimental Collaboration (RDEC) System

Awarding Office: DEFENSE ADVANCE RESEARCH PROJECTS AGENCY (DARPA)

Awardee: Virginia Polytechnic Institute & State University
Battelle Memorial Institute
Tacit Knowledge Systems Inc
Language Computer Corporation
Mosaic Inc
Science Applications International Corporation
Altarum Institute
The Washington University
Text Solutions Inc
Dow Jones Reuters Business Interactive LLC
Comsys Services, LLC
Insightful Corporation
Tarragon Consulting Corp
Powerloom Corporation

Effective Date: 28 Feb 2006

Estimated Completion or Expiration Date: 28 Feb 2007

U.S. Government Dollars: $ 11,900,000

Non-Government Dollars: $ 138,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective is to take a functionally driven approach to building experimental platforms at multiple locations that exploit three continuous and concurrent tasks: technology exploration; system architecture definition and integration; and, experiment platform activities. As the architecture is being formed, potentially relevant technologies will be aligned with key functional needs. These technologies will form (complete or partial) components and will be integrated into target prototype configurations using dynamically composable system architecture. These configurations and components that exceed threshold effectiveness measures will then be migrated over time, to form an end-to-end prototype system deployed at multiple locations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The performing organization, Science Applications International Corporation (SAIC) (formerly Hicks and Associates)., is a traditional defense contractor; however, 19 subcontractors (tailgaters), Acxion Corporation, Groove Corporation, Brilliant Media, Center for Strategic and International Studies (CSIS), SSS Corporation (formerly Visintuit),, Fund For Peace, Context Mediaton Technology, Integrated Support Associates, Inc. (ISA),, Altarum, Global Velocity, Evolving Logic, HNC Software (formerly Fair Isaac), Potomac Institute, Tacit, Inc., Mosaic, Tarragon Consulting, Comsys/Secure IT, and Clark & Parsia LLC are nontraditional defense contractors. The use of an other transaction provided access to these commercial firms by allowing relief from the normal intellectual property regime, accounting requirements and flow-down requirements of standard government contracts. Access to these firms broadened the technology base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:

Cooperative Agreements and Other Transactions Entered for Fiscal Year 2006

The use of an other transaction has allowed SAIC to tap into the technical resources of many different companies referred to as Tailgaters in a timely and efficient manner. Rather than being required to follow the stringent subcontractor approval requirements under the Federal Acquisition Regulation (FAR), an other transaction permits SAIC the flexibility to pursue additional Tailgaters that will provide significant benefits to the program without having to delay the program for time consuming approvals. The extreme complexity and time pressure of this program make the flexibility and streamlining available under an other transaction essential to technical success.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: MDA972-99-9-0008

Modification Number: P00017

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Unmanned Air Combat Vehicle

Awarding Office: DEFENSE ADVANCE RESEARCH PROJECTS AGENCY (DARPA)

Awardee: The Boeing Company

Effective Date: 16 Dec 2005

Estimated Completion or Expiration Date: 30 Sep 2006

U.S. Government Dollars: $ 136,690

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
To develop and demonstrate, as an Advanced Technology Demonstration (ATD), an affordable unmanned combat air vehicle (UCAV) that will suppress enemy air defenses and conduct strike missions in a global command and control architecture. The technology area is combat unmanned air vehicle (UAV) technology. This particular agreement brings the personnel, facilities, and equipment of NASA Dryden into the development effort.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Since the main purpose of this other transaction is the addition of NASA Dryden to the performing team, no broadening of the technology and industrial base is expected.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This agreement defines and describes the role of NASA Dryden as a technical partner in the overall program effort, assisting in general research and providing flight test support and range facilities. The technical partnering arrangement is needed to enable Boeing to obtain engineering support, technical expertise, and the use of NASA Dryden facilities and resources for flight-testing. DARPA's primary role this agreement is to provide funding and payment to NASA for services provided. Boeing's primary roleto monitor performance and track the progress of program research and flight test activities as reported by NASA Dryden. This agreement provides a mechanism for obtaining quality technical support from a Government agency to a Government contractor, but funded by a third party Government agency. Use of an other transaction enhanced the cultural change experienced by both industry and Government, away from traditional wiring-of-money and memorandum-of-understanding process toward a more collaborative relationship tailored to the specific needs of the program. Another key feature of this agreement is that Boeing is held accountable for any cost overruns of teams and subcontractors, as well as Government agencies providing support; hence the need to monitor performance and track progress provided by NASA Dryden.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: N00421-03-9-0002

Modification Number: P00014

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Mid-Pacific Photonics Prototyping Facility (M3PF)

Awarding Office: NAVAL AIR WARFARE CENTER AIR DIV

Awardee: APIC Corporation

Effective Date: 27 Apr 2006

Estimated Completion or Expiration Date: 30 Sep 2006

U.S. Government Dollars: $ 500,000

Non-Government Dollars: $ 250,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to acquire commercial prototyping process technology needed to develop and fabricate prototype Photonic Integrated Circuit (PIC) chips for use on Navy and other defense networking and communication systems. This will be accomplished by developing and fabricating a world-class photonics prototyping facility that can be used to fabricate the next generation of integrated photonics chips needed to reduce the size, weight, cost and installation penalties associated with applying photonics to naval aircraft and other defense systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) has allowed the government to do business with a non-traditional Department of Defense (DoD) contractor and its collaborative team of business and engineering professionals. APIC, as a newly formed small business entity, lacks the infrastructure necessary to conduct business in accordance with traditional Federal Acquisition Regulation (FAR) requirements such as Cost Accounting Standards (CAS).

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an OT has allowed the government to clearly define the significant contributions of all of the team participants and spell out the intellectual property rights of each party. Use of an OT for Prototype has also afforded the government more insight into the participation and performance of all team members than would be possible under the prime-subcontractor arrangement of a traditional FAR contract.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: N00421-03-9-0002

Modification Number: P00015

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Mid-Pacific Photonics Prototyping Facility (M3PF)

Awarding Office: NAVAL AIR WARFARE CENTER AIR DIV

Awardee: APIC Corporation

Effective Date: 21 Jul 2006

Estimated Completion or Expiration Date: 29 Apr 2007

U.S. Government Dollars: $ 375,669

Non-Government Dollars: $ 250,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to acquire commercial prototyping process technology needed to develop and fabricate prototype Photonic Integrated Circuit (PIC) chips for use on Navy and other defense networking and communication systems. This will be accomplished by developing and fabricating a world-class photonics prototyping facility that can be used to fabricate the next generation of integrated photonics chips needed to reduce the size, weight, cost and installation penalties associated with applying photonics to naval aircraft and other defense systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) has allowed the government to do business with a non-traditional Department of Defense (DoD) contractor and its collaborative team of business and engineering professionals. APIC, as a newly formed small business entity, lacks the infrastructure necessary to conduct business in accordance with traditional Federal Acquisition Regulation (FAR) requirements such as Cost Accounting Standards (CAS).

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an OT has allowed the government to clearly define the significant contributions of all of the team participants and spell out the intellectual property rights of each party. Use of an OT for Prototype has also afforded the government more insight into the participation and performance of all team members than would be possible under the prime-subcontractor arrangement of a traditional FAR contract.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: N66001-05-9-6016

Modification Number: P00002

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Advanced Container Security Device (ACSD)

Awarding Office: SPACE AND NAVAL WARFARE SYSTEMS

Awardee: L-3 Communications Security And Detection Systems Inc

Effective Date: 02 Jun 2006

Estimated Completion or Expiration Date: 01 Dec 2007

U.S. Government Dollars: $ 3,382,228

Non-Government Dollars: $ 1,312,580

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The intent of the ACSD program is to further the state of the art in the area of container security, which will then allow for commercial use of a higher standard of container security. This higher standard of container security may be mandated via statute, industry standard, or the Maritime Transportation Security Act - International Ship and Port Facility Security Code. The interest of the federal government, as managed by Homeland Security Advanced Research Projects Agency (HSARPA), is to foster this research in order to advance the total security of the citizens of the United States.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The ACSD prototype also provides data to the Office of Naval Intelligence (ONI) to support the Navy's role in Maritime Domain Awareness and Cargo Tracking. In addition, the ACSD prototype will alert authorities of threats prior to transfer of hazardous cargo to sea basing ships containing munitions. The device will have the ability to target containers and provide positioning information for ships transporting threats. This defensive weapons system is similar to a Fire Control or Sonar Combat System that provides location data and targeting information. The early detection of WMD and terrorists during transportation makes the ACSD prototype a critical defensive weapons system.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The ACSD prototype will be able to provide location data in the event of an unauthorized entry on land or sea, which acts as an early detection defensive weapons system for the primary purpose of combating hidden weapons smuggled by land or sea. The positioning of the ACSD prototype in cargo container/transport will also assist in interdiction. When indicated by the ACSD prototype, detected threats in the open ocean will be responded to by US Naval forces due to their far forward deployment and their role in maritime domain awareness. The ACSD prototype has interfaces for future sensors, such as chemical/biological, radiological/nuclear, and explosives being developed to alert for weapons of mass destruction (WMD). The early detection of these weapons will provide the military with the ability to target or intercept these weapons before they are deployed. The five areas in which the ACSD prototype acts as a defensive weapon system are: 1) assuring the integrity of container loading; 2) detecting human cargo (which could include possible terrorists); 3) significantly reducing the risk of undetected tampering in transit; 4) sensing any intrusion into the container; and, 5) providing an interface for the previously mentioned advanced sensors.

Other benefits to the DOD through use of this agreement:
Commercialization of the ACSD prototypes is the ultimate goal.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0073

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 24 Aug 2006

Estimated Completion or Expiration Date: 30 Sep 2007

U.S. Government Dollars: $ 494,696

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The problem of text extraction from maps has been widely addressed in the defense and intelligence communities, yet it remains a significant challenge. Text appears in multiple sizes and colors, overlaps with other text and geographic features, and appears in arbitrary orientations. Although a great deal of research has advanced the field, there are still many open problems. The Pennsylvania State University, Applied Research Laboratory, Image Processing, GIS Department (PSU/ARL) will work with the NGA to implement and test a prototype of its tool set. The project will construct an ArcGIS centered tool for executing the following series of processing steps to extract text from scanned maps. The system structure is intended to be user directed where output from any process execution can be rapidly evaluated and either rerun or sent to the next step. The ArcGIS foundation is flexible permitting access to native ESRI algorithms, editing, query, and display functionality. Further, it can integrate with other software to provide solutions for problems outside of the available ArcGIS tool set. PSU/ARL will test the incorporation of optical character recognition (OCR) software into the work process to extract candidate text areas. The flexibility of ArcGIS allows for growth in application development to include data base renderings and creation of web based tools.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, PSU/ARL and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. PSU/ARL is a major research institution meeting Government R&D needs across a broad spectrum of technologies and applications. PSU/ARL has been instrumental in the research and development of a number of GIS related algorithms and tools. Rosettex has a proven track record of transitioning R&D technology to the commercial market place for Government clients. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model for technology advancement of workflow based OCR solutions.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The need for rapid development and deployment of the map text extraction technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. In this case, PSU/ARL has invested its own resources to design a commercial product centered approach to the multi-lingual map text extraction problem. Furthermore, this partnering relationship is anticipated to continue beyond the life of the agreement, thereby

broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities offered by this effort are directly related to DoD/IC needs to accurately and unambiguously identify individuals, places, and events from multi-lingual map and gazetteer products. Accurately and unambiguously identifying individuals, places, and events will increase the ability of US Armed Forces to analyze and screen individuals, locations, and events to plan deployment and targeting activities for US military weapons systems.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Modification Number: 05

Task Number: 0046

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance-Rosettex Technology & Venture Group

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 21 Sep 2006

Estimated Completion or Expiration Date: 24 Apr 2007

U.S. Government Dollars: $ 196,844

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Provide the evaluation systems (hardware & software) and engineering support needed to improve the stability and usability of MarineLink, an XML-based semantic discovery, search and routing capability. This effort will facilitate the transition of MarineLink to Operational Forces via the Program Office, PM-Intel.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) has resulted in the participation of a non-traditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs, and without the OT would likely not have been formed to bring these solutions to DoD. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. Semandex Corporation is a non-traditional defense contractor who would have been unable to pursue Government business without the OT, due to its small size and limited marketing and proposal generation resources for traditional procurements.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations, resulting in the rapid development of new technologies such as semantic routing. The OT placed Rosettex industry team member Semandex and the Government in a more commercial-like relationship than would a customary Government contract, to the benefit of both. Semandex has been more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, the partnering relationships established are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs. Additionally, via this mechanism, the Semandex technology that would normally not have been considered for DoD use is being transitioned for direct implementation into an evolving DoD capability baseline.

Other benefits to the DOD through use of this agreement:
The Intelligence Analysis System (IAS) Family of Systems (FoS) is employed by Marine Intelligence analysts across all components and echelons of the Marine Air Ground Task Force. This project supports the transition of the IAS to the net-centric CONOPS outlined by the DoD .

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Modification Number: 01

Task Number: 0049

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 27 Jun 2006

Estimated Completion or Expiration Date: 01 Oct 2006

U.S. Government Dollars: $ 997,448

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort supports the National Reconnaissance Office (NRO) by performing prototyping, evaluations, assessments, demonstrations, and making recommendations with respect to the use of nanostructured approaches for the development of the next generation of high efficiency photo voltaic (PV) solar cell for space. The overall objective is twofold: (1) incorporate nanotechnology in state-of-the-art photovoltaic devices to provide a near term power conversion efficiency improvement; and (2) leverage activities performed in the first area to enable the demonstration of ultra-high efficiency intermediate band solar cell (IBSC) photovoltaic devices.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort, Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. This project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This agreement fosters research and development practices that are more like those in commercial organizations, resulting in the rapid development of new technologies. The agreement places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
This project will benefit the DoD/IC community by conducting necessary research and demonstrate the feasibility of: (1) incorporating nanotechnology in state-of-the-art photovoltaic devices to provide a near term power conversion efficiency improvement; and (2) leveraging the activities performed in the first area to enable the demonstration of ultra-high efficiency intermediate band solar cell (IBSC) photovoltaic devices.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0055

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance-Rossettex Technology & Venture Group

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 20 Oct 2005

Estimated Completion or Expiration Date: 19 Nov 2006

U.S. Government Dollars: $ 992,032

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Rayban objectives address the performance shortfalls demonstrated by current assisted target cueing/automatic target recognition (ATC/ATR) systems when applied to electro-optic panchromatic imagery data. The ATC/ATR systems have significant difficulty discriminating the target of interest from the surrounding background, which stems from the passive nature of electro-optic sensors, their limited dynamic range, a lack of contrast, and changing lighting conditions. To date, no robust, reliable processing approach has been developed to solve this problem.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed in 2001 to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort, Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability to address the challenges mentioned above. The specific technical scope of this effort is classified. General Dynamics Advanced Information Systems (GD-AIS) is a partner on this effort. The specific unit of GD-AIS being utilized on this effort has been selected in collaboration with Government technical experts as significant best of class in the technical area for which development is required. They are an R&D organization with limited experience in commercial product development. By teaming this unit with Rosettex, and through the use of OT, the DoD is encouraging Rosettex and its partner in this effort to co-invest in the capability delivered and to seek partnerships to transition it to existing commercial processing architectures by allowing the partner to retain intellectual property rights. The use of commercial processing architectures will speed delivery to the NGA and other community stakeholder processing enterprises.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The capability being developed under this OT is critical to DoD/IC operations. There is also a need to assure the technology is developed quickly and used as widely as possible in a number of different DoD/IC organizational architectures. This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development, adoption, and use of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. By teaming a select unit of GD-AIS with Rosettex, and through the use of OT, the DoD is encouraging the team members to co-invest in the delivered capability and to seek partnerships to transition it to existing commercial processing architectures by allowing GD-AIS to retain intellectual property rights. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems which depend on assisted target cueing/automatic target recognition.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0056

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex Technology & Venture Group

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 22 Dec 2005

Estimated Completion or Expiration Date: 22 Jan 2007

U.S. Government Dollars: $ 249,993

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of the effort is the adaptation of Gaussian Mixture Model (GMM) and Support Vector Machine (SVM) modeling algorithms for use in a robust, Arabic language Speaker Identification (SID) technology to support community efforts to fight the global war on terror. A robust Arabic SID will enhance US military efforts to secure and protect weapon and other facilities.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex and its partner, SRI International, Menlo Park, CA. SRI is a major research institution meeting commercial and Government needs across a broad spectrum of technologies and applications. SRI has been instrumental in the research and development of a number of SID and Arabic Speaker Recognition (ASR) algorithms and tools. The use of an OT for this project will broaden the DoD/IC technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Rosettex is a non-traditional Defense contractor with unique capabilities that have the potential to dramatically increase the Nation's ability to fight the global war on terror. Rosettex does not posses the infrastructure or expertise to support a traditional Federal Acquisition Regulation (FAR) contract. This OT fosters research and development practices that are more like those in commercial organizations, and will result in the rapid development and fielding of critical new technologies that might not be possible under traditional FAR. The OT places project team members and the Government in a more commercial-like relationship than would a customary Government contract. This is critical to rapid development of the required algorithms. Rosettex team members are more willing to commit their personnel and resources to projects in support of this relationship than they would otherwise. Furthermore, these partnering relationships are anticipated to continue within the SID and ASR commercial market sector beyond the life of the agreement, thereby broadening SID and ASR technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities offered by Robust Arabic Language SID are directly related to DoD/IC needs to accurately and unambiguously identify individuals. Accurately and unambiguously identifying individuals will increase the ability of US armed forces to screen individuals and, when warranted, deny them access to weapon and other facilities, thereby enhance US military efforts to secure and protect these facilities.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0057

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 03 Mar 2006

Estimated Completion or Expiration Date: 06 Apr 2007

U.S. Government Dollars: $ 349,912

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The National Center for Forensic Science (NCFS) Task will investigate the feasibility of printing the following onto flexible plastic substrates: fine-scale serpentine fill patterns in conductive carbon ink bounded by non-conductive carbon ink. The work will include placing electrical contacts at each end of the patterns to test conductivity. Both screen-printed and inkjet-printed carbon inks will be investigated and the characteristics of each measured. Basic physical and environmental reliability testing will be performed, and demonstration samples of the patterns produced.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort, Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations, resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
These technologies are anticipated to be employed in subsystems of significance for the national defense.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0058

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 06 Mar 2006

Estimated Completion or Expiration Date: 20 Mar 2007

U.S. Government Dollars: $ 400,142

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The NGA has a requirement to develop an Earth Gravitational Model to update the NGA technical report TR 8350.2, Department of Defense World Geodetic System 1984: Its Definition and Relationships with Local Geodetic Systems. This effort provides the world-wide common coordinate reference system for military, civilian, and commercial operations through the Department of Defense's (DoD) World Geodetic System 1984. This project addresses this requirement by providing NGA with a prototype model which will provide a more accurate depiction of the earth geoids for use in precise navigation and targeting. This project is in the Geospatial Intelligence technology area.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor; SGT, Inc. SGT is a recently graduated small-disadvantaged business 8 (a) contractor, with veteran minority ownership status that provides solutions-driven aerospace engineering and technical services. Rosettex, a non-traditional defense contractor, will provide program management for this effort. Teamed, SGT and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems dependent upon accurate and precise geo-positioning information to support location and targeting.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0059

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 25 May 2006

Estimated Completion or Expiration Date: 23 May 2007

U.S. Government Dollars: $ 393,931

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Test the use of commercial wireless handheld devices customized to the needs of deployed PSYOP forces, and the organic communications resources to coordinate with operational command Headquarters. Handheld devices must be able to execute full Windows XP Operating System, have at least 20GB hard drive removable if possible, fit in an ammo pouch, and weigh less than one pound. Devices will be tested at the Naval Postgraduate School (NPS), and a selected device is expected to move forward into pre-operational testing.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Use of the other transaction agreement has allowed the participation of commercial firms such as Twisted Pair Solutions, OQO Computer, Symbionics, and iTronics, who otherwise would not have participated in the project. These firms make hardware or software for the commercial small computer market, and generally do not use their resources or have expertise to pursue traditional Government procurement opportunities. The other transactions provisions allowed NGA to solicit active participation of these firms in a manner that did not require significant deviation from their normal commercial practices. The expected benefits are both significantly less expensive handheld device unit costs driven by commercial volumes, as well as better capability over the longer term due to the process for ongoing testing and insertion of the best commercial devices.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the other transactions has created new business relationships between these small commercial firms and the end user community. These relationships have fostered an ongoing dialogue to ensure appropriate small commercial vendors directly understand the end user needs as well as the technology insertion mechanism. Without these relationships, the cost for these commercial companies to approach this market individually would be so high, and the expected return on investment so low, as to discourage their participation. With these relationships, the user command will continue to get direct insight into the latest commercial innovations and be able to evaluate them for insertion prior to the products reaching full commercial viability; as a result, the mechanism now exists for continued insertion of cutting edge technology on an ongoing basis.

Other benefits to the DOD through use of this agreement:
The prototype handheld devices provide direct information support to deployed Psychological Operations (PSYOP) forces, and are thus their primary weapon system for waging PSYOP campaigns.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0061

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 07 Jul 2006

Estimated Completion or Expiration Date: 07 Sep 2007

U.S. Government Dollars: $ 1,019,200

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort supports the National Geospatial-Intelligence Agency (NGA) by performing prototyping, evaluations, assessments, demonstrations, and making recommendations to enable the efficient migration of JPEG 2000 into the Distributed Common Ground System (DCGS) architecture. Specifically, this phase will focus on supporting JPEG 2000 community profile development, accessing the motion imagery compression needs of the DCGS architecture, investigating a JPEG2000 hardware solution for latency reduction, verifying libraries National Information Library/Command Information Library/Image Product Library (NIL/CIL/IPL) ability to ingest JPEG2000 compressed airborne data, accessing the Motion Imagery Compression needs of the DCGS architecture, and participating in community demonstrations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort, Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The capability being developed under this OT is critical to DoD operations. There is also a need to assure the technology is developed quickly and used as widely as possible in a number of deployed units and commands utilizing the DCGS architecture. This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development, adoption, and use of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems with video data derived from intelligence and surveillance satellite systems. This will be accomplished by supporting the implementation of standardized JPEG 2000 structured airborne video data management and exploitation hardware, software, and interface capabilities in the (DCGS).

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0062

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 06 Jun 2006

Estimated Completion or Expiration Date: 02 Feb 2007

U.S. Government Dollars: $ 158,440

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objectives of the effort are to develop prototype PDF products and standardized exploitation tools to support community efforts to standardized GeoPDF products, to promote exploitation support applications development, and to facilitate the use of GeoPDF products in critical operational systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, TerraGo Technologies, Inc., 155 Woolco Drive, Marietta, GA 30065. TerraGo was spun out of Layton Graphics, Inc., in 2004 to further develop and support MAP2PDF, an innovative product that publishes GIS data, engineering maps, drawings, and attribute data to geo-referenced intelligent PDF files for viewing and use by any device that runs Adobe Reader. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of this unique and innovative processing capability in the context of specific defense and intelligence community needs.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies like commercial GeoPDF products and exploitation tools. Results of this effort will accelerate the exploitation of GeoPDF products, based on a ubiquitous Adobe PDF product architecture, for geospatial intelligence purposes by the DoD/IC community and will lead to development of new, low cost commercial GEOINT exploitation tools. This capability is important to improve the quality and utility of intelligence reports for defense applications. The need for rapid development and deployment of the GeoPDF technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract.. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. In this case, TerraGo has invested significant private equity in the research and development in the GeoPDF formats and exploitation tools.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort will be used to address DoD/IC needs to provide geospatial intelligence and a common relevant operating picture in support of tactical urban contingencies. The operational use of softcopy map products based on widely available, commercial technology will allow tactical armed forces to better perform their missions and ensure the continued high lethality and survivability

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0064

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 24 May 2006

Estimated Completion or Expiration Date: 23 Jul 2007

U.S. Government Dollars: $ 172,480

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort supports the National Reconnaissance Office (NRO) by performing prototyping, evaluations, assessments, demonstrations, and making recommendations with respect to the use of high purity, standardized carbon nanotube papers for controlled catalyst deposition and fabrication of carbon nanotube electrodes. The overall objective of the proposed program is to leverage capability developed at the NanoPower Research Labs (NPRL) at Rochester Institute of Technology (RIT) to produce extremely high quality materials, and utilize their first-class characterization facilities to: (1) perform a detailed set of calibrated experiments to measuring the lithium storage capacity and ultimate charge/discharge rates of high purity "Buckey" paper electrodes in a lithium ion battery, and (2) the suitability of these same electrodes as gas diffusion media in a proton exchange membrane (PEM) fuel cell.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort, Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of the OT will hasten the development of those science and technology of nanotechnology applications offering the potential to boost electrical power conversion in satellite platforms, and thereby broaden the available technology and industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations, resulting in the rapid development of new nanotechnology applications to address critical government needs for more effective satellite systems technologies. The OT partnering relationships of this effort are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC efforts to support fielded weapons systems that depend on data derived from intelligence and surveillance satellite systems. Implementing single-walled nanotube (SWNT) technology for energy conversion can dramatically increase the capacity and effectiveness of these satellite systems by extending amount of electrical power available for their operation.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0065

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance (NTA), Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 07 Aug 2006

Estimated Completion or Expiration Date: 14 Sep 2007

U.S. Government Dollars: $ 2,999,751

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Rosettex will deliver prototypes of linguistic and knowledge discovery capabilities supporting the Caleb-II Predictive Analysis cell, and provide prototypes of new, computer-based training modules for disconnected sustainment training in the field.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Each of the four commercial firms involved in the project are small companies that would have had difficulty participating in the Caleb-II effort without the other transaction (OT) authority. These firms are K3 enterprises, Saffron Technology, Inc., Basis Technology, and Horizontal Fusion, LLC. The expected benefits of these firms participation in the Caleb-II project are better technology for Predictive Analysis (Basis/Saffron), better adoption of this technology by operational users due to the computer-based training provided by Horizontal Fusion, and better integration of these technologies into an operational environment and transition to users for prototype testing as a result of the expertise of K3.

The time and cost of responding to a traditional procurement instrument would have made it impossible for any of these four small companies to be involved. Three of the four companies have significant commercial intellectual property protected under commercial license terms and/or trade secrets. In both cases, the Other Transactions authority has protected these interests more effectively than either traditional instruments or prime/sub relationships.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of this agreement has fostered new business relationships among small, for-profit commercial companies that support the national security of the United States. These relationships help the United States get better technology by providing a direct pathway for small, innovative, commercially focused companies that would otherwise not do business with the Federal Government to cost-effectively bring their technology to support national security.

New relationships have been formed between Basis Technology and Saffron that provide a better-integrated solution in combination than any other similar technology in the market, and between Horizontal Fusion and both Basis and Saffron as a source of specific content for computer-based training that helps support the technology transition to operational users.

Several provisions of the other transactions instrument were critical to these new relationships, including more relaxed Intellectual Property (IP) provisions which enabled Rosettex to contract with companies used to working only with commercial partners; more extensive protection for the vendors intellectual property and trade secrets; and for at least two of the vendors, elimination of the requirement to comply with stringent government cost accounting standards, enabling reliance on standard commercial practices.

Other benefits to the DOD through use of this agreement:
A significant additional benefit from use of the other transaction agreement is the establishment of new relationships in the Government stakeholder organizations. Funding for Caleb-II originates with the Joint Improvised Explosive Device Defeat Organization (JIEDDO), which has expressed its lack of success to date in finding a mechanism to engage small, commercial companies. The NTA agreement provides such a mechanism, which may help the defense community get better access to smaller, innovative technology companies in a timely, cost-effective manner. To quantify these benefits, the JIEDDO took over a year to fully contract its FY05 BAA awards; under OT provisions, NTA will be able to contract the Caleb-II effort in approximately two months after funding has been received. Discussions are under way to institutionalize this rapid contracting access to small, innovative commercial companies.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0066

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 31 Aug 2006

Estimated Completion or Expiration Date: 04 Oct 2007

U.S. Government Dollars: $ 599,888

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The Program Objective is to transition the advanced prototype aXiom capability to support Army, USMC and Special Operations Forces (SOF) units as part of the Caleb-II program. Caleb-II establishes a unique Tactical to Operational level Predictive Analysis Center while equipping the Improvised Explosive Device (IED) Defeat Organization forward elements with Joint Intelligence Operations Capability - Iraq (JIOC-I) compatible digital C4I. Semantic Web Networking is an XML-based content routing system that enhances Command and Control by delivering more relevant and complete information from across Intel Community and operational databases in real-time.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Semandex Corporation. Semandex is a non-traditional defense contractor who would have been unable to pursue Government business without the OT, due to its small size and limited marketing and proposal generation resources for traditional procurements. The use of an OT for this project has broadened the DoD technology and industrial base by bringing a new supplier with important technology capabilities into the intelligence arena. Evaluations by the user community have established that the Semandex technology is measurably better in reducing search time and improving information currency than other mechanisms currently in use.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations, resulting in the rapid development of new technologies such as semantic routing. The OT placed Semandex and the Government in a more commercial-like relationship than would a customary Government contract, to the benefit of both. Semandex has been more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, the partnering relationships established are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs. Additionally, via this mechanism, the Semandex technology is being transitioned for direct implementation into an evolving DoD capability baseline.

Other benefits to the DOD through use of this agreement:
The program seeks to take advantage of tactically collected intelligence, in combination with other sources of intelligence, to produce immediately actionable information disseminated to operational forces. The semantic web capability provides the dissemination mechanism as part of this counter-insurgency and counter-IED system.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0067

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance (NTA), Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 28 Jun 2006

Estimated Completion or Expiration Date: 24 Dec 2006

U.S. Government Dollars: $ 643,418

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The National Geospatial-Intelligence Agency (NGA) is conducting research and development on a wide range of advanced spectral tools in anticipation of increased utility of and need to exploit current and future spectral imagery data sources. The object of this effort is to develop new thermal models that will utilize temperatures of identified key components in specified scenarios to support imagery exploitation. The NTA will investigate, develop, evaluate, validate, and document new thermal models with robust capabilities for integration into the National System for Geospatial-Intelligence. This project is in the Geospatial Intelligence technology area.

E**xtent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:**
The use of an other transaction (OT) Agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, Northrop Grumman and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems with geospatial intelligence and a common relevant operating picture.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0068

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 19 Jun 2006

Estimated Completion or Expiration Date: 19 Sep 2007

U.S. Government Dollars: $ 1,106,959

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
NGA Analysts have a need for a mature suite of software and hardware which will use Foliage Penetration Synthetic Aperture Radar (FOPEN SAR) to provide a prototype, near-operational system to detect objects and potential targets, and conduct change detection analysis in specific regions of interest within operational mission timelines. The NGA seeks to extend and apply recent SAR advances and techniques for the problem of automatic target recognition (ATR) using proven BAE laboratory software. BAE will evaluate, modify, enhance, and/or mature the software and hardware to develop a production and field deployable system that will allow analysts to automatically process FOPEN SAR or commercial GeoSAR imagery to detect objects and potential targets.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, BAE and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. BAE is a DoD/IC systems integrator addressing Government needs across a broad spectrum of technologies and applications. BAE is known to be a world-class supplier of SAR exploitation expertise and capabilities and has been instrumental in the research and development of a number of SAR ATR related algorithms and tools. Rosettex has a proven track record of transitioning R&D technology to the commercial market place for Government clients. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model for technology advancement of ATR solutions.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The need for rapid development and deployment of the ATR technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. In this case, BAE has invested resources to prove the efficacy of its technology relative to the ATR problem in a laboratory environment. The Government will build on these investments to quickly field a much-needed capability. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities offered by this effort are directly related to DoD/IC needs to accurately and unambiguously recognize, identify, and classify targets. Accurate identification and classification of targets will increase the ability

of US Armed Forces fielded weapons systems to more efficiently and effectively neutralize the targets.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0069

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 12 Jun 2006

Estimated Completion or Expiration Date: 12 Aug 2007

U.S. Government Dollars: $ 1,299,936

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This project continues the prototype developments started under the prior Insight 2 program, and carries them to the next level of maturity. The new Handheld Iris Recognition Systems, Iris Recognition Development, and Tool Kit Support tasks will integrate existing technologies to the current prototypes, resulting in much increased functionality. These prototypes will demonstrate the abilities of current technologies to perform iris recognition in several different classes of unconstrained environments. Successful demonstrations will enable future applications such as automated identification of persons in crowds at airports or other public spaces, at a distance and while they are moving.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. In addition to Rosettex, Iridian Technologies, Inc. of Moorestown, NJ is also a nontraditional defense contractor, and will supply software resources and expertise in support of the effort. Iridian leads the world in research, development and marketing of authentication technologies based on iris recognition - the most accurate biometric identifier. Iridian is a holder of U.S. and international patents on the core concepts and technologies behind iris recognition. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
Commercial off the shelf biometric systems are becoming widely available and are being deployed in a variety of government and commercial applications. Understanding the capabilities of such systems and how to use and enhance their capabilities to safeguard access to government weapons assets and systems are important concerns for the DoD in general and for the National Security Agency (NSA) in particular. The NSA is interested in supporting research and development activities in these areas and have responsibility for incorporating biometric identification

into secure interfaces between people and information systems. The work planned for these projects will support their efforts.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0070

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 07 Jul 2006

Estimated Completion or Expiration Date: 07 Oct 2007

U.S. Government Dollars: $ 1,143,295

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This project continues the developments on iris recognition started under the prior Rivendell and Rivendell Phase II programs, and carries them to the next level of maturity. The new phase of the program will leverage the technology into operational prototypes. Additional details are classified.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The work conducted under the previous Rivendell programs, and which will occur under Rivendell III, is providing new approaches and techniques for capturing, evaluating, storing, and comparing iris data as a means to unambiguously confirm identity. Classified and unclassified publications and demonstrations of this technology are providing other organizations foundations from which to conduct their own R&D, thus shortening the time frame in which this technology is becoming available for Government implementation, as well as enhancing the technology's capabilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. The results achieved so far under the Rivendell programs have proved the value of this technology. In consequence, other commercial entities are entering the iris R&D arena, and this trend is expected to continue. The Government benefits from this in that the cost of the technology is slowly but surely decreasing and more and more vendors are available, thus providing flexibility/leverage in selecting a given vendor.

Other benefits to the DOD through use of this agreement:
Commercial off the shelf biometric systems are becoming widely available and are being deployed in a variety of government and commercial applications. Understanding the capabilities of such systems and how to use and enhance their capabilities to safeguard access to government weapons assets and systems are important concerns for the DoD.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0071

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 15 Jun 2006

Estimated Completion or Expiration Date: 07 Jul 2007

U.S. Government Dollars: $ 175,430

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
New Mexico State University (NMSU) will work collaboratively with the Government in the area of distance exploitation. NMSU will attempt to increase the read range of various tags, allowing exploitation of the data at a greater distance than normally allowed. In doing so, NMSU will characterize the various types of tags and readers, focusing on those technologies identified by the Government as being of interest. NMSU will obtain equipment, along with necessary specialized test equipment to set up a Radio Frequency Identification (RFID) exploitation laboratory. The lab will provide the means to carry out the project. Areas which will be explored include current and future RFID chip technologies, frequencies and modulations, power levels, antennas, attenuation factors, open and covert readers, methods of relay (RF or optical repeaters, etc), jamming, data replacement and insertion, and maximum detection ranges.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor. NMSU is a major research institution meeting commercial and Government needs across a broad spectrum of technologies and applications. NMSU has been instrumental in the research and development of a number of RFID algorithms and tools. The use of an OT for this project will broaden the DoD/IC technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
NMSU is a non-traditional Defense contractor with unique capabilities that have the potential to dramatically increase the Nation's ability to fight the global war on terror. NMSU does not posses the infrastructure or expertise to support a traditional Federal Acquisition Regulations (FAR) contract. This OT fosters research and development practices that are more like those in commercial organizations, and will result in the rapid development and fielding of critical new technologies that might not be possible under traditional FAR. NMSU team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue within the RFID commercial market sector beyond the life of the agreement, thereby broadening RFID technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement: The capabilities offered by RFID Exploitation Demonstrations prototypes are directly related to DoD/IC needs to locate, accurately identify, and track individuals with hostile intentions toward the US.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0072

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 08 Aug 2006

Estimated Completion or Expiration Date: 31 Dec 2006

U.S. Government Dollars: $ 249,979

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Video Event Awareness System (VEAS) is a prototype system developed to analyze and understand, in near real-time, events in surveillance video sources; proactively attempt to validate likely scenarios of suspicious activity; and generate alerts when it recognizes a possible security violation. The system makes use of metadata extracted from video sources and initiates the capture of additional video as needed to validate surveillance scenarios. The object of this effort is to develop and add additional technical functionality to the initial VEAS prototype system and to evaluate those capabilities in a formal evaluation process. A key strength of the VEAS system is its modularity and ability to expand its core functionality by incorporating additional video processing tools. While the tracker integrated into VEAS under the previous Advanced Research and Development Activity (ARDA) development effort, it is desirable to demonstrate additional system extensibility by integrating one more video processing tools into VEAS. This project is in the Information Processing Analysis and Management (IPAM) technology area.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, Sarnoff, Telecordia Technologies, and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems that require the capability to monitor people, vehicles, and their activities for extended periods of time in areas where missions can be compromised.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0074

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 11 Sep 2006

Estimated Completion or Expiration Date: 14 Sep 2007

U.S. Government Dollars: $ 195,975

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
NGA maintains a database of place names called the Geographic Names Data Base or the "GNDB," which is recognized by the United States Board on Geographic Names as the premier source for geographic names in the United States. This project addresses two major objectives that concern improving the utility of the Geographic Names Data Base (GNDB): (1) improving the accuracy and utility of the database in general, and (2) providing better support for analysts in the field, who need to rapidly match names mentioned in varying languages and dialects in audio feeds and other reports.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, the University of Maryland Baltimore County - Institute of Language and Information Technologies (UMBC) and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. UMBC specializes in the field and applications of ontological semantics including the theoretical, descriptive, tool development and implementation-oriented areas of natural language processing as needed for expansion of the capabilities of the GNDB. Rosettex has a proven track record of transitioning R&D technology to the commercial market place. This project will broaden the DoD technology and industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies like multilingual capabilities for interpreting geographic names. This capability is important to improve the accuracy intelligence reports and related defense applications. The need for rapid development and deployment of the OCR technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. In this case, UMBC has invested resources to improve the efficiency of GNDB processing.

Other benefits to the DOD through use of this agreement:
US Armed Forces will be able to more accurately and unambiguously identify geographic locations and places to plan deployment and targeting activities for US military weapons systems..

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0075

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 08 Sep 2006

Estimated Completion or Expiration Date: 15 Oct 2007

U.S. Government Dollars: $ 84,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Although a great deal of research has advanced the optical character recognition field, there are still many open problems. University of Maryland (UMD) has a number of enabling technologies for text detection, segmentation, and custom trainable optical character recognition. This effort will determine the extent to which these technologies can be used and will be divided into three complementary tasks over the period of performance: (1) delivery of a Cambodian Gazetteer, (2) installation and training of the basic bridge system for resource acquisition and (3) basic research and implementation of an enhanced semi-automated bridge system for map text detection, segmentation and recognition.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, UMD and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. UMD is a major research institution meeting Government R&D needs across a broad spectrum of technologies and applications. UMD has been instrumental in the research and development of a number of Optical Character Recognition (OCR) algorithms and tools. Rosettex has a proven track record of transitioning R&D technology to the commercial market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model for technology advancement of OCR solutions.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The need for rapid development and deployment of the OCR technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
Will increase the ability of US Armed Forces to analyze and screen individuals, locations, and events to plan deployment and targeting activities for US military weapons systems.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0076

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 30 Jun 2006

Estimated Completion or Expiration Date: 01 Apr 2007

U.S. Government Dollars: $ 300,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The NGA has a need for Automated Target Recognition (ATR) technology to assist analysts in performing more accurately and efficiently target detection, recognition, and identification. Despite years of ATR technology development focused on using 3-D modeling, it has not yet progressed to the point where fully autonomous exploitation is viable throughout both the NGA and the Intelligence Community. The NGA seeks to extend and apply recent Automatic Feature Extraction (AFE) advances and techniques for the problem of ATR using Visual Learning Systems (VLS) Feature Analyst commercially available software product. This project will investigate the Target Detection phase of the ATR process and modify/enhance the current commercial Feature Analyst software for target recognition, identification, and classification.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, VLS, Inc. In 1997 a substantial Small Business Innovative Research grant from NASA helped found the company. Since its inception, VLS has offered software and service solutions for creating and maintaining geospatial image data. Rosettex, a non-traditional defense contractor, will provide program management for this effort. Teamed, VLS and Rosettex will provide research, development, prototyping, and transition of this technology into the world market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations. The need for rapid development and deployment of the OCR technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. In this case, VLS has invested resources to prove the efficacy of its technology relative to the ATR problem. These partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies.

Other benefits to the DOD through use of this agreement:
Accurate identification and classification of targets will increase the ability of US Armed Forces fielded weapons systems to more efficiently and effectively neutralize the targets.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0077

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 29 Aug 2006

Estimated Completion or Expiration Date: 31 Jul 2007

U.S. Government Dollars: $ 540,447

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This project's objective is to research and develop a prototype system that demonstrates the benefits of a new paradigm at the NGA's Office of Basic and Applied Research (NGA/IB). In this paradigm, analysts tag geospatial data with relevant features, events, and conjectures in a form computer can organize and classify. The major project thrust is R&D on the underlying technologies, while ontology development will be focused on a restricted domain and sufficient only to demonstrate the potential of this system. User interface development under this effort will leverage other NGA program efforts and activities (e.g., GKB-p).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, Rosettex, who will provide program management for this effort. Teamed, BNN Technologies and Rosettex will provide research, development, and prototyping of this technology. BNN is a recognized technology leader meeting Government R&D needs across a broad spectrum of technologies and applications. BNN has been instrumental in the research and development of a number of geospatial analysis algorithms and tools. Rosettex has a proven track record of transitioning R&D technology to the commercial market place for Government clients. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative model for technology advancement of geospatial analysis workflow.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The need for rapid development and deployment of next generation imagery intelligence (IMINT) analysis and knowledge management technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. In this case, the NGA will build on the results of a large portfolio of past prototype development work conducted by BBN in this domain under Government Contract and at their own expense. Use of this legacy will dramatically reduce the technology implementation and transition life cycle. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue within the knowledge management commercial market sector beyond the life of the agreement, thereby broadening specific technologies available to meet DoD needs.

Other benefits to the DOD through use of this agreement:
These capabilities are directly related to DoD/IC needs increase the precision of target identification and description and reduce the time from target identification to weapons system engagement. NGA analysts will be able to tag data with relevant features, events, and conjectures in a form computers can organize and classify. Target Intelligence

reports will be generated more rapidly and will be grounded with facts, judgments, and conjectures classified according to a complex web of connected target ontologies and concepts. This actionable intelligence can then be disseminated to DoD/IC users, including those who operate weapons and weapons-related systems, more quickly to support engagement.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0078

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 27 Jul 2006

Estimated Completion or Expiration Date: 30 Aug 2007

U.S. Government Dollars: $ 411,919

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objective of this project is to implement a prototype state-of-the-art capability for rapid data viewing and dissemination that comes closer to satisfying the needs of the emergency response community. The prototype product will include a high-performance, scalable solution for rapidly ingesting and widely disseminating a large volume of high-resolution image products to support hurricane response efforts. To the user, this capability will be transparent for accessing the Hazards Data Distribution System (HDDS) search and discovery website. The Pixia prototype will be directly accessible from that entry point to support rapid response to requests for imagery, and will be evaluated for wider deployment for emergency and military use.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of Rosettex, who will provide program management for this effort, and Pixia, who perform the technical elements of the effort. Pixia has developed a unique technology for rapid storage and retrieval of imagery, and is known as a leader in the industry. Rosettex has a proven track record of managing R&D and transitioning technology to the commercial market place for Government clients. Teamed Rosettex and Pixia will provide a commercial solution, adjustments for critical government needs, and evaluation data and support that will accelerate transition of the technology for homeland security and defense applications, and thus broaden the DoD/IC technology and industrial base. The Department of Defense will benefit from a realistic evaluation of the technology, which would be used for high-performance warfighter access of imagery for military weapons systems targeting applications that use imagery to geolocate specific tactical targets of interest.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development, evaluation, and deployment of new technologies. The OT places industry team members and the Government in a more commercial-like relationship, allowing team members to accelerate the technology for hurricane relief efforts, and providing evaluation information needed for potential deployment to meet military and homeland security imagery analysis requirements .

Other benefits to the DOD through use of this agreement:
The National Technology Alliance (NTA) is supporting this project as an initiative to represent the interest of the NGA which would use this technology for high-performance warfighter access of imagery for military weapons systems targeting applications that use imagery to geolocate specific tactical targets of interest.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0079

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Awardee: Sarnoff Corporation

Effective Date: 25 Aug 2006

Estimated Completion or Expiration Date: 29 Feb 2008

U.S. Government Dollars: $ 448,054

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Foreign terrorists typically use a small group (cell) structure. An attendant vulnerability is their need to plan and prepare within an unfamiliar and semi-isolated environment. Terrorism functioning requires the day-to-day work of recruitment, cell building, moving of people, money, and material, and the mere maintaining of a presence in a targeted country. The more complex the intended terrorist act, the more difficult the planning process, which translates into more people and actions, and longer time periods in some cases, several years. Specialized support may be required, either from knowing accomplices or from unknowing outside sources. Complex planning is therefore a point of weakness for terrorists. The exploitation of this vulnerability through the development of a better understanding of the geospatial and social networks of terrorist cells, their training and planning processes, and the intended targets is the major goal of this effort. Terrorist geography is not random; rather, it is structured with underlying patterns and logic. Locations serve specific functions for offenders in terms of their criminal requirements. A better understanding of the geography, movement, planning processes, and targets of foreign terrorist cells will help in decoding and interpreting the underlying spatial patterns, and in developing a geographic and demographic prediction model. The purpose of the model or template is the description of the geographic patterns and residential areas preferred by terrorist cells.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of two nontraditional defense contractor(s), Rosettex, who will provide program management for this effort, and the Center for Geospatial Intelligence and Investigation, who will perform the technical elements of the effort Department of Criminal Justice, Texas State University, San Marcos. Texas State University and Rosettex will provide research and analysis that will accelerate the prototyping and transition of this technology into the world market place. Texas State University has been instrumental in the research and development of a number of Geographic Profiling related algorithms and tools. Rosettex has a proven track record of managing R&D and transitioning technology to the commercial market place for Government clients. The use of an OT for this project will broaden the DoD/IC technology and industrial base by encouraging the development of a unique and innovative model for technology advancement of Geographic Profiling solutions.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The need for rapid development and deployment of the Geographic Profiling capabilities to be defined under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to

projects in support of this relationship than it would otherwise. In this case, Texas State University and Dr. Rossmo has invested its own resources to address Geographic Profiling in the Law Enforcement domain. Commercial products focused on the Law Enforcement are being offered based on the R&D conducted by Texas State University and Dr. Rossmo. This effort will build on this legacy to address Geographic Profiling in the counterterrorism domain and accelerate its use to support critical analysis support activities. Furthermore, this partnering relationship is anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD/IC needs.

Other benefits to the DOD through use of this agreement:
The National Technology Alliance (NTA) is supporting this project as a Geospatial Intelligence task order initiative to represent the interest of NGA, which would use this technology to accurately and unambiguously identify individuals, places, and understand the geography, movement, planning processes, and targets of foreign terrorist cells.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0080

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 08 Sep 2006

Estimated Completion or Expiration Date: 08 May 2008

U.S. Government Dollars: $ 740,001

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The objectives of the effort are to develop prototype PDF products and standardized exploitation tools to support community efforts to standardized GeoPDF products, to promote exploitation support applications development, and to facilitate the use of GeoPDF products in critical operational systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of a nontraditional defense contractor, TerraGo Technologies, Inc. TerraGo was spun out of Layton Graphics, Inc., in 2004 to further develop and support MAP2PDF, an innovative product that publishes GIS data, engineering maps, drawings, and attribute data to geo-referenced intelligent PDF files for viewing and use by any device that runs Adobe Reader. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of this unique and innovative processing capability in the context of specific defense and intelligence community needs.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies like commercial GeoPDF products and exploitation tools. Results of this effort will accelerate the exploitation of GeoPDF products, based on a ubiquitous Adobe PDF product architecture, for geospatial intelligence purposes by the DoD/IC community and will lead to development of new, low cost commercial (GEOINT) exploitation tools. This capability is important to improve the quality and utility of intelligence reports for defense applications. The need for rapid development and deployment of the GeoPDF technology to be developed under this effort is critical to DoD/IC effort to prosecute the Global War on Terror. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. This relationship will accelerate the development and deployment cycle desired by the Government. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. In this case, TerraGo has invested significant private equity in the research and development in the GeoPDF formats and exploitation tools. The Government will build on this legacy investment.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort will be used to address DoD/IC needs to provide geospatial intelligence and a common relevant operating picture in support of tactical operations. The operational use of softcopy map products will allow tactical armed forces to better perform their missions.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2001

Task Number: 0084

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Rosettex

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: Sarnoff Corporation

Effective Date: 01 Sep 2006

Estimated Completion or Expiration Date: 31 Aug 2007

U.S. Government Dollars: $ 50,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This statement of work will focus on techniques for image processing that enable support of deprived users by separating the most interesting and relevant information in images from background information. Based on the utility functions of mobile users, automated decisions will be made by a network of image processors that support image quality decisions and optimal refresh rates. To support warfighters equipped with minimum technology support capabilities from enterprise systems, two technical problems must be solved: 1) developing technologies to convert user services that require too much processing by the user, to less processing intensive versions, and 2) developing technologies that reduce the communications capabilities required from users. This effort will explore a range of technology options to address these needs.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has resulted in the participation of Rosettex, who will provide program management for this effort, and the University of Virginia (UVa), specifically, the technology group that constitutes the UVa research site for the Wireless Internet Center for Advanced Technology (WICAT). UVa's Systems Technology Integration Laboratory (STIL) will provide the needed infrastructure to carry out the proposed effort, including the optical Cheetah network to emulate image sources, and the Internet and 802.11 networks to represent the support technology available to service providing computers in the SOA and the mobile end user of services. Rosettex has a proven track record of managing R&D and transitioning technology to the commercial market place for Government clients. Teamed, Rosettex and UVa will provide a commercial solution, adjustments for critical government needs, and evaluation data and support that will accelerate transition of the technology for homeland security and defense applications, and thus broaden the DoD/IC technology and industrial base. The Department of Defense will benefit from a realistic evaluation of the technology that efficiently and effectively supports the image processing needs of mobile warfighter user at the tactical level.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development, evaluation, and deployment of new mobile wireless technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract, allowing team members to accelerate and prove adaptation of these technologies to support image processing needs of warfighters who are usually equipped with minimum image data access capabilities from enterprise systems.

Other benefits to the DOD through use of this agreement:
The National Technology Alliance (NTA) is supporting this project to represent the interest of the National Geospatial-Intelligence Agency (NGA), which would use this technology for high-performance warfighter access of imagery for military weapons systems targeting applications that use imagery to geolocate specific tactical targets of

interest. Specifically, UVa's system for reducing the communications capabilities required to support in-theater mobile users is a potential crucial component of weapon targeting systems, locating and deploying weapon system sites, and warfighter situational awareness.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2002

Modification Number: 01

Task Number: 0018

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Chemical, Biological, Radiological Technology Alliance (CBRTA)

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: 3M, on Behalf of CBRTA

Effective Date: 30 Jun 2006

Estimated Completion or Expiration Date: 30 Nov 2006

U.S. Government Dollars: $ 276,250

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This Mod. Add Option 1. Biometrics is emerging as a reliable means of controlling access to both physical and virtual spaces. As the amount of biometric data available to government agencies is growing, there is an increasing need for new techniques to manage, organize and utilize nationwide biometric databases for use in homeland security, border security, law enforcement and intelligence applications. The research community has thus far focused only on accuracy with small databases, while neglecting the scalability and speed issues which are important to large database applications. While the vast majority of the biometric research community is exclusively focusing on modalities such as face and fingerprints, insufficient exploratory research has been done in new modalities that can be captured unobtrusively and covertly, and can augment or replace existing obtrusive modalities. The possibility of using objective measurements of behavioral traits as a biometric is relatively unexplored.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This Mod. Add Option 1. The use of an other transaction agreement has enabled Calspan-U of Buffalo Research Center (CUBRC) to team with a non-traditional defense contractor, the State University of New York at Buffalo, Center for Unified Biometrics in a collaboration that would not have been possible outside of the agreement structure because the University at Buffalo does not accept work that is classified in nature. This strengthened teaming arrangement offers potential for meeting other DoD needs as they arise.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This Mod. Add Option 1. In meeting with the technical personnel within DIA, development of advanced biometric data collection and analysis techniques were identified as a critical need. The Chemical, Biological & Radiological National Technology Alliance (CBRTA) has the necessary skill sets and infrastructure required to perform activities such as those identified in the Statement of Work. This agreement will bring together the planning, experimental design, fabrication, and test execution skill sets from within the CBRTA to tackle the difficult challenge of meeting US biometric requirements.

Other benefits to the DOD through use of this agreement: This Mod. Add Option 1. This agreement has placed trusted and knowledgeable individuals from competing companies into an environment designed for collaboration and cooperation. Access to the technologies, knowledge base, and infrastructure required for this program can best be accomplished through the agreement. The expertise, data, and insights hidden in the work history and relationships of companies that normally do not do business with the government are directly applicable to U.S. national security biometric needs.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2002

Task Number: 0022

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Chemical, Biological, Radiological Technology Alliance (CBRTA)

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: 3M, on Behalf of CBRTA

Effective Date: 26 Oct 2005

Estimated Completion or Expiration Date: 26 Apr 2006

U.S. Government Dollars: $ 820,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The proposed work will develop and demonstrate a network of robust, self-calibrating prototype sensor/transceivers for chlorine dioxide and chlorine concentration monitoring during building decontamination following an asymmetrical biological threat event, filling a technology gap for real-time sensing. Sensor detection limits are very broad in order to determine when sufficient decontamination agent has been introduced to neutralize the threat and when it is safe for individuals to re-occupy the building. Project risk will be reduced through leveraging of Honeywell's high-precision micro-flow sensors. Specific Technical Objectives include sensor shelf life of 510 years, packaging resistant to chlorine, chlorine dioxide, and other corrosives, broad concentration range measurement from 10 % for both chlorine and chlorine dioxide, to sub 5 parts per billion chlorine and 5 parts per million chlorine dioxide by weight, atmospheric concentration, and wireless network compatibility.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has allowed Honeywell and Motorola to provide a rapid response to US government requirements. The collaboration of Honeywell and Motorola (a key OT consideration) will benefit the DoD community by developing capabilities that can be used as the basis for commercial decontamination gas offerings to meet critical government needs. The lack of demonstrated sensor functionality has been stifling requirements development as well as commercial innovation and product development in this domain. This effort will broaden technology by producing a set of validated sensor functionality and demonstration hardware that will obviate this situation, thus accelerating product development. Honeywell & Motorola are part of an alliance of mostly non-traditional defense contractor that collaborate, support, and provide an atmosphere of cooperation between member companies. This collaboration would most likely not happen outside of the CBRTA alliance thereby not allowing DoD access to this particular technology.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an other transaction agreement has fostered a highly productive new relationship between Honeywell and Motorola to develop and prototype a smart network of integrated sensor/transceivers to facilitate decontamination of buildings that have sustained a biological weapons attack. Honeywell and Motorola working together on this project is a new relationship. Honeywell & Motorola are part of an alliance of mostly non-traditional defense contractor that collaborate, support, and provide an atmosphere of cooperation between member companies. This new relationship would most likely not happen outside of the CBRTA alliance. The synergy generated by this new relationship provides DoD access to new technology now and in the future.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems that require decontaminant detection and measurement functionality. They will enable decontamination of a biologically contaminated structure to be executed with significantly improved effectiveness and safety.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2002

Task Number: 0023

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, Chemical Biological, Radiological Technology Alliance (CBRTA)

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: 3M, on Behalf of CBRTA

Effective Date: 27 Mar 2006

Estimated Completion or Expiration Date: 17 Jun 2006

U.S. Government Dollars: $ 199,685

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are to develop and test a Physical Geolocation System (PGS) sampler prototype. Tests will include initial laboratory testing on the component parts, followed by field test studies. Specifically, the operational capabilities of the PGS sampler will be analyzed for their strengths and reproducibility, which will provide an indication of its ability to collect accurate samples that reflect the pollen burden in the ambient atmosphere and of forensic materials.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction agreement has enabled SRC to develop PGS for not only DoD applications, but also for health care applications (e.g., by providing an early warning of high airborne allergen loads) and for agriculture (e.g., by providing early warning of invasive plant spread into an area, or of plant pathogen spread into an area). All of these applications build on the core capabilities being developed for the PGS device to be used for intelligence gathering and counter-terrorism activities. Participants include SRC, a non-traditional defense contractor. Orders such as this that are placed under this other transaction agreement will prototype and evaluate candidate commercial solutions for meeting the national security needs of the United States. The other transaction agreement will attract commercial business units and other niche companies that do not normally do business with the Government. This has been possible because use of an other transaction permits the Government to relax the patent requirements and cost accounting standards (CAS) typically imposed on standard Federal Acquisition Regulation (FAR) contracts. As a result, DoD is able to access researchers in the commercial R&D business units that have been unavailable to DoD and, with a small DoD investment, influence commercial solutions and product upgrades that meet Agency mission requirements.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an other transaction (OT) agreement has allowed SRC to partner with Cargill and 3M, and with service providers Innovative BioSystems and Lark Technologies, all of whom are non-traditional defense contractors. All of the activities and partnerships to date have contributed to a more rapid and deeper development of the PGS sampler prototype, and without these partnerships, PGS sampler development would have been fatally hindered. The current effort likewise will benefit from the same features of the other transaction agreement: it will streamline the ability to work with our non-traditional defense contractors, Innovative BioSystems and Lark Technologies, and by allowing more rapid development of the PGS sampler prototype, it will support the national security of the USA. CBRTA is an alliance of mostly non-traditional defense contractor that collaborate, support, and provide an atmosphere of cooperation between member companies.

Other benefits to the DOD through use of this agreement:
The capabilities developed in this effort are directly related to DoD/IC needs to support fielded weapons systems that require geospatial intelligence functionality. That is, the prototype PGS sampler will assist in targeting activities

directed at the neutralization of terrorist or other facilities where contraband is stored or processed, or where explosive devices are being constructed.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2002

Task Number: 0024

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, CBRTA

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: 3M, on Behalf of CBRTA

Effective Date: 02 Jun 2006

Estimated Completion or Expiration Date: 30 May 2008

U.S. Government Dollars: $ 199,617

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The purpose of this project is to evaluate commercially available materials from various vendors to include but not limited to the 3M Company to develop a prototype tent closure system that will overcome the deficiencies of the current tent closure system. Calspan University of Buffalo Research Center (CUBRC) will use the technical experience, test equipment, and test data generated as part of the Phase I program to design prototype closure systems that can meet the key performance parameters required by the customer. Material selection and design criteria will be established and prototype closures will be fabricated for physical, mechanical and potentially chemical testing.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
In discussions with technical personnel, new tent closure systems were identified as a critical need. The CBRTA has the necessary skill sets and infrastructure required to perform activities such as those identified in the Statement of Work. The use of an other transaction agreement will bring together the planning, experimental design, fabrication, and test execution skill sets with from within the CBRTA to tackle the hard challenge of generating demonstrating the feasibility of a new concept design. Participants include CUBRC, a non-traditional defense contractor and subcontractor University of New York at Buffalo. Orders such as this that are placed under this other transaction agreement will prototype and evaluate candidate commercial solutions for meeting the national security needs of the United States. The other transaction agreement will attract commercial business units and other niche companies that do not normally do business with the Government. This has been possible because use of an other transaction permits the Government to relax the patent requirements and cost accounting standards (CAS) typically imposed on standard FAR contracts. As a result, DoD is able to access researchers in the commercial R&D business units that have been unavailable to DoD and, with a small DoD investment, influence commercial solutions and product upgrades that meet Agency mission requirements.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of the other transaction (OT) agreement has placed trusted and knowledgeable individuals from divergent as well as competing companies into an environment designed for collaboration and cooperation. Access to the technologies, knowledge base, and unique infrastructure required for this program can best be accomplished through the OT. The expertise, data, and insights hidden in the work history and relationships of companies that normally do not do business with the government are extensive and directly applicable to defense against weapons of mass destruction.

Other benefits to the DOD through use of this agreement:
Other benefits are that this is a defense related system per U.S. Munitions List Part 121, Category XIV.f.4&5 (Toxicological Agents, Including Chemical Agents, Biological Agents and Associated Equipment): (4) Individual

protection against the chemical agents and biological agents listed in paragraph (a) and (b) of this category. This includes military protective clothing and masks, but not those items designed for domestic preparedness (*e.g.*, civil defense); (5) Collective protection against the chemical agents and biological agents listed in paragraph (a) and (b) of this category.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2002

Task Number: 0025

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Prototype Project for the National Technology Alliance, CBRTA

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: 3M, on Behalf of CBRTA

Effective Date: 27 Jun 2006

Estimated Completion or Expiration Date: 26 Jun 2009

U.S. Government Dollars: $ 1,979,988

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are to (1) develop microbial forensic capacity and infrastructure, (2) develop a prototype assay, TOTO-PATH, that enables highly specific identification and geospatial attribution of pathogens of concern, and (3) to develop prototype forensic assays. The capacity and infrastructure will be accomplished by designing an appropriate laboratory that will then be equipped and staffed. The TOTO-PATH assay will be developed by examining genetic sequences of pathogens to identify single nucleotide polymorphism signatures (highly specific genetic markers) that will be converted into molecular inversion probes (MIPs). These in turn will be tested against hundreds of different strains of the pathogens of concern. The most powerful MIPs will be consolidated into a microarray format for subsequent use in rapid assessment of unknown pathogens. The prototype forensic assays will be developed through the acquisition, development, and implementation of current assays used for the forensic investigation of biothreat agents. This will include adapting validated signatures to detection platforms that are currently the mainstay of the biodefense and bioforensic community.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction agreement has enabled the Translational Genomics Research Institute (TGen) and SRC to develop these forensic analyses for not only DoD applications, but also for general human health care applications (e.g., by providing the capability to identify common pathogens) in clinical, hospital, or other health-care settings, and could even be applied to other domains such as agriculture and silviculture by providing the ability to identify at a highly specific level, livestock, poultry, crop, and forestry pathogens. The development of these civilian applications is possible because of the patent right provisions of the other transactions (OT) agreement, which allows the retention of title to all inventions. All of these applications build on the core capabilities being developed for the forensic analyses of dangerous pathogens assays to be used for protecting US citizens and our troops both CONUS and OCONUS.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an OT has allowed TGen and SRC to partner on this effort, with TGen being a new and non-traditional defense contractor. It additionally permitted the sponsoring agency to interact with both companies in a contractual relationship that fostered the rapid development of the proposal as well as the environment that allows rapid prototyping after contract execution. In addition and as noted above, the partnership, because of the patent rights provisions of the other transactions will contribute to a more extensive development of TOTO-PATH and forensic assay prototypes; without this partnership, these prototype developments likely would not have been initiated. The current effort likewise will benefit from the same features of the other transaction agreement; it will streamline the ability to work with this non-traditional defense contractor and by allowing more rapid development of the two prototypes, it will support the national security of the USA.

Other benefits to the DOD through use of this agreement:

The prototype TOTO-PATH assay will allow the US Government to identify biological agents that deployed operational forces may contact, may have contacted, or that may be used by a terrorist in an asymmetric attack on the US homeland. Because it allows a much higher specificity than currently available, the prototype assay will also allow the Government to attribute the attack to a specific source or geographical region. The information that the TOTO-PATH assay provides can be used to provide better medical interventions to exposed forces in the event of an attack. The prototype TOTO-PATH assay can also be used to assess natural disease outbreaks and allow better preparation of US forces before deployment to outbreak areas. The prototype TOTO-PATH assay will therefore help protect deployed forces and attribute biological attacks to a source, both of which represent weapons systems.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: NMA401-02-9-2002

Task Number: 0026

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: National Technology Alliance, CBRTA

Awarding Office: NATL GEOSPATIAL-INTELLIGENCE AGENCY

Awardee: 3M, On Behalf of CBRTA

Effective Date: 07 Sep 2006

Estimated Completion or Expiration Date: 08 Sep 2007

U.S. Government Dollars: $ 629,911

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
In this proposed effort, Honeywell and Johns Hopkins University Applied Physics Laboratory (JHU-APL) will develop the technology to integrate three new components into a prototype instrument to acquire spectra of explosive-related compounds (ERCs), and then demonstrate a path to a significantly smaller, portable, faster and longer-ranged THz imaging spectrometer for standoff detection of concealed explosives. These key enabling technologies are:

- Honeywell's Micro-Electro-Mechanical Systems (MEMS)-based uncooled thermoelectric (TE) microbridge detectors coupled to impedance-matched broadband micro-antennas;
- Honeywell's high throughput, compact lamellar grating interferometer; and
- JHU-APLs active THz illumination source with > 100mW power required for standoff chemical identification.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction (OT) agreement has enabled a joint technology development between Honeywell and JHU-APL. JHU-APL has developed an expertise in THz technologies from multiple projects, whereas, Honeywell has developed state of the art uncooled bolometer detection technologies. The ability to link Honeywell's detector expertise with JHU-APL's knowledge of THz science contributes to the broadening of this technology and industrial base for DoD.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an OT has enabled the partnership between Honeywell and Johns Hopkins University Applied Physics Laboratory. JHU-APL is a non-traditional DoD contractor that often functions in an evaluation role for the DoD. As such, they cannot typically function as a traditional subcontractor. In that sense, the availability of the OT vehicle enables Honeywell and JHU-APL to collaborate in a manner that would otherwise be prohibited. This directly broadens the base of technology and industry to meet DoD needs in the area of detecting concealed explosives.

Other benefits to the DOD through use of this agreement:
The development of this THz-based detection system is intended to be applied to the problem of detecting concealed explosives. As such, this is not a weapons program, but is a 'weapons-related system' by virtue of it’s relevance to the detection of Improvised Explosive Devices (IEDs), an ongoing concern in both the defense and civilian sectors.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15P7T-06-9-L613

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Concealed Explosive Detection

Awarding Office: XR W4GV USA HQ COMM ELECT CMD

Awardee: Thermal Matrix, Inc

Effective Date: 01 Feb 2006

Estimated Completion or Expiration Date: 15 Jun 2006

U.S. Government Dollars: $ 3,016,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The goal of this effort is to identify, quantify, integrate, and demonstrate a family of sensors and to develop a system-of-systems for suicide bomb detection and deterrence. The approach is to leverage previous development efforts by the government, academia and industry to rapidly prototype a system-of-systems comprised of visible, IR, acoustic, millimeter wave and chemical sensors combined with intelligent behavior algorithms. The Recipient's approach of taking the best of available technology, working in true partnership with the Government and conducting field demonstrations of an open architecture sensor suite with live targets will result in the rapid development of prototype systems and an aggressive push to an initial operational capability.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Thermal Matrix, which is a not for profit corporation, will be utilized. They are a non-traditional defense contractor that will identify, quantify, integrate, and demonstrate a family of sensors and develop a system-of-systems for suicide bomb detection and deterrence.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an other transaction (OT) agreement has resulted in the establishment of a new relationship with a not-for-profit organization which will help us get better technology in the future. As prototypes are developed and demonstrated, the system-of-systems approach will allow for near seamless integration of advanced (next generation) sensors. This approach also allows for the sensor suite to be customized for urban versus desert environment and Homeland Defense and Homeland Security applications. Daily casualties are being incurred as a result of Improvised Explosive Devices (IED's) that are, in many instances, transported and detonated by a human being. The ability to detect and deter the use of these fatal devices is of utmost importance to the life, safety and welfare of military personnel and civilians in the combat theater. There is an urgent need to provide the war fighter with an increased capability to detect packaged IED's, and IED's carried by suicide bombers.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15P7T-06-9-P011

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Applied Communications and Information Networking (ACIN)

Awarding Office: XR W4GV USA HQ COMM ELECT CMD

Awardee: Drexel University

Effective Date: 10 May 2006

Estimated Completion or Expiration Date: 11 May 2009

U.S. Government Dollars: $ 20,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The work to be performed under this other transaction (OT) agreement will be under the auspices of Drexel's Advanced Communications and Information Networking (ACIN) Center located in Camden, NJ. The Army has contracted with Drexel University under separate contract to operate and manage the ACIN Center. The ACIN Center consists of two programs: the ACIN Program for Warfighter Support and the ACIN Camden Center for Entrepreneurship in Technology. The ACIN Program for Warfighter Support funds/manages technology development projects within a strategic partnership between Drexel and the Sarnoff Corporation so as to enable rapid deployment of technologies developed with partnership for the benefit of Warfighters and First Responders. The ACIN Technology Center is tasked with fostering growth in private-sector companies that are developing technologies and products for use in military and commercial applications.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The purpose of this other transaction (OT) agreement is to establish a management vehicle whereby the ACIN Technology Center companies can combine Drexel's existing contracting infrastructure and the Center's existing technology capabilities to address DoD/Government information technology needs and requirements. In particular, this OT establishes a mechanism whereby Communications-Electronics Research Development and Engineering Center (CERDEC) will authorize Drexel University to enter into subcontractor agreements with the ACIN Technology Center's emerging technology companies in support of DoD technology goals by use of the Center's rapid delivery/production model.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This OT between the Government and Drexel University is to perform acquisition, management, and oversight of contract partnerships with emerging technology companies that have been brought into the ACIN Technology Center. The purpose of this OT is to create a vehicle whereby the ACIN Technology Center can leverage/combine Drexel's existing contracting and management infrastructure/capabilities and the Center's existing technology capabilities and relationships to create a vehicle for rapid contracting with these companies.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15P7T-06-9-P012

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Distributed Aperture System (DAS)

Awarding Office: XR W4GV USA HQ COMM ELECT CMD

Awardee: Bae Systems, Inc

Effective Date: 08 May 2006

Estimated Completion or Expiration Date: 31 Mar 2008

U.S. Government Dollars: $ 3,600,000

Non-Government Dollars: $ 2,510,483

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The over arching technical goal of this effort is the development of a Distributed Aperture System (DAS). Closed hatch operations in current combat vehicles allow limited situational understanding of the battle space environment to the driver, commander, and crew. This is a significant problem in complex and urban environments, since it is difficult to maneuver the vehicle at night or during obscured battlefield conditions, and dismounting troops are not able to determine the threat and plan their exit. In support of this mission, the Army's Night Vision & Electronic Sensor Directorate is developing a Distributed Aperture System (DAS) that will stitch and fuse scenery from multiple sensors displaced around the vehicle and make it available for vehicle driver, passengers and crew, enabling closed hatch simultaneous 360 x 90 degree view of battle space, stationary, or moving, day or night under obscured battlefield conditions and complex/urban environments. The focus of this agreement is to develop and demonstrate DAS software and hardware maturity equivalent to Transition Readiness Level (TRL) 06 in an operational environment mounted on a combat vehicle, to allow technical and user testing to provide early insights in how best to achieve all around situational awareness while under armor. These user experiments will support requirements, provide information to mature existing virtual simulations of DAS capability and address display and controls issues.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This is a first time technological advance which will allow for future add on situational awareness upgrades and increase the visual capability under harsh field conditions. BAE's approach will focus on demonstrating Distributed Aperture System (DAS) maturity equivalent to Transition Readiness Level (TRL) 06 in an operational environment mounted in a Bradley M2 modified for sensor evaluation. Achievement of TRL by the end of this agreement is essential to allow DAS to participate in technical and user testing and provide early feedback in support of Future Combat Systems (FCS). BAE will develop and fabricate a DAS that will be integrated into/onto a specially modified Bradley M2 evaluation vehicle which Night Vision and Electronic Sensors Directorate uses for sensor evaluation.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The Distributed Aperture System program represents an agreement between the U.S. Army and BAE Systems. The agreement is for BAE to work in coordination with the U.S. Army to design, develop, fabricate, and integrate (specially modified Bradley M2 evaluation vehicle) one (1) Distributed Aperture System (DAS) that will provide combat vehicle crewman with significantly increase close-in situation awareness while under armor. The approach is to leverage previous development, commercially available technologies and integrates them into one system in response to a need identified by the user community. These technologies include uncooled microbolometer infrared imaging devices (currently fielding with the Thermal Weapons Sight and Driver's Vision Enhancement), image intensified cameras, high resolution

color day cameras, an image processing system, and flat panel displays that can display other information generated by on board sensors. DAS uses a multiple aperture sensing system that processes the imagery from the infrared, intensified, and color day cameras to perform close in situational awareness and target detection. DAS will have the ability to overlay icons to provide the user orientation information and alerts from the aided target cuing. The understanding between the Government and BAE is that the Government's principal purpose is to support and stimulate BAE to provide their best efforts in the design and development of a DAS.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15P7T-06-9-P234

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: HC3 Defined Radio

Awarding Office: XR W4GV USA HQ COMM ELECT CMD

Awardee: Northrop Grumman Space & Mission Systems Corp

Effective Date: 19 Jul 2006

Estimated Completion or Expiration Date: 19 Jan 2007

U.S. Government Dollars: $ 250,000

Non-Government Dollars: $ 250,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The use of an other transaction (OT) agreement in the case of the High Capacity Communications Capability (HC3) was critical in that it allowed the Government to broaden its search area of technically capable contractors who were not only willing to tackle the technical problem, but who were also confident enough in their ability to be successful that they were willing to offer to cost share the initial development effort. The OT allowed the Government to allow companies with good ideas and approaches who may not have been setup to execute a FAR based contract to participate to both their and the Government's benefit. Northrop Grumman proposed the OT as a contract vehicle and would not cost share under any other type contract in the development. The OT and the additional latitude that it allows the developer contractor should increase the technical range and experimentation of the developer contractors under the HC3 program and should increase the technical range and experimentation of the development without necessarily increasing the risk of the overall success of the program.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of the OT in the HC3 program has allowed Northrup Grumman and the Government to foster a mutually beneficial relationship where technical success and cost management is the reciprocal concern of both parties. Both the contractor developer and the Government will benefit from technical success and cost containment. Ultimate success will benefit both national security and troop safety by savings costs through hardware and software reuse. HC3 is addressing module obsolescence as well as technology insertions and upgrades as future enhancements to the system are made, without re-competing or mandating major upgrades to the entire terminal suite. Under this concept, Waveform Modules may be combinations of proprietary hardware and/or software, which reside on platforms which conform to Government owned and managed Open Systems Standards. This will have substantial benefit in terms of cost savings to the Government.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The OT benefits the Government in this case in that it allowed the Government to go with the contractor that put forth the best proposal and limits the Government's initial investment while simultaneously providing an up front incentive to the developer contractor that is not solely based on funding. There is a real mutual desire to succeed as all have a real capital investment.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15P7T-06-9-P252

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Secure Communication Interoperable Program (SCIP)

Awarding Office: XR W4GV USA HQ COMM ELECT CMD

Awardee: Secureant

Effective Date: 28 Sep 2006

Estimated Completion or Expiration Date: 28 Sep 2007

U.S. Government Dollars: $ 700,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The use of the other transaction (OT) agreement for the Secure Communication Interoperable Program (SCIP) was critical element that allowed the Government to broaden its search area of technically capable contractors who were willing to determine a solution to the vulnerability, threat and security issues of commercial Voice over IP phones. The OT allowed these companies to foster with good innovative ideas and approaches who may not be setup to execute a Federal Acquisition Regulation (FAR) based contract to participate to both theirs and the Government benefit. The contractor Secureant proposed the Firm Fixed Price OTA as the agreement type and the Government found it acceptable.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of the OT for the SCIP has identified that both the contractor developer Secureant and the Government have a mutually beneficial relationship where technical success and cost management is the reciprocal concern of both parties. Ultimate goal is to develop an enhanced interoperable VOIP cell phone security system using header encryption technology benefit both United States homeland security and security of our soldiers in the battlefield. Cost effective substantial savings for an enhanced secure wireless voice communication is utmost critical requirement in today's society as well as future potential applications in order to protect valuable information within the United States Government.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The OT benefits the Government in this case as to allow the Government to go forward with the contractor that put forth his best proposal and limits the Government's initial investment while simultaneously providing an up front incentive to the developer contractor. There is a real mutual desire to succeed as all have a real capital investment.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0700

Task Number: 0006

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Neuroscientific Demonstrations

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: University Of Medicine And Dentistry Of New Jersey

Effective Date: 03 May 2006

Estimated Completion or Expiration Date: 03 Nov 2006

U.S. Government Dollars: $ 4,173,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
For this task, the contractor will conduct research for a non-invasive breath test to indicate whether or not a suspect has recently handled explosives. The basis for the research is that the most explosives contain volatile organic compounds that are absorbed into the body via the lungs by inhalation or by diffusion through the skin. A breathalyzer that indicates whether or not a suspect has recently handled explosives could provide a powerful new tool to rapidly screen suspects and assist in counter-terrorism operations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
New Jersey Medical School (NJMS) will provide Intellectual and academic support toward conducting neuroscientific research, training and demonstrations at Picatinny Arsenal. Armament Research Development and Engineering Center (ARDEC) has an established capability to develop engineering solutions to problems in both military and homeland defense applications directly relevant to several weapons and weapon systems, both lethal and non-lethal, presently under development at Picatinny for the DoD. For example, scaleable target effects systems, made possible by emerging advanced energy technologies, represent an appealing new category of weapons for a variety of military and homeland defense situations. ARDEC is in the process of constructing state-of-the-art laboratory facilities to validate human responses to advance technology solutions. ARDEC has recognized the need for a capability to generate such data and created the Target Behavioral Response Laboratory (TBRL) to evaluate human behavioral responses to aversive stimuli primarily created by advanced energy systems. Also, an Emergency Operations Center (EOC) is under construction. In this EOC, technologies and systems may be integrated to improve management in times of crisis such as terrorist acts. ARDEC needs to evaluate these systems and human performance in as realistic a manner as possible. The overall goals are to create a large indoor facility at the TBRL to evaluate effects with individuals and groups simulating crowds under a wide range of motivational situations and with extensive data collection capabilities and the building of a facility for training and research toward emergency responses to terrorism.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the OT establishes a business relationship with a unique and diverse non-traditional collaboration of institutes that would be difficult or impossible to attain under a standard contract, grants, or cooperative agreement. Under a previous Grant with ARDEC, collaboration was formed with the Department of Neuroscience, (NJMS) in conjunction with Neurology Service, Department of Veterans Affairs New Jersey Health Care System (NJHCS), and East Orange (EO), New Jersey. This resulted in the creation within the NJMS of the Stress and Motivated Behavior Institute (SMBI). The SMBI joins core faculty from the New

Jersey Medical School, as well as faculty whose appointments are primarily at other institutions (e.g., New Jersey Institute of Technology, University of California at Los Angeles, University of Arizona). The Grant was limited to archival research and limited laboratory experimentation. A basic requirement for experimentation with human subjects is the need for Institutional Review Board approval of Human Use Protocols. It is not possible for ARDEC to employ scientists with appropriate credentials and appointments to prepare such documents and conduct such experiments. The SMBI is staffed for just an effort but it is necessary to establish this OT for their efforts to be applied to these experiments, which lie outside the scope of the previously mentioned grant. The intent is to prepare separate tasks to NJMS/SMBI for each of the experiments to be conducted to provide the appropriate researchers and biomedical staff as needed.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0700

Task Number: 0007

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Neuroscientific Demonstrations

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: University of Medicine and Dentistry of New Jersey

Effective Date: 03 May 2006

Estimated Completion or Expiration Date: 03 Feb 2007

U.S. Government Dollars: $ 4,173,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
For this task, the contractor will conduct research and develop a strategy to incorporate realistic stress and stress management into the training of emergency operation personnel. This training will lead to better performance and improved health in Emergency Operations Center (EOC) personnel in the event of actual terrorist actions**.**

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
New Jersey Medical School (NJMS) to provide Intellectual and academic support toward conducting neuroscientific research, training and demonstrations at Picatinny Arsenal. Armament Research Development and Engineering Center (ARDEC) has an established capability to develop engineering solutions to problems in both military and homeland defense applications directly relevant to several weapons and weapon systems, both lethal and non-lethal, presently under development at Picatinny for the DoD. For example, scaleable target effects systems, made possible by emerging advanced energy technologies, represent an appealing new category of weapons for a variety of military and homeland defense situations. ARDEC is in the process of constructing state-of-the-art laboratory facilities to validate human responses to advance technology solutions. ARDEC has recognized the need for a capability to generate such data and created the Target Behavioral Response Laboratory (TBRL) to evaluate human behavioral responses to aversive stimuli primarily created by advanced energy systems. Also, an EOC is under construction. In this EOC, technologies and systems may be integrated to improve management in times of crisis such as terrorist acts. ARDEC needs to evaluate these systems and human performance in as realistic a manner as possible. The overall goals are to create a large indoor facility at the TBRL to evaluate effects with individuals and groups simulating crowds under a wide range of motivational situations and with extensive data collection capabilities and the building of a facility for training and research toward emergency responses to terrorism.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the other transaction (OT) agreement establishes a business relationship with a unique and diverse non-traditional collaboration of institutes that would be difficult or impossible to attain under a standard contract, grants, or cooperative agreement. Under a previous Grant with ARDEC, collaboration was formed with the Department of Neuroscience, New Jersey Medical School (NJMS) in conjunction with Neurology Service, Department of Veterans Affairs New Jersey Health Care System (NJHCS), and East Orange (EO), New Jersey. This resulted in the creation within the NJMS of the Stress and Motivated Behavior Institute (SMBI). The SMBI joins core faculty from the New Jersey Medical School, as well as faculty whose appointments are primarily at other institutions (e.g., New Jersey Institute of Technology, University of

California at Los Angeles, University of Arizona). The Grant was limited to archival research and limited laboratory experimentation. A basic requirement for experimentation with human subjects is the need for Institutional Review Board approval of Human Use Protocols. It is not possible for ARDEC to employ scientists with appropriate credentials and appointments to prepare such documents and conduct such experiments. The SMBI is staffed for just an effort but it is necessary to establish this Other Transaction for their efforts to be applied to these experiments, which lie outside the scope of the previously mentioned grant. The intent is to prepare separate tasks to NJMS/SMBI for each of the experiments to be conducted to provide the appropriate researchers and biomedical staff as needed.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0700

Task Number: 0008

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Neuroscientific Demonstrations

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: University of Medicine and Dentistry of New Jersey

Effective Date: 04 May 2006

Estimated Completion or Expiration Date: 04 May 2007

U.S. Government Dollars: $ 4,173,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
For this task, the contractor to conduct research to reduce the danger to friendly forces, and minimize injury to non-combatant civilian populations in the areas of tactical vehicle checkpoints and for convoy protection for scaleable effects/non-lethal technologies. The contractor will look at optical dazzlers, acoustics systems and other devices to improve effectiveness.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
New Jersey Medical School (NJMS) to provide Intellectual and academic support toward conducting neuroscientific research, training and demonstrations at Picatinny Arsenal. Armament Research Development and Engineering Center (ARDEC) has an established capability to develop engineering solutions to problems in both military and homeland defense applications directly relevant to several weapons and weapon systems, both lethal and non-lethal, presently under development at Picatinny for the DoD. For example, scaleable target effects systems, made possible by emerging advanced energy technologies, represent an appealing new category of weapons for a variety of military and homeland defense situations. ARDEC is in the process of constructing state-of-the-art laboratory facilities to validate human responses to advance technology solutions. ARDEC has recognized the need for a capability to generate such data and created the Target Behavioral Response Laboratory (TBRL) to evaluate human behavioral responses to aversive stimuli primarily created by advanced energy systems. Also, an Emergency Operations Center (EOC) is under construction. In this EOC, technologies and systems may be integrated to improve management in times of crisis such as terrorist acts. ARDEC needs to evaluate these systems and human performance in as realistic a manner as possible. The overall goals are to create a large indoor facility at the TBRL to evaluate effects with individuals and groups simulating crowds under a wide range of motivational situations and with extensive data collection capabilities and the building of a facility for training and research toward emergency responses to terrorism.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the other transaction (OT) agreement establishes a business relationship with a unique and diverse non-traditional collaboration of institutes that would be difficult or impossible to attain under a standard contract, grants, or cooperative agreement. Under a previous Grant with ARDEC, collaboration was formed with the Department of Neuroscience, NJMS in conjunction with Neurology Service, Department of Veterans Affairs New Jersey Health Care System (NJHCS), and East Orange (EO), New Jersey. This resulted in the creation within the NJMS of the Stress and Motivated Behavior Institute (SMBI). The SMBI joins core faculty from the New Jersey Medical School, as well as faculty whose appointments are

primarily at other institutions (e.g., New Jersey Institute of Technology, University of California at Los Angeles, University of Arizona). The Grant was limited to archival research and limited laboratory experimentation. A basic requirement for experimentation with human subjects is the need for Institutional Review Board approval of Human Use Protocols. It is not possible for ARDEC to employ scientists with appropriate credentials and appointments to prepare such documents and conduct such experiments. The SMBI is staffed for just an effort but it is necessary to establish this Other Transaction for their efforts to be applied to these experiments, which lie outside the scope of the previously mentioned grant. The intent is to prepare separate tasks to NJMS/SMBI for each of the experiments to be conducted to provide the appropriate researchers and biomedical staff as needed.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0700

Task Number: 0009

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Neuroscientific Demonstrations

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: University of Medicine and Dentistry of New Jersey

Effective Date: 09 May 2006

Estimated Completion or Expiration Date: 09 May 2007

U.S. Government Dollars: $ 4,173,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
For this task, the contractor will evaluate established training regimens for the degree of stressfulness instilled in trainees from physiological and psychological perspectives. The goal is to develop a noninvasive objective profile to assess the degree of the stress response focused on the individual's response to the stress and not just physical exertion.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
New Jersey Medical School (NJMS) to provide Intellectual and academic support toward conducting neuroscientific research, training and demonstrations at Picatinny Arsenal. Armament Research Development and Engineering Center (ARDEC) has an established capability to develop engineering solutions to problems in both military and homeland defense applications directly relevant to several weapons and weapon systems, both lethal and non-lethal, presently under development at Picatinny for the DoD. For example, scaleable target effects systems, made possible by emerging advanced energy technologies, represent an appealing new category of weapons for a variety of military and homeland defense situations. ARDEC is in the process of constructing state-of-the-art laboratory facilities to validate human responses to advance technology solutions. ARDEC has recognized the need for a capability to generate such data and created the Target Behavioral Response Laboratory (TBRL) to evaluate human behavioral responses to aversive stimuli primarily created by advanced energy systems. Also, an Emergency Operations Center (EOC) is under construction. In this EOC, technologies and systems may be integrated to improve management in times of crisis such as terrorist acts. ARDEC needs to evaluate these systems and human performance in as realistic a manner as possible. The overall goals are to create a large indoor facility at the TBRL to evaluate effects with individuals and groups simulating crowds under a wide range of motivational situations and with extensive data collection capabilities and the building of a facility for training and research toward emergency responses.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the Prototype Other Transaction establishes a business relationship with a unique and diverse non-traditional collaboration of institutes that would be difficult or impossible to attain under a standard contract, grants, or cooperative agreement. Under a previous Grant with ARDEC, collaboration was formed with the Department of Neuroscience, NJMS in conjunction with Neurology Service, Department of Veterans Affairs New Jersey Health Care System (NJHCS), and East Orange (EO), New Jersey. This resulted in the creation within the NJMS of the Stress and Motivated Behavior Institute (SMBI). The SMBI joins core faculty from the New Jersey Medical School, as well as faculty whose appointments are primarily at other institutions (e.g., New Jersey Institute of Technology, University of California at Los

Angeles, University of Arizona). The Grant was limited to archival research and limited laboratory experimentation. A basic requirement for experimentation with human subjects is the need for Institutional Review Board approval of Human Use Protocols. It is not possible for ARDEC to employ scientists with appropriate credentials and appointments to prepare such documents and conduct such experiments. The SMBI is staffed for just an effort but it is necessary to establish this Other Transaction for their efforts to be applied to these experiments, which lie outside the scope of the previously mentioned grant. The intent is to prepare separate tasks to NJMS/SMBI for each of the experiments to be conducted to provide the appropriate researchers and biomedical staff as needed.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0701

Modification Number: 0

Task Number: 0001

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Acceleration of Dual Use Technologies

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Insitech Inc

Effective Date: 20 Sep 2004

Estimated Completion or Expiration Date: 30 Sep 2008

U.S. Government Dollars: $ 11,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
To assist Armament Research Development and Engineering Center (ARDEC) in accelerating dual use technology development in core mission areas to include homeland defense/homeland security technology, environmental technology and manufacturing prototyping. The overall goal is to significantly enhance the rapid transition of new technologies to the war fighter through the identification and development of innovative technologies for prototyping. Mission areas directly related include Nano-technologies, Manufacturing process/Rapid prototyping, Environmental technologies, Biomedical technologies, and Homeland Defense/Security technologies. InSitech will perform a market assessment of various technologies to gage marketability and value from a military, public sector and commercial standpoint and present findings and recommendations. Upon approval, InSitech will establish business and overall leverage investment strategy for the potential development and commercialization of each technology project. The Miniature Integrated Nuclear Detection System (MINDS) will be the first prototype project. MINDS is a cost effective, high-tech security system that continually monitors the environment for the presence of nuclear spectra. MINDS applications will include securing all military bases and immediately fills a gap in national security. The second prototype project will be the Multi-Network Communicator (MNC).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Use of the other transaction (OT) agreement establishes a business relationship with a unique and diverse non-traditional, non-profit corporation that would be difficult or impossible to attain under a standard contract, grant or cooperative agreement and the flexibility inherent in the OT will encourage InSitech to utilize commercial practices. Also, using an OT creates an opportunity for ARDEC to leverage its resources to influence the design and development of dual use technologies to satisfy the Army's mission needs. InSitech is a non-traditional contractor that has never entered into or performed on (1) any procurement contract that is subject to full coverage under the cost accounting standard prescribed pursuant to Section 26 of the Office of Federal Procurement Policy Act (41 U.S.C. 422) and the regulations implementing such section; or (2) any other procurement contract in excess of $500,000 to carry out prototype projects or to perform basic, applied or advanced research projects for a federal agency. InSitech, as a non-traditional contractor, coordinates the interests of state economic development authorities, local municipalities, small businesses, institutions of higher education, and the private sector.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the OT establishes a business relationship with a unique and diverse non-traditional, non-profit corporation that would be difficult or impossible to attain under a standard contract, grant or cooperative agreement and the flexibility inherent in the OT will encourage InSitech to utilize commercial practices.

Other benefits to the DOD through use of this agreement:
Over the years, the Army has made substantial investments in military technology, as well as university-led and private sector research and development activities. Recent events, however, have made it imperative that the Army creates new mechanisms to promote the accelerated deployment of critical technologies being developed at government, university and commercial laboratories. It is now essential that critical technologies be rapidly tested, evaluated and fielded in order to meet the Army's evolving roles and mission requirements. Also, the continued reduction of base operation funding over the past decade, has made it essential that the Army explore novel approaches to reduce base operation costs. Recent changes to 10 USC 2667 have now allowed the Army to pursue installation-reshaping strategies through innovative leasing arrangements with the private sector. In light of the above, Picatinny has developed a unique approach to accelerate dual use technology development, enhance its mission objectives and reduce base operation costs through the more efficient and effective utilization of its real property assets. As part of this strategy Picatinny proposes to enter into an OT with InSitech, a non-profit, non traditional, NJ based corporation, for dual use technology development and commercialization of select Picatinny Intellectual Property. The planned cost is $11M over a three-year period.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0701

Task Number: 0005

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Acceleration of Dual Use Technologies

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Insitech Inc

Effective Date: 07 Jun 2006

Estimated Completion or Expiration Date: 07 Jun 2007

U.S. Government Dollars: $ 11,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This task will continue InSitech's efforts to assist Armament Research Development and Engineering Center (ARDEC) in accelerating dual use technology development in core mission areas to include homeland defense/homeland security technology, environmental technology and manufacturing prototyping. The overall goal is to significantly enhance the rapid transition of new technologies to the war fighter thorough the identification and development of innovative technologies for prototyping. Mission areas directly related include Nano-technologies, Manufacturing process/Rapid prototyping, Environmental technologies, Biomedical technologies, and homeland Defense/Security Technologies. In this task Insitech will work with ARDEC/Picatinny's management, scientists and engineers to develop a database of known technology gap areas. InSitech will perform appropriate outreach and network functions with leaders in the private sector, academic institutions and venture capital firms for potential technical solutions. InSitech will also determine what in-house technologies and intellectual property have potential commercial application and business opportunities and will identify commercial potential of each technology/IP. Currently the Miniature Integrated Nuclear Detection System (MINDs) prototype project is near completion. MINDs is a cost effective, high-tech security system that continually monitors the environment for the presence of nuclear spectra. Minds applications include securing all military bases and immediately fills a gap in national security. The Multi-Network Communicator (MINC) prototype project is also nearing completion. MNC is an expanded offering that significantly increase the reliability of wireless voice, data, and video services. When used for military applications, communications could be randomly distributed over multiple pathways to frustrate jamming and eavesdropping.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Use of the other transaction (OT) agreement establishes a business relationship with a unique and diverse non-traditional, non-profit corporation that would be difficult or impossible to attain under a standard contract, grant or cooperative agreement and the flexibility inherent in the OT will encourage InSitech to utilize commercial practices. Also, using an OTcreates an opportunity for ARDEC to leverage its resources to influence the design and development of dual use technologies to satisfy the Army’s mission needs. InSitech is a non-traditional contractor that has never entered into or performed on (1) any procurement contract that is subject to full coverage under the cost accounting standard prescribed pursuant to Section 26 of the Office of Federal Procurement Policy Act (41 U.S.C. 422) and the regulations implementing such section; or (2) any other procurement contract in excess of $500,000 to carry out prototype projects or to perform basic, applied or advanced research projects for a federal agency. InSitech, as a non-traditional contractor, coordinates the interests of state economic development authorities, local municipalities, small businesses, institutions of higher education, and the private sector.

Extent to which the cooperative agreement or other transaction has fostered within the technology

and industrial base new relationships and practices that support the national security of the USA:
Use of the OT establishes a business relationship with a unique and diverse non-traditional, non-profit corporation that would be difficult or impossible to attain under a standard contract, grant or cooperative agreement and the flexibility inherent in the OT will encourage InSitech to utilize commercial practices. InSitech Inc. was incorporated as a New Jersey based non-profit corporation in November 2003. The purpose for which this corporation was created was to work in conjunction with federal, state and local government entities to lessen the governmental burdens of Government by: a) facilitating the recognition of Picatinny and the surrounding community in New Jersey as a world center of excellence in technology transfer, commercialization, development and service; b) facilitating the recognition of Picatinny and the surrounding community in New Jersey as a world leader in technology enhancement-manufacturing technology, environmental remediation, nanotechnology, homeland defense technology/training, biomedical device development, armament technologies and renewable energy sources; c) positioning Picatinny and the surrounding community in New Jersey to develop job opportunities.

Other benefits to the DOD through use of this agreement:
Over the years, the Army has made substantial investments in military technology, as well as university-led and private sector research and development activities. Recent events, however, have made it imperative that the Army creates new mechanisms to promote the accelerated deployment of critical technologies being developed at government, university and commercial laboratories. It is now essential that critical technologies be rapidly tested, evaluated and fielded in order to meet the Army's evolving roles and mission requirements. Also, the continued reduction of base operation funding over the past decade, has made it essential that the Army explore novel approaches to reduce base operation costs. Recent changes to 10 USC 2667 have now allowed the Army to pursue installation-reshaping strategies through innovative leasing arrangements with the private sector. In light of the above, Picatinny has developed a unique approach to accelerate dual use technology development, enhance its mission objectives and reduce base operation costs through the more efficient and effective utilization of its real property assets. As part of this strategy Picatinny proposes to enter into OT with InSitech, a non-profit, non traditional, NJ based corporation, for dual use technology development and commercialization of select Picatinny Intellectual Property.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W15QKN-04-9-0701

Task Number: 0006

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Acceleration of Dual Use Technologies

Awarding Office: XR W4GG TACOM PICATINNY

Awardee: Insitech Inc

Effective Date: 28 Jul 2006

Estimated Completion or Expiration Date: 28 Oct 2006

U.S. Government Dollars: $ 11,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
This task will continue InSitech's effort to assist Armament Research Development and Engineering Center (ARDEC) in accelerating dual use technology development in core mission areas to include homeland defense/homeland security technology, environmental technology and manufacturing prototyping. The overall goal is to significantly enhance the rapid transition of new technologies to the war fighter through the identification and development of innovative technologies for prototyping. Mission areas directly related include Nano-technologies, Manufacturing process/Rapid prototyping, Environmental technologies, Biomedical technologies, and Homeland Defense/Security technologies. InSitech will develop and conduct individual request for information (RFIs) within both traditional and non-traditional DoD customer markets to identify existing technologies available that can potentially provide solutions to current technology gap areas associated with sensors in proximity fuzes and sensor nodes and transceivers utilizing GPS technology. The Miniature Integrated Nuclear Detection System (MINDS) prototype project is near completion. MINDS is a cost effective, high-tech security system that continually monitors the environment for the presence of nuclear spectra. MINDS applications include securing all military bases and immediately fills a gap in national security. The Multi-Network Communicator (MNC) prototype project is currently in process. MNC is an expanded offering that significantly increases the reliability of wireless voice, data, and video services. When used for military applications, communications could be randomly distributed over multiple pathways to frustrate jamming and eavesdropping.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Use of other transaction (OT) establishes a business relationship with a unique and diverse non-traditional, non-profit corporation that would be difficult or impossible to attain under a standard contract, grant or cooperative agreement and the flexibility inherent in the OT will encourage InSitech to utilize commercial practices. Also, using an OT creates an opportunity for ARDEC to leverage its resources to influence the design and development of dual use technologies to satisfy the Army's mission needs. InSitech is a non-traditional contractor that has never entered into or performed on (1) any procurement contract that is subject to full coverage under the cost accounting standard prescribed pursuant to Section 26 of the Office of Federal Procurement Policy Act (41 U.S.C. 422) and the regulations implementing such section; or (2) any other procurement contract in excess of $500,000 to carry out prototype projects or to perform basic, applied or advanced research projects for a federal agency. InSitech, as a non-traditional contractor, coordinates the interests of state economic development authorities, local municipalities, small businesses, institutions of higher education, and the private sector.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Use of the OT establishes a business relationship with a unique and diverse non-traditional, non-profit

corporation that would be difficult or impossible to attain under a standard contract, grant or cooperative agreement and the flexibility inherent in the OT will encourage InSitech to utilize commercial practices. InSitech Inc. was incorporated as a New Jersey based non-profit corporation in November 2003. The purpose for which this corporation was created was to work in conjunction with federal, state and local government entities to lessen the governmental burdens of Government by: a) facilitating the recognition of Picatinny and the surrounding community in New Jersey as a world center of excellence in technology transfer, commercialization, development and service; b) facilitating the recognition of Picatinny and the surrounding community in New Jersey as a world leader in technology enhancement-manufacturing technology, environmental remediation, nanotechnology, homeland defense technology/training, biomedical device development, armament technologies and renewable energy sources; c) positioning Picatinny and the surrounding community in New Jersey to develop job opportunities.

Other benefits to the DOD through use of this agreement:
Over the years, the Army has made substantial investments in military technology, as well as university-led and private sector research and development activities. Recent events, however, have made it imperative that the Army creates new mechanisms to promote the accelerated deployment of critical technologies being developed at government, university and commercial laboratories. It is now essential that critical technologies be rapidly tested, evaluated and fielded in order to meet the Army's evolving roles and mission requirements. Also, the continued reduction of base operation funding over the past decade, has made it essential that the Army explore novel approaches to reduce base operation costs. Recent changes to 10 USC 2667 have now allowed the Army to pursue installation-reshaping strategies through innovative leasing arrangements with the private sector. In light of the above, Picatinny has developed a unique approach to accelerate dual use technology development, enhance its mission objectives and reduce base operation costs through the more efficient and effective utilization of its real property assets. As part of this strategy Picatinny proposes to enter into an OT with InSitech, a non-profit, non traditional, NJ based corporation, for dual use technology development and commercialization of select Picatinny Intellectual Property.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W56HZV-05-9-0002

Modification Number: P00002

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Lockheed Martin Systems Integration - Owego (LMSI-O)

Awarding Office: SR W4GG HQ US ARMY TACOM

Awardee: Lockheed Martin Corporation

Effective Date: 03 Feb 2006

Estimated Completion or Expiration Date: 02 Aug 2007

U.S. Government Dollars: $ 8,999,946

Non-Government Dollars: $ 11,219,599

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
Develop and demonstrate prototype Future Tactical Truck System Advanced Concept Technology Demonstrator.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Provides for physical development and demonstration of advanced technologies applicable to military trucks such as advanced hybrid propulsion technologies and C4ISR.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Continuation of the physical development from the proceeding modeling and simulation phase continues the building of relationships between commercial technology suppliers, including advanced hybrid propulsion exportable power and water generation.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W911NF-06-9-0002

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Improved Combat Arms Earplug

Awarding Office: XR W2DF RDECOM ACQ CTR DURHAM

Awardee: Aearo Company I

Effective Date: 30 Dec 2005

Estimated Completion or Expiration Date: 30 May 2006

U.S. Government Dollars: $ 132,800

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The Aearo Company shall participate in a collaborative program of research in order to develop an improved combat arms earplug. The improved version will provide the same attenuation as the existing earplug, but should be more comfortable and easier to use and more compatible with existing military equipment. The potential of reducing the low level-level steady-state attenuation of the device, while retaining its level-dependent features and adequate impulse-noise protection will be examined. Goals include: (1) Development a single-ended version of the present earplug that provides means, via a 2-position assembly to either wear the plug in an open or closed mode The development will consist of protyping various designs and then evaluating them for comfort, performance, and convenience. Once the measurements suggest that the goals have been met for attenuation in steady-state noise, the devices will then be evaluated for level-dependent performance in high-level impulsive noise. (2) Provide a report of studies on the localization abilities of soldiers wearing Combat Arms earplug and other types of hearing protection. (3) Conduct new speech intelligibility and localization studies on prototypes that will be developed under this proposal and compare those designs to moderate-and fat-attenuation earplugs and earmuffs that are currently available. (4) Conduct limited field trials with deployed soldiers on the new design to assess comfort and user acceptance. (5) Assess tradeoffs between potential lower-attenuation designs and the existing Combat Arms Earplug to determine if there can be a better balance between hearing clearly and getting adequate protection.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The Aearo Company shall participate in a collaborative program of research in order to develop an improved combat arms earplug. The agreement allowed the DoD to take advantage of an emerging, proprietary, patented process with the goal of creating an improved earplug that will enhance the survivability of soldiers in combat environments. The firm would not have participated in another FAR Based or assistance instrument because of the intellectual property rights that would have potentially had to cede with these instruments. The awardee has developed process to use and prototype the Combat Earplug at their own expense thus was not willing to provide the Government with limited rights. The use of the 845 Prototype Agreement was required as the DoD required this firm to utilize the DoD specific requirements for the enhancement of the combat earplug.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The significant new relationship resulting from this agreement is the relationship between the awardee and the government. The awardee, a non-traditional contractor, was not interested in doing business with the government under a traditional Federal Acquisition Regulation (FAR) based contract. Future improvements in the earplug would have been directed toward commercial markets without consideration military specific requirements.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

Agreement Number: W911W6-06-9-0001

Type of Agreement: Acquisition Transaction for Prototype (using Section 845)

Title: Modular Airborne Command and Control System (A2C2S)

Awarding Office: XR W1DF AVIATION APPLIED TECH DIR

Awardee: The Boeing Company

Effective Date: 25 Apr 2006

Estimated Completion or Expiration Date: 30 Jun 2006

U.S. Government Dollars: $ 3,294,100

Non-Government Dollars: $ 1,690,630

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
To design, fabricate and prepare for a proof of principle test of the Modular System.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
Use of this other transaction (OT) agreement has contributed to a broadening of the technology and industrial base for meeting DoD needs. The combined benefits of the technology insertions will result in a more mission capable and effective command and control aircraft. The work under this proposed agreement satisfies the next logical step to a timely assessment of modular system that meets the requirement of the operational users. Use of an other transaction enabled the Army to access the technologies, negotiate minimum essential rights in data and contract on terms that enabled Boeing to protect its intellectual property. Use of the OT authority enabled the contractor to protect privileged technology as trade secret. Use of this other transaction authority has afforded the opportunity for a highly collaborative effort which will improve the capabilities of both private sector and the Government. The success of the program is ensured through very substantial Government involvement.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Using other transaction authority for A2C2S enables the Government to take advantage of rapidly changing technology that is inherent in the commercial components brought to the program. The more flexible intellectual property terms and relief from the administrative burden typical of a conventional contract has facilitated those relationships. Other than the collaborative relationship between the traditional and the Government no new relationships were fostered.

Cooperative Agreements and Other Transactions
Entered for Fiscal Year 2006

The following charts provide a summary of the DoD's use of the three statutory reasons an agency can use to award new prototype other transactions and the level of participation of non-traditional contractors in new other transactions.

Prototype OT Reason Type Code	Number of Awards	% Total Awards	# Distinct Non-Traditional Firms Participating
"A" = Non-Traditional Significant Participation	116	91	185
"B" = Cost Sharing	10	8	1
"C" = SPE Determination of Exceptional Circumstances	2	1	4

# Non-Traditional Companies Participating	185
# Non-Traditional Companies as Prime	75

New Agreements consist only of those agreements coded as Initial Award in the Type of Action reporting block of the DD 2759, REPORT OF OTHER TRANSACTIONS FOR PROTOTYPE PROJECTS.

Major modifications (increased scope of work) and master agreements are not considered to be new agreements.