



Department of Defense

Annual Report
on
Cooperative Agreements
and
Other Transactions
Entered into During FY2002
Under 10 USC 2371

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".

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 amounts reported for non-government dollars for research and prototype projects 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.

This report addresses cooperative agreements that included a "recoupment clause" and two types of other transactions: other transactions for research and other transactions for prototypes. The total amount of funds recovered in FY 2002 due to the use of recoupment clauses was \$9,225. Collectively, Army, Navy, Air Force, DARPA, the National Security Agency, the Missile Defense Agency and the National Imagery and Mapping Agency (NIMA) submitted 17 reportable research actions and 74 reportable other transactions for prototypes in FY 2002. Also included in this report are three Navy prototype other transactions mistakenly omitted from the FY 2001 Annual Report and 18 amendments/modifications to existing other transactions.

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.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

- (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" 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 INTO DURING FY02**

Agreement Number: F33615-01-3-5705

Type of Agreement: Other Transaction for Research

Title: Manufacturing Technology for Micro-Electromechanical Systems (MEMS)-Based Inertial Measurement Units (IMUs)

Awarding Office: U.S. Air Force, Air Force Research Laboratory, Materials and Manufacturing Technology Directorate

Awardee: Honeywell Sensor and Guidance Products

Effective Date: 29 Mar 2002

Estimated Completion or Expiration Date: 29 Mar 2006

U. S. Government Dollars: \$4,938,023

Non-Government Dollars: \$4,938,023

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 develop MEMS products and manufacturing technology processes to enable low-cost production of MEMS-based IMUs for Department of Defense (DoD) missiles, munitions and projectiles. These products will offer significant advantages over current technologies with increased reliability and reduced cost, size, weight and power thus expanding product applicability and further reducing cost through economy of scale. Potential commercial applications include commercial aircraft, automotive, mining and energy industries.

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 allowed the DoD to gain access to technology areas/commercial product development that would not have been possible under a procurement contract. The recipient is the industry leader who has made significant investment in the product currently in the marketplace. While they have shown interest in advancing their technology to stay ahead of competitors, they have little incentive to bring a new product to market as long as their current product enjoys a major share of the market. The industry in general has not pursued MEMS IMU technology upgrades due to the belief that the initial products would not be cost effective for the commercial marketplace. The other transaction will pursue affordability as well as technical improvements for MEMS IMUs. These improvements are expected to increase interest within the commercial marketplace, leading to further reduction of price for both military and commercial customers. The recipient has invested significant corporate resources into MEMS IMU related activities and is using a substantial amount of its own background intellectual property as a basis for its performance under this agreement. Due to the substantial contributions before and during the project, Honeywell was not willing to accept intellectual property provisions normally found in a contract or cooperative agreement. In addition to accelerating time to market, the use of an OT for research allows the Government to exert influence into the development of MEMS IMUs and the associated processes to ensure they are responsive to DoD technical and cost 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 agreement is fostering relationships that will greatly benefit tech transition. As discussed above, the recipient was unwilling to accept intellectual property provisions required in contracts or cooperative agreements. By using an other transaction, the Government is intimately involved in tech transition early in the project. The Tri-services are in a collaborative relationship with Honeywell and the DoD prime manufacturers

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

who will purchase and insert the MEMs IMUs developed under the TIA. This relationship is designed to foster buy-in from the DoD prime manufacturers. The services are directing samples to DoD primes who will evaluate and influence development of the product. This upfront involvement is designed to create an acceptance in the marketplace that will speed transition to military and commercial products.

Other benefits to the DOD through use of this agreement:

The primary benefits to the DoD gained by using this agreement have been described in the responses to questions 1 and 2.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-02-3-J013

Type of Agreement: Other Transaction for Research

Title: Maintenance Analysis, Safety and Training Program

Awarding Office: CECOM, AMSEL-AC-CC-RT-H

Awardee: Smiths Aerospace, Inc

Effective Date: 18 Sep 2002

Estimated Completion or Expiration Date: 17 Sep 2004

U. S. Government Dollars: \$ 2,970,000

Non-Government Dollars: \$ 1,485,000

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 a HUMS Processor Module on the US Army fleet of Chinook Helicopters.

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 this agreement has only been in effect for two months, it is difficult to define its contribution to the industrial base at this point. However, several aviation groups are currently looking at HUMS technology so it can be expected that this will have a beneficial effect on 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:

Due to the short time this agreement has been in effect, it is not yet known what new business relationships and practices may result.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-02-3-L423

Type of Agreement: Other Transaction for Research

Title: Antenna Research For Satellite Communications On-The-Move (SOTM)

Awarding Office: U S Army Communications and Electronics Command, CECOM, AMSEL-AC-CC-RT-G

Awardee: Harris Corporation Government Communication Systems Division

Effective Date: 14 May 2002

Estimated Completion or Expiration Date: 14 Aug 2005

U. S. Government Dollars: \$ 1,859,263

Non-Government Dollars: \$ 1,750,000

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 develop an On-The-Move phased array antenna system for use with GBS reception, Wideband Gapfiller transmit and receive and MILSTAR (Advanced EHF) transmit and receive.

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:

Phased array antennas utilizing ferroelectric phase shifters are a prime candidate for affordable phased arrays for Army communications on-the-move applications. A phased array antenna can function in multiple frequency bands with multiple beams obviating the need for multiple antennas on mobile vehicles. These same antennas can be utilized for airborne, space borne and shipboard applications for the military. Commercial applications include Direct Broadcast Satellite reception, Mobile SATCOM Telephones, Mobile data reception from new low earth orbit satellites such as Teledesic, and use on recreational vehicles, cruise ships and pleasure boats. Military and commercial Radar systems can also utilize the new ferroelectric phase shifter 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:

Affordable high data rate communications on-the-move will be achieved through the application of the results of this program. Development of this technology is expected to have a major impact on next generation systems employing phased array antennas. While the first Army application is in the Radio Access Point for high data rate communications on-the-move; UAV, satellite, airborne and shipboard applications have also been proposed. In addition, radar systems (on all of the previous platforms) are also possible. Ferroelectric phase shifters and automatic insertion printed wiring board technology will make it possible to build low cost phased array antennas for all military applications.

Additionally, opportunities exist in the commercial sector for phased arrays, especially where multi-beam systems are required (tracking several satellites or ground terminals, simultaneously). Applications exist in airborne and shipborne telecommunications, and in terrestrial communications for cellular radio systems and microwave systems, and cable TV distribution systems where frequency reuse must be maximized. Commercial applications include Direct Broadcast Satellite reception, Mobile SATCOM Telephones, Mobile data reception from new low earth orbit satellites such as Teledesic, and use on recreational vehicles, cruise ships and pleasure boats. Commercial RADAR systems can also utilize the new ferroelectric phase shifter technology. The technology will be ready for commercial exploitation by FY02 at the latest. The competitive advantage is cost. Phased arrays utilizing the ferroelectric phase shifter technology are expected to reduce the cost of phased array antennas by 10:1 to 100:1, depending on the application.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-99-3-K518 **Task Order:** P00009

Type of Agreement: Cooperative Agreement for Research

Title: Low Cost Microsensors and Applications

Awarding Office: US Army Communications-Electronics Command

Awardee: Raytheon Systems Company

Effective Date: 22 Mar 2002

Estimated Completion or Expiration Date: 30 Dec 2002

U. S. Government Dollars: \$ 3,475,000

Non-Government Dollars: \$ 3,699,985

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

(DUS&T) Dual use science & technology program to reduce the cost, weight, and power of uncooled ir sensors, and to increase the capability of these sensors, thereby expanding their applicability to military and commercial markets never before addressed by thermal imaging.

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 OT agreement with Raytheon has resulted in the successful design, fabrication and integration of a 640x480, 25 um pixel uncooled sensor. It was the first large format 640x480 uncooled sensor built by Raytheon. The performance, size, weight and power has allowed additional sensors of this type to be built, integrated onto Unmanned Air Vehicle (UAV) prototype platforms and successfully flown. The Navy and the Army has each developed these UAV prototypes. The sensor technology developed under this agreement which includes the 640x480 readout, the 640x480 25um uncooled focal plane array and the 640x480 electronics will make a most significant contribution to the acquisition of imagery from a UAV for transmission to a remote location to be used for situation awareness. The program is also the stepping-stone to achieving smaller, lower power uncooled sensors with a large format (\geq 640x480). It is also believed that the 640x480 large format sensor will eventually replace the 320x240 sensor in the thermal weapon sight (TWS). The benefit will be increased range performance.

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 technology will be used by the Navy in the Dragon Eye UAV. A flight test has already been conducted with a modified version of the 640x480 sensor developed under this contract. Modifications included a change of optics and the addition of a shutter. The ROIC, Uncooled focal plane array and electronics that make up the sensor and which were developed under this OT program remained unchanged. Technical papers of this program have been written and presented to other USA companies in the IR technology industry.

The approximately 50% cost share by Raytheon under the contract has allowed the government to successfully acquire a 640x480 small, low power sensor for \$3.5 M. for future use in a variety of military applications that include but will likely not be limited to Unmanned Air and Ground Vehicles (UAV, UGV) and thermal weapon sights (TWS).

Other benefits to the DOD through use of this agreement:

The use of an other transaction has resulted in additional benefits, not addressed above.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-99-3-K518

Task Order:P00008

Type of Agreement: Cooperative Agreement for Research

Title: Low Cost Microsensors and Applications

Awarding Office: US Army Communications-Electronics Command

Awardee: Raytheon Systems Company

Effective Date: 24 Jun 2002

Estimated Completion or Expiration Date: 30 Dec 2002

U. S. Government Dollars: \$ 3,475,000

Non-Government Dollars: \$ 3,699,985

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

(DUS&T) Dual use science & technology program to reduce the cost, weight, and power of uncooled ir sensors, and to increase the capability of these sensors, thereby expanding their applicability to military and commercial markets never before addressed by thermal imaging.

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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 technology will be used by the Navy in the Dragon Eye UAV. A flight test has already been conducted with a modified version of the 640x480 sensor developed under this contract. Modifications included a change of optics and the addition of a shutter. The ROIC, Uncooled focal plane array and electronics that make up the sensor and which were developed under this OT program remained unchanged. Technical papers of this program have been written and presented to other USA companies in the IR technology industry.

The approximately 50% cost share by Raytheon under the contract has allowed the government to successfully acquire a 640x480 small, low power sensor for \$3.5 M. for future use in a variety of military applications that include but will likely not be limited to Unmanned Air and Ground Vehicles (UAV, UGV) and thermal weapon sights (TWS).

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-3-0002

Type of Agreement: Other Transaction for Research

Title: Shapes Vector Technology Transfer and Development

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Commonwealth of Australia Represented by the Defence Science & Technology Organisation (DSTO)

Effective Date: 14 May 2002

Estimated Completion or Expiration Date: 13 Dec 2009

U. S. Government Dollars: \$ 7,800,000

Non-Government Dollars: \$ 1,100,000

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 dynamic approaches to computer network defense using Shapes Vector software. The technology area is computer network security.

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 enables DSTO to jointly participate with the U. S. Government in critical technology development for advances in computer network defense. As an Australian Government organization, DSTO would not comply with regulations imposed by the Federal Acquisition Regulation and would not accept a procurement contract. This joint effort was made possible through the use of an other 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 program brings together two governments to jointly improve computer network security. This program will enable use of Shapes Vector software, developed by DSTO, and to provide a framework for maturing the software to meet the needs of the Government through both further work by DSTO and work by other performers. The ability to infer complex network topologies from passive access for presentation in real time puts Shapes Vector a generation ahead of current network visualization technologies that have very limited interference capabilities. Without such critical technology, it is practically impossible to effectively “see” and “act” within the net at a strategic level. If this pilot program is successful, responsibility for broader deployment strategy falls to the Joint Task Force for Computer Network Operations (JTF-CNO). Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), and intellectual property rights (Bayh-Dole) were important to DSTO. 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 DSTO to use existing Australian accounting practices and avoids the cost of setting up U. S. Government accounting systems.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-3-0003

Type of Agreement: Other Transaction for Research

Title: Speech-to-Text Collaboration

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Microsoft Corporation

Effective Date: 01 Aug 2002

Estimated Completion or Expiration Date: 31 Jul 2004

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 technical objective of this effort is to convert natural human speech to text. The Microsoft proposal described promising novel approaches for modeling and exploiting long-span phenomena in natural human speech and offered to develop and test these ideas in both English and Chinese. The key ideas include a radically new structured speech model plus new learning algorithms. The technology area in which the project is being conducted is state-of-the-art speech recognition. This is part of a new research program known as "EARS" (Effective, Affordable, Reusable Speech-to-Text).

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:

Microsoft is a non-traditional player in DoD research. As a commercial company, their internal systems are not compliant with regulations imposed by the Federal Acquisition Regulation. If not for an other transaction, they would not have participated 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:

This EARS program brings together industry and universities to produce powerful new speech-to-text (automatic transcription) technology whose outputs are substantially richer and much more accurate than currently possible. The commercial applications to be developed will benefit Microsoft, the members of the EARS program and ultimately the United States. Certain rights pertaining to intellectual property rights (Bayh-Dole) and foreign access to technology were important to Microsoft. These required additional negotiation and flexibility in the provisions ultimately agreed upon the parties. This flexibility and tailoring was possible only with the use of an other transaction.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-3-0004

Type of Agreement: Other Transaction for Research

Title: High Power Fiber Lasers

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Corning Incorporated

Effective Date: 30 Jul 2002

Estimated Completion or Expiration Date: 31 Jan 2004

U. S. Government Dollars: \$ 5,400,000

Non-Government Dollars: \$ 5,000,000

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The goals are 1) to produce a large mode area polarization maintaining/single mode fiber with ytterbium doping using a large mode area silica core fiber to produce a fiber laser with output power greater than 1000 W and 2) modeling, designing, and developing a photonic crystal fiber with a large area air-core in parallel with a goal of delivering a 1 kW fiber laser. The technology area is high power fiber lasers.

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 on this program broadened the technology base by providing access to Corning, primarily a commercial company, and allowing it to use its commercial practices.

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 fosters the use of commercial practices on this military program.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-3-0005

Type of Agreement: Other Transaction for Research

Title: Development Of Multiwavelength Assemblies for Chip Scale Wavelength Division Multiplexing

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Multiwavelength Assemblies for Ubiquitous Interconnects (MAUI) Consortium,
c/o Agilent Technologies, Inc.

Effective Date: 28 Jun 2002

Estimated Completion or Expiration Date: 27 Sep 2003

U. S. Government Dollars: \$ 1,757,718

Non-Government Dollars: \$ 2,550,684

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 develop and demonstrate advanced optical and optoelectronic components, parallel multiwavelength optical subassemblies (PMOSAs), and highly functional subsystems to meet the interconnection needs posed by next-generation commercial and military computing applications. New capabilities in fiber-optic technologies are emerging which have the potential to revolutionize system performance and optimize system design. This project is intended to demonstrate key enabling components and integration required to bring this potential to reality. The technology area is optoelectronics.

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 Agilent's commercial business units to participate in critical technology development for advances in Chip-Scale Wavelength Division Multiplexing systems. As a commercial company, its internal systems are not compliant with the Federal Acquisition Regulation. If not for an other transaction, this firm would not have participated. As a result, the technology base was broadened.

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 industry and university to engage in innovative, but high-risk research and development. The commercial applications to be developed will benefit Agilent, the University of Southern California (USC), and ultimately the United States. The commercial market for Multiwavelength Assemblies For Ubiquitous Interconnects (MAUI) developed technology is considerable. If FTTP based interconnects can be manufactured in a cost-effective manner, their market potential in high end computer and server systems alone could be in the \$100M - \$1B per year range. If the technology is sufficiently successful that it migrates to lower end workstation or PC based systems, the market potential could be in the \$1B - \$10B per year range. In addition, size and weight are always key characteristics in military systems. The development of parallel wavelength division multiplexed (PWDM) interconnects technology will provide increased bandwidth in less space and less weight than the conventional approach of adding additional individual optical fibers (or copper cables) for each signal. Advantages also occur in reliability and producibility due to the reduced number of cables and I/O connections. The MAUI program offers an additional advantage in the development of military wavelength division multiplexed (WDM) network equipment based on low cost COTS technology. Military MAUI devices derived from the Agilent/USC efforts will benefit from the low cost processes developed for the commercial markets, and provides a sustainable supply source for basic devices.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), and intellectual property rights (Bayh-Dole) were important to Agilent. 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.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-3-0006

Type of Agreement: Other Transaction for Research

Title: Widely Tunable Integrated Transmitter for Fast Dynamic Network Configuration

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Agility Communications, Inc.

Effective Date: 28 Jun 2002

Estimated Completion or Expiration Date: 27 Sep 2003

U. S. Government Dollars: \$ 1,880,000

Non-Government Dollars: \$ 1,380,000

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 foster the growth of a technology platform - Sampled Grating Distributed Bragg Reflector (SG-DBR) laser-based chip-scale photonic integration on InP. This integrated technology is the only means to simultaneously achieve high modulation bandwidth, wide tuning range, high power, rapid reconfigurability, and high reliability. The technology area is widely-tunable lasers.

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 Agility to participate in this critical technology development. As a commercial company, its internal systems are not compliant with the Federal Acquisition Regulation. If not for an other transaction, this firm would not have participated. As a result, the technology base was broadened.

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, through the use of an other transaction, encourages a commercial, small business entity to engage in innovative, but high-risk research and development. The development of Chip-Scale Wavelength Division Multiplexing systems is beneficial to both military and commercial systems because they share the same fundamental goal for widely-tunable lasers; namely, they are the key component to lowering the cost of operation and deployment through increased network flexibility and reconfigurability. The same InP technology platform capable of producing high-bandwidth integrated analog modulators can be adapted to longer-reach commercial digital transmission systems. Wide tunability eliminates the necessity for multiple part codes in fixed-wavelength Wavelength Division Multiplexing (WDM) systems and makes it economically viable to combine modulator and laser in a single component. Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), and intellectual property rights (Bayh-Dole) were important to Agility. 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.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-3-0007

Type of Agreement: Other Transaction for Research

Title: Reduced-Size Stirling Generator (RSG)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: New Power Concepts LLC

Effective Date: 27 Sep 2002

Estimated Completion or Expiration Date: 26 Mar 2004

U. S. Government Dollars: \$ 3,897,142

Non-Government Dollars: \$1,500,000

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 design and develop a Reduced-size Stirling Generator (RSG), with continuous electrical output in the range of 200 to 400 Watts, having a net efficiency of 85%, quiet operation (<60 dB) and able to operate on military logistics fuel. The resulting size and power output of RSG would make it suitable for a broad range of military applications, including: extending the rough terrain range of the Segway™ HT; soldier-transported power and battery charging; and power for other small electric vehicles, unattended sensors, and other portable applications. Under this effort, several technologies will be investigated simultaneously, (burner, regenerator, thermal management, control electronics and power modules) in order to develop a fully integrated hybrid energy system. The technology area is hybrid energy 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:

This Other Transaction will allow the Department of Defense to have access to the RSG technology in a form factor (size, weight, power) necessary to meet many demanding military applications. Currently, the military does not have access to this technology. Many military mobile power systems are large, heavy, inefficient and have a large acoustic signature. The RSG will meet many of the military mobile power requirements at a significant reduction in size, weight and cost. The RSG is very quiet allowing for operation in hostile environments. NPC and the sub, DEKA, are not traditional defense suppliers. Thus, the use of an Other Transaction helped broaden the tech base by providing access to these 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:

This Other Transaction will establish a domestic source for RSG technology for military use and allow for the continuing advancement of this technology through government support. Furthermore, the RSG knowledge could potentially provide a competitive technology for use in the commercial power generation markets. Stirling generators are high efficiency power generators capable of displacing current combustion engine type technologies. In addition, New Power Concepts, the prime contractor on this effort, is a domestic company manufacturing Stirling generators in the United States, which ensures military access to the RSG technology.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA904-02-3-0052

Type of Agreement: Other Transaction for Research

Title: Research Toward a Scalable Hybrid Scalar-Vector High Performance Computer

Awarding Office: Maryland Procurement Office, National Security Agency, Ft. Meade, Maryland

Awardee: Cray, Inc.

Effective Date: 28 June 2002

Estimated Completion or Expiration Date: 30 June 2004

U. S. Government Dollars: \$ 10,000,000

Non-Government Dollars: \$ 10,000,000

[The total value of this Agreement is \$20M with a 50/50 Govt/Contractor share ratio over the term.]

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 conduct research in (I) technology and architecture enhancements to the Cray SV2 system aligned with the objective of developing a significant improved future system; and (II) design tasks of a binary compatible technology refreshment to the Cray SV2 system related to the objective of (I) above. The supercomputer research will encompass efforts toward the development of (a) memory and processor enhancements to the SV2 referred to as the SV2e, and (b) a significant improvement to the SV2e that includes vector registers, superior memory bandwidth performance, stride independent memory bandwidth, instruction level parallelism and power efficiency.

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 continues to meet the Government's needs in computer system architecture design that emphasizes the successful combination of Distributed Shared Memory architectures with vector processing for solving important problem sets that do not yield to commodity microprocessor based solutions. Improvements in CMOS (Complementary Metal-Oxide Semiconductor) fabrication technology combined with advances in signaling technology offer opportunities to continue delivering significant advantages in computer capability. In addition to Government uses in nuclear, defense and mathematical applications, commercial utilization of high-end computing technology of this focus is evident in various business sectors to include pharmaceutical research, weather analysis and prediction, petroleum exploration and the automobile research and development industries.

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 for this effort strongly support the Government's High Performance Computing (HPC) Program goals. The Government's requirement for supercomputer architectures of the type such as described herein have been documented in the 2001 Department of Defense study entitled, "High Performance Computing Survey and Requirements Analysis" which found that current commodity based High Performance Computers are inefficient for solving critical national security applications such as cryptanalysis. Under the Agreement, CRAY, Inc. will include in the research, unique, innovative approaches toward future supercomputer systems with enhanced capabilities. Ultimately, the commercial availability of the products resulting from this research will provide higher performance computing at a lower cost to the Government to meet critical future defense needs.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00014-99-3-0002

Type of Agreement: Other Transaction for Research

Title: Very High Power PEBB Demonstration

Awarding Office: Office of Naval Research (ONR)

Awardee: ABB, Inc.

Effective Date: 4 Sep 2002

Estimated Completion or Expiration Date: 30 Sep 2005

U. S. Government Dollars: \$ 13,249,443

Non-Government Dollars: \$ 13,249,443

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The technical objectives are outlined in a three year program for the development of Electric Utility Power Quality (Power Electronic equipment), that exhibit low cost, and can meet the dual-use standards for utility and U.S. Navy military applications. The targets of this development, for the Navy applications, are two types of Power Electronic Building Blocks (PEBBs): (1) Bi-directional Control Thyristors (BCT) for AC breaker applications, and (2) AC/DC voltage source converter building block for up to 15kV AC circuit 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:

A primary use of Other Transactions for Research has been to increase the DoD's access to dual use technologies by supporting and stimulating research that has both commercial and military application. This is an expansion of an agreement under the dual-use program to commercialize Power Electronic Building Block Technology in the utility industry. The Navy is not interested in producing this technology, nor does it have the resources to do so. The Navy requires this capability for the development of Electric Utility Power Quality and Power Electronic equipment that exhibits low cost and that can meet the dual-use standards for utility/industrial and military 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 use of an other transaction agreement has fostered the continued the relationship established with ABB, Inc, which began with the initial agreement in September 1999 leveraging mutual interests through entry into a dual-use agreement. Prior to working with ONR, ABB had determined that a modular approach to power electronic module design and construction made good business sense. The similarities to the PEBB model advanced by the Navy were clear and the benefits in working with the Navy paradigm were obvious. The results of the efforts to date have borne out the wisdom of the modular approach. Because of these mutual interests, Navy is able to capitalize on commercial technology development that has potential for military applications.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00421-02-3-3111

Type of Agreement: Other Transaction for Research

Title: Enhancement of NF3 for High Temperature Disk Applications

Awarding Office: Naval Air Warfare Center Aircraft Division, Patuxent River

Awardee: Pratt and Whitney

Effective Date: 06 Jun 2002

Estimated Completion or Expiration Date: 06 Apr 2005

U. S. Government Dollars: \$1,510,336.00

Non-Government Dollars: \$ 1,594,449.00

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 program is to develop new materials, coatings, and fabrication processes enabling fabrication of more cost-effective components with increased operational life in Naval gas turbine engine environments. Materials of interest will possess high operational temperature capabilities, improved fatigue behavior, and superior oxidation resistance. This is in an effort to reduce the maintenance burden, reduce cost and/or improve performance for next generation and legacy aircraft gas turbine engines.

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 primary use of Other Transactions for Research has been to increase the DoD's access to dual use technologies by supporting and stimulating research that has both commercial and military application. This project aims to do that by developing a framework that is applicable to a range of military and commercial vehicles and by demonstrating application of such a system using several key military aircraft platforms.

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 recipient of this Other Transaction Research is a for-profit firm that has previously worked with DoD agencies. However, use of other transaction allows the Government to capitalize on commercial technology development that has potential for military application. The ability to do this is enhanced by the use of commercial-like agreements with more flexible terms than is possible with a FAR based contract. For example, this agreement contains alternate patent rights provisions and flexible termination provisions. Cost sharing and reduced Government oversight reduce overall project costs.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00421-02-3-3225

Type of Agreement: Other Transaction for Research

Title: Lightweight, Low Cost, Castable High Temperature Aluminum Alloys

Awarding Office: Naval Air Warfare Center Aircraft Division, Patuxent River

Awardee: United Technologies Corporation

Effective Date: 22 Aug 2002

Estimated Completion or Expiration Date: 21 Aug 2005

U. S. Government Dollars: \$ 751,506

Non-Government Dollars: \$ 751,585

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 program is development and evaluation of lightweight, low cost, and castable aluminum alloy materials for elevated temperature applications in turbine and diesel engines for aerospace and transportation industries.

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 primary use of Other Transactions for Research has been to increase the DoD's access to dual use technologies by supporting and stimulating research that has both commercial and military application. This project aims to do that by developing lightweight materials that apply to a range of military and commercial engines. This will benefit both the US military and commercial product manufacturers.

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 recipient of this Other Transaction Research is a for-profit firm that has previously worked with DoD agencies. However, use of other transaction allows the Government to capitalize on commercial technology development that has potential for military application. The ability to do this is enhanced by the use of commercial-like agreements with more flexible terms than is possible with a FAR-based contract. For example, this agreement contains alternate patent rights provisions and flexible termination provisions. In addition, reduced Government oversight and cost sharing contribute to overall cost reduction.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00421-02-3-3249

Type of Agreement: Other Transaction for Research

Title: Design and Fabrication of the Next Generation Polyacetylnitral (PAN) Derived Intermediate Modulus (IM)

Awarding Office: Naval Air Warfare Center Aircraft Division, Patuxent River

Awardee: HEXCEL Corporation

Effective Date: 24 Sep 2002

Estimated Completion or Expiration Date: 23 Sep 2003

U. S. Government Dollars: \$184,827

Non-Government Dollars: \$ 111,581

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 research is to incorporate single wall carbon nanotubes (CNTs) into a polyacrylonitrile (PAN) precursor carbon fiber to obtain metal-like "ductile" failure with improved fiber modulus and strength. This effort is to validate both analytically and experimentally the concept of loading of carbon nanotubes (CNTs) into PAN (Polyacrylonitrile) dope and demonstrate the spinning of a monofilament from the CNT-loaded PAN precursor.

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 design and fabrication of the next generation polyacetylnitral (PAN) derived Intermediate Modulus (IM) carbon fibers that will be far superior to the current carbon fibers with respect to strength, modulus, and durability. These carbon/graphite reinforcement fibers are currently utilized in the manufacture of advanced composite structures used in various Department of Defense (DoD) aerospace systems. The design and fabrication of advanced carbon fibers is designated by the DoD as a defense critical technology, and thus all DoD platforms must utilize carbon fibers manufactured and supplied by U.S. vendors.

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 recipient of this Other Transaction Research is a for-profit firm that has previously worked with DoD agencies. However, use of other transaction allows the Government to capitalize on commercial technology development that has potential for military application. The ability to do this is enhanced by the use of commercial-like agreements with more flexible terms than is possible with a FAR based contract. For example, this agreement contains alternate patent rights provisions and flexible termination provisions.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Responsive Access, Small Cargo, and Affordable Launch (RASCAL)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Coleman Research Corporation

Effective Date: 04 Apr 2002

Estimated Completion or Expiration Date: 03 Jan 2003

U. S. Government Dollars: \$ 1,199,081

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 RASCAL program is to demonstrate the feasibility of a rapid, routine small payload delivery system, capable of providing flexible access to space, using a combination of reusable and low cost expendable vehicle elements. The technology area is small cargo space launch.

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 leader of the performing team, Coleman Research Corporation, is a traditional defense supplier, three team members are nontraditional and participating substantially in the first phase of this project: Vela Technology Development, Inc.; PanAero, Incorporated; and XCOR Aerospace, Inc. The use of an other transaction provided access to these commercial firms, 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 use of an other transaction will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0002

Type of Agreement: Other Transaction for Prototype

Title: Responsive Access, Small Cargo, and Affordable Launch (RASCAL)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Space Access, LLC

Effective Date: 18 Apr 2002

Estimated Completion or Expiration Date: 17 Jan 2003

U. S. Government Dollars: \$ 1,196,763

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 RASCAL program is to demonstrate the feasibility of a rapid, routine small payload delivery system, capable of providing flexible access to space, using a combination of reusable and low cost expendable vehicle elements. The technology area is small cargo space launch.

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, Space Access, LLC, is a nontraditional defense supplier. The use of an other transaction provided DoD with access to this commercial firm on a military prototype project, thereby broadening the 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:

The use of an other transaction allowed this commercial firm to use its existing commercial accounting practices, alleviating the requirement and avoiding the cost of setting up a government-approved system. Further, the use of an other transaction provided freedom from the standard intellectual property regime and mandatory flow-down clauses that are obstacles to commercial participation and practice.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0004

Type of Agreement: Other Transaction for Prototype

Title: Responsive Access, Small Cargo, and Affordable Launch (RASCAL)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Pioneer Rocketplane Corporation

Effective Date: 04 Apr 2002

Estimated Completion or Expiration Date: 03 Jan 2003

U. S. Government Dollars: \$ 1,142,000

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 RASCAL program is to demonstrate the feasibility of a rapid, routine small payload delivery system, capable of providing flexible access to space, using a combination of reusable and low cost expendable vehicle elements. The technology area is small cargo space launch.

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 Pioneer Rocketplane/HMX team is an entrepreneurial small business cooperation, established to revolutionize space access by developing low risk, profitable, reusable launch vehicles and associated systems. Not only is the team itself a nontraditional performer tailored to this project, but several of its members are nontraditional defense suppliers in their own right (Pioneer Rocketplane, HMX, Inc., and Aurora Flight Sciences). The use of an other transaction provided access to these nontraditional performers, thereby broadening the technical 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 Pioneer Rocketplane/HMX team will use a disciplined, but innovative, systems engineering approach to integrate government requirements with the commercial marketplace to develop next generation space launch systems. This approach was made possible by the use of an other transaction, since it allows nontraditional firms to utilize commercial practice on this prototype system.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0005

Type of Agreement: Other Transaction for Prototype

Title: Lead Systems Integrator (LSI) for Future Combat Systems (FCS) Phase II, Concept Technology and Development

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: The Boeing Company

Effective Date: 14 Mar 2002

Estimated Completion or Expiration Date: 14 Sep 2003

U. S. Government Dollars: \$ 154,000,000

Non-Government Dollars: \$ 86,000,000 (plus \$26,400,000 savings in General & Administrative (G&A) and Cost of Money)

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 lead the system integration effort on the Future Combat Systems (FCS) project. FCS is a system of systems that will transform the way the Army conducts combat. Boeing will have total systems integration responsibility for designing, developing, producing, fielding and supporting the FCS system of systems. The technology area is integration of complex 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:

Although Boeing, the team leader, is a traditional defense supplier, seven of the team members are nontraditional: RedZone Robotics Inc.; Krauss-Maffei Wegmann; Cougaar Software Inc., Parametric Technology Corporation; Command Systems, Inc.; Navigator Development Group, Inc.; and Strategic Perspectives, Inc.

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 Boeing to utilize independent research and development (IR&D) funds on this effort. The use of IR&D has two benefits. First, the federal resources devoted to the project are leveraged by the addition of company IR&D to the project funding. Second, IR&D funds buy more technical labor toward project goals than federal funds, because IR&D expenditures are not burdened with general and administrative expense (G&A), cost-of-money factors, or fees. 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 INTO DURING FY02**

Agreement Number: MDA972-02-9-0006

Type of Agreement: Other Transaction for Prototype

Title: Responsive Access, Small Cargo, and Affordable Launch (RASCAL)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: The Space Launch Corporation

Effective Date: 10 Apr 2002

Estimated Completion or Expiration Date: 09 Jan 2003

U. S. Government Dollars: \$ 1,150,000

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 RASCAL program is to demonstrate the feasibility of a rapid, routine small payload delivery system, capable of providing flexible access to space, using a combination of reusable and low cost expendable vehicle elements. The technology area is small cargo space launch.

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, the Space Launch Corporation, is a nontraditional defense supplier, as are three other team members: Universal Space Lines, Scaled Composites, and Hunter and Associates. 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 will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0007

Type of Agreement: Other Transaction for Prototype

Title: Responsive Access, Small Cargo, and Affordable Launch (RASCAL)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Delta Velocity Corporation

Effective Date: 03 Apr 2002

Estimated Completion or Expiration Date: 02 Jan 2003

U. S. Government Dollars: \$ 1,253,798

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 RASCAL program is to demonstrate the feasibility of a rapid, routine small payload delivery system, capable of providing flexible access to space, using a combination of reusable and low cost expendable vehicle elements. The technology area is small cargo space launch.

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 leader of the performing team, Delta Velocity Corporation, is a nontraditional defense supplier, as are two other team members: Athena Technologies and CSA Engineering, Inc. 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 will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0008

Type of Agreement: Other Transaction for Prototype

Title: Responsive Access, Small Cargo, and Affordable Launch (RASCAL)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Northrop Grumman Systems Corporation

Effective Date: 10 Apr 2002

Estimated Completion or Expiration Date: 09 Jan 2003

U. S. Government Dollars: \$ 1,899,824

Non-Government Dollars: \$ 626,942

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 RASCAL program is to demonstrate the feasibility of a rapid, routine small payload delivery system, capable of providing flexible access to space, using a combination of reusable and low cost expendable vehicle elements. The technology area is small cargo space launch.

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 leader of the performing team, Northrop Grumman Systems Corporation, is a traditional defense supplier, three team members are nontraditional: Earth Space Applications, Aeronautical Enterprises, and Spath Engineering. The use of an other transaction provided access to these commercial firms, 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 use of an other transaction will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0009

Type of Agreement: Other Transaction for Prototype

Title: High Energy Liquid Laser Area Defense System (HELLADS)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: General Atomics

Effective Date: 24 May 2002

Estimated Completion or Expiration Date: 23 Nov 2002

U. S. Government Dollars: \$ 449,273

Non-Government Dollars: \$ 225,311

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted: HELLADS is a revolutionary high-energy laser (HEL) system concept that has the potential to reduce the weight of a HEL by an order of magnitude. The first phase of HELLADS will focus upon critical experiments to validate the feasibility of the liquid laser. This phase is broken into two sub-phases – the first of which (Phase Ia) is a seedling to demonstrate critical laser parameters and the second of which (Phase Ib) will demonstrate a subscale liquid laser. After the liquid laser feasibility has been demonstrated in the first phase, the government may exercise an option to have the contractor design and construct a 100 kW proof of concept HEL and demonstrate its performance in a ground demonstration over a four-year period. The technology area is high energy lasers.

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:

General Atomics (GA) is a traditional defense supplier. As a result, the technology and industrial base was not broadened in this effort. Other benefits did accrue, however, from the use of an other transaction, as described below.

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) rather than a traditional FAR contract is expected to save seven months in development time over the four year duration of the project. This savings in schedule arises from the developmental nature of the program. By eliminating the need for extensive formal contract documentation at every step of the program, rapid iteration between the government program manager and the GA principal investigator will enable quick decisions to be made as data becomes available from the various experiments within the project. In particular, once the data from the index matching tests is acquired, the OT would enable a decision to go forward on the next experiment within one week whereas a FAR contract would require a formal reporting and documentation step that would require at least six weeks. Since there are four critical experimental steps in phase one alone, the schedule savings adds up rapidly. The effect of the OT on rapid communication and decision making between the contractor and the government is enhanced significantly due to the potentially classified nature of some of the work. Further, the flexibility an OT offers in determination of intellectual property rights is expected to encourage the participation of nontraditional defense contractors and vendors of commercial items and services in later phases.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0010

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Combat Armed Rotorcraft (UCAR)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: McDonnell Douglas Corporation, A Wholly Owned Subsidiary of The Boeing Company

Effective Date: 12 Jun 2002

Estimated Completion or Expiration Date: 30 May 2003

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

Non-Government Dollars: \$ 2,500,000 (plus \$446,277 savings General & Administrative (G&A) and Cost of Money)

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 joint DARPA/Army UCAR program is to demonstrate the technical feasibility, military utility, and operational value of an Unmanned Combat Armed Rotorcraft (UCAR) system to effectively and affordably prosecute armed reconnaissance and attack missions within the emerging Objective Force system-of-systems architecture. To achieve this goal, the UCAR program will design, develop, integrate, and demonstrate the critical and enabling technologies, processes, and system attributes pertaining to an objective UCAR system. The critical technology areas include, but are not limited to: survivability, command and control, targeting/weapons delivery, and autonomous low altitude flight.

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:

McDonnell Douglas is a traditional defense supplier. As a result, the technology and industrial base was not broadened in this effort. Other benefits did accrue, however, from the use of an other transaction, as described below.

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 Boeing to utilize independent research and development (IR&D) funds on this effort. The use of IR&D has two benefits. First, the federal resources devoted to the project are leveraged by the addition of company IR&D to the project funding. Second, IR&D funds buy more technical labor toward project goals than federal funds, because IR&D expenditures are not burdened with general and administrative expense (G&A), cost-of-money factors, or fees. The use of an other transaction has fostered the maximum application of commercial practice and program management streamlining to achieve drastic schedule reduction on this development program. The UCAR is a key technical component of the Army's Future Combat System, which is breaking traditional acquisition paradigms and timelines. Its development must be accelerated. The other transaction allows a tailored approach which avoids traditional hurdles.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0011

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Combat Armed Rotorcraft (UCAR)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Lockheed Martin Systems Integration - Owego (LMSI-O)

Effective Date: 05 Jun 2002

Estimated Completion or Expiration Date: 04 Jun 2003

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

Non-Government Dollars: \$ 2,217,000 (plus \$352,867 savings in General & Administrative (G&A) and Cost of Money)

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 joint DARPA/Army UCAR program is to demonstrate the technical feasibility, military utility, and operational value of an Unmanned Combat Armed Rotorcraft (UCAR) system to effectively and affordably prosecute armed reconnaissance and attack missions within the emerging Objective Force system-of-systems architecture. To achieve this goal, the UCAR program will design, develop, integrate, and demonstrate the critical and enabling technologies, processes, and system attributes pertaining to an objective UCAR system. The critical technology areas include, but are not limited to: survivability, command and control, targeting/weapons delivery, and autonomous low altitude flight.

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:

Lockheed Martin is a traditional defense supplier. As a result, the technology and industrial base was not broadened in this effort. Other benefits did accrue, however, from the use of an other transaction, as described below.

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 Lockheed Martin to utilize independent research and development (IR&D) funds on this effort. The use of IR&D has two benefits. First, the federal resources devoted to the project are leveraged by the addition of company IR&D to the project funding. Second, IR&D funds buy more technical labor toward project goals than federal funds, because IR&D expenditures are not burdened with general and administrative expense (G&A), cost-of-money factors, or fees. The use of an other transaction has fostered the maximum application of commercial practice and program management streamlining to achieve drastic schedule reduction on this development program. The UCAR is a key technical component of the Army's Future Combat System, which is breaking traditional acquisition paradigms and timelines. Its development must be accelerated. The other transaction allows a tailored approach which avoids traditional hurdles.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0012

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Combat Armed Rotorcraft (UCAR)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Sikorsky Aircraft Corporation

Effective Date: 13 Jun 2002

Estimated Completion or Expiration Date: 30 May 2003

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

Non-Government Dollars: \$ 1,500,000 (plus \$1,030,848 savings in General & Administrative (G&A) and Cost of Money)

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 joint DARPA/Army UCAR program is to demonstrate the technical feasibility, military utility, and operational value of an Unmanned Combat Armed Rotorcraft (UCAR) system to effectively and affordably prosecute armed reconnaissance and attack missions within the emerging Objective Force system-of-systems architecture. To achieve this goal, the UCAR program will design, develop, integrate, and demonstrate the critical and enabling technologies, processes, and system attributes pertaining to an objective UCAR system. The critical technology areas include, but are not limited to: survivability, command and control, targeting/weapons delivery, and autonomous low altitude flight.

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:

Sikorsky Aircraft Corporation is a traditional defense supplier. As a result, the technology and industrial base was not broadened in this effort. Other benefits did accrue, however, from the use of an other transaction, as described below.

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 Sikorsky to utilize independent research and development (IR&D) funds on this effort. The use of IR&D has two benefits. First, the federal resources devoted to the project are leveraged by the addition of company IR&D to the project funding. Second, IR&D funds buy more technical labor toward project goals than federal funds, because IR&D expenditures are not burdened with general and administrative expense (G&A), cost-of-money factors, or fees. The use of an other transaction has fostered the maximum application of commercial practice and program management streamlining to achieve drastic schedule reduction on this development program. The UCAR is a key technical component of the Army's Future Combat System, which is breaking traditional acquisition paradigms and timelines. Its development must be accelerated. The other transaction allows a tailored approach which avoids traditional hurdles.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0013

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Combat Armed Rotorcraft (UCAR)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Northrop Grumman Systems Corporation, Air Combat Systems

Effective Date: 04 Jun 2002

Estimated Completion or Expiration Date: 30 May 2003

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

Non-Government Dollars: \$ 1,510,446 (plus \$961,022 savings in General & Administrative (G&A) and Cost of Money)

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 joint DARPA/Army UCAR program is to demonstrate the technical feasibility, military utility, and operational value of an Unmanned Combat Armed Rotorcraft (UCAR) system to effectively and affordably prosecute armed reconnaissance and attack missions within the emerging Objective Force system-of-systems architecture. To achieve this goal, the UCAR program will design, develop, integrate, and demonstrate the critical and enabling technologies, processes, and system attributes pertaining to an objective UCAR system. The critical technology areas include, but are not limited to: survivability, command and control, targeting/weapons delivery, and autonomous low altitude flight.

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 leader of the performing team, Northrop Grumman Systems Corporation, is a traditional defense supplier, four subcontracts will be awarded to nontraditional firms: MD Helicopter; CarterCopters, LLC; The Saber Group; and Natural Selection, Inc. The use of an other transaction helped to provide access to these commercial firms, 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 use of an other transaction will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. In addition, the use of an other transaction has allowed Northrop Grumman to utilize independent research and development (IR&D) funds on this effort. The use of IR&D has two benefits. First, the federal resources devoted to the project are leveraged by the addition of company IR&D to the project funding. Second, IR&D funds buy more technical labor toward project goals than federal funds, because IR&D expenditures are not burdened with general and administrative expense (G&A), cost-of-money factors, or fees. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0014

Type of Agreement: Other Transaction for Prototype

Title: Concept Studies and Development of the Mach 5/50 Medium Caliber, Direct Fire Weapon

Awardee: The Commonwealth of Australia Represented by the Defence Science & Technology Organisation (DSTO)

Effective Date: 26 Aug 2002

Estimated Completion or Expiration Date: 26 Nov 2005

U. S. Government Dollars: \$ 5,300,000

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:

This program will develop leap-ahead lethality and performance in a medium caliber, direct fire weapon capable of firing ten round bursts every 1-2 seconds with firing rates within each burst that exceed 600 rounds per minute (10 rounds per second). Each of the projectiles will have a minimum muzzle velocity of 1600 meters per second (~ Mach 5). The gun system will gang together several barrels with 50-millimeter bores on a single, two-axis trainable gun mount. To facilitate a comprehensive system evaluation, the gun system will contain a mix of smooth and rifled barrels. The technology area is direct fire weapons.

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 enabled DSTO to jointly participate with the U. S. Government in critical technology development for advances in ultra-high performance medium caliber gun systems. As an Australian Government organization, DSTO would not comply with regulations imposed by the Federal Acquisition Regulation and would not accept a procurement contract. This joint effort was made possible through the use of an other transaction and allowed for the development of a prototype weapon system.

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

This program brings together two governments to develop an ultra-high performance medium caliber gun system. The overall performance goals of this program will provide multiple services with a low-cost, reliable enabling technology to support a wide range of current/future applications, including extended range combat vehicle firepower and lethality, full-spectrum future combat vehicle lethality, short-range, high engagement rate naval air defense, critical fixed site defense and improved aircraft self-defense. Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), and intellectual property rights (Bayh-Dole) were important to DSTO. 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.

The program will most likely require technology infusion from a vast array of Australian commercial sources and could result in relationships being formed with small foreign technology companies. The other transaction for prototype will enable searching out and establishing relationships with any technological firm instead of limiting the market place to traditional DoD type companies.

The other transaction environment may also foster relationships between Australian commercial sources and DoD companies more readily than would have been possible under a FAR contract.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0015

Type of Agreement: Other Transaction for Prototype

Title: Sensor Based System for Detection of Disturbed Soil and Buried Mines

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: QWIP Technologies, Inc.

Effective Date: 13 Sep 2002

Estimated Completion or Expiration Date: 13 May 2002

U. S. Government Dollars: \$ 1,200,000

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 this effort is to develop a prototype, near infrared/infrared mine detection system to be flown on an aerial platform. This system will consist of a two color, collocated Quantum Well Infrared Photo Detector (QWIP) based sensor. This sensor will be integrated with a visible/near infrared CMOS and appropriate optics. The technology area is infrared mine detection.

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 prime performer, QWIP Technologies, is a commercial company and non-traditional defense contractor, which does not wish to comply with Cost Accounting Standards or government procurement regulations. The use of an other transaction provided access to this firm by not imposing those standards and regulations, thereby broadening the technology base. Further, QWIP Technologies has assembled a team of non-traditional companies to work on the project, including Equinox Corporation, SE-IR Corporation, Santa Barbara Infrared, Global Communication Semiconductors, Revtek, and Indigo. These firms would have been hesitant to participate under a FAR-based contract due to mandatory clause flowdowns and the significantly increased lead time necessary to insure team member compliance with FAR regulations.

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 been beneficial in attracting a team of non-traditional, commercial contractors who might otherwise have been hesitant to enter into a standard procurement contract with the Government. In particular, QWIP Technologies wished to maintain its non-traditional contractor status and commercial practices.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-02-9-0017

Type of Agreement: Other Transaction for Prototype

Title: Combustion System Heavy Fuel Engine (HFE) Conversion of a High Performance Subaru 4-Cylinder Gasoline Engine

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Sonex Research, Inc.

Effective Date: 26 Sep 2002

Estimated Completion or Expiration Date: 30 Jun 2004

U. S. Government Dollars: \$ 744,246

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 is to demonstrate a laboratory configuration of the Subaru Sonex Combustion System (SCS) engine operating on JP-5/8 heavy fuels with performance essentially equal to operation on gasoline and to achieve a technology readiness level consistent with a transition to development of an engine for flight test. There are currently no commercially available lightweight, high performance, four-stroke heavy fuel engines. The need for reliable and safe heavy fuel engines for military applications makes this program a critical technology effort. The technology area is power plant technology for innovative tactical platforms.

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, Sonex Research, is not a traditional defense supplier. The use of an other transaction provided access to this commercial firm by allowing relief from the normal intellectual property regime and flow-down requirements of standard government contracts. Access to this firm 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 allows this nontraditional defense contractor to utilize its normal commercial operating practices, without being forced into standardized government systems and procedures. This flexibility contributes to innovative pursuit of engine technology for new and different platforms for reconnaissance, surveillance, communications, and troop mobility.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-00-9-0005, Modifications P00011 and P00013

Type of Agreement: Other Transaction for Prototype

Title: Naval Unmanned Combat Air Vehicle (UCAV-N), Phases IC and IIA

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: The Boeing Company

Effective Date: 1 Feb 2002

Estimated Completion or Expiration Date: 30 Sep 2004

U. S. Government Dollars: \$ 9,718,691

Non-Government Dollars: Not Required – Original Award Made On 30 Jun 2000

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The technical objectives are to demonstrate the technical feasibility of a Naval Unmanned Combat Air Vehicle (UCAV-N) system which can effectively and affordably suppress enemy air defense and conduct strike and surveillance missions from ships to sea. The technology areas include combat unmanned aircraft technology, information technology, and command and control technology.

During Phase IC, Boeing will identify the most cost effective way to define, design, fabricate, integrate and test a Navy UCAV Demonstration System (UDS) that shows legacy to the Navy UCAV Operational System (UOS) design. The UOS system will be validated against current missions, with emphasis upon surveillance, as part of the UDS definition effort.

The Phase IIA effort will focus on the systems engineering and integration of the program. This element includes the System Integration and Maturation, CONOPS and Effectiveness, Modeling and Simulation, and UOS Update activities. The contractor shall provide systems and processes to accurately assess the overall technical progress of the program to achievement of desired results.

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 seeks to develop an unmanned combat aircraft specifically for naval applications. It is an offshoot from the main DARPA UCAV program. It utilizes the two competing contractors which emerged from the first phase of the main UCAV effort. As such, the award of an other transaction to Boeing on this program has done little to broaden the 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:

The use of an other transaction on the UCAV-N program has allowed the government to negotiate an unusual ceiling cost, no fee arrangement which provides best value in this particular situation. The other transaction also provides the flexibility and adaptability necessary to accommodate future contractor contributions to the program if circumstances warrant.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-00-9-0006, Modifications P00010 and P00012

Type of Agreement: Other Transaction for Prototype

Title: Naval Unmanned Combat Air Vehicles (UCAV-N), Phases IC and IIA

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Northrop Grumman Corporation

Effective Date: 1 Feb 2002

Estimated Completion or Expiration Date: 30 Sep 2004

U. S. Government Dollars: \$ 12,000,000

Non-Government Dollars: Not Required – Original Award Made On 30 Jun 2000

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The technical objectives are to demonstrate the technical feasibility of a Naval Unmanned Combat Air Vehicle (UCAV-N) system which can effectively and affordably suppress enemy and air defenses and conduct strike and surveillance missions from ships at sea. The technology areas include combat unmanned aircraft technology, information technology, command and control technology.

The primary effort in Phase 1C will be to identify the most cost effective way to design, fabricate, integrate and test a UCAV-N demonstration system, which is carrier compatible and shows legacy to the UCAV-N Operational System (UOS-N) design.

The Phase IIA objectives are to advance technology on the critical path towards developing a UCAV-N operational system and ensure continued UCAV-N risk reduction and technology innovation.

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 other transactions on this program broadened the technology and industrial base by providing access to commercial companies that joined the teams led by traditional defense contractors. The Northrop Grumman team included Aurora Flight Sciences and Athena Technologies. The main reasons these firms could participate was that the other transaction allowed them relief from the normal intellectual property regime and flow-down requirements of Government contracts. The Government was willing to accept less rights in intellectual property in exchange for enhanced programmatic insight.

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 also resulted in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. This flexibility allowed the government to take only limited rights to intellectual property in view of the significant cost share by the performing organization. This incentivized the performer to take on greater risk in developing revolutionary technologies, because it will retain greater rights to those technologies during the competitive phases of the program. Before the end of the competitive phases, the government will acquire all necessary rights from the surviving competitor. It is not cost effective to pay for full rights from all competitors while the competition is ongoing.

Other transactions facilitate better allocation of rights, risks and incentives. This is critical to the effective technical performance of the team. When coupled with the use of frequent performance payable milestones, mutual

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

termination rights, and an absence of mandated FAR and DFARS clauses, the other transaction stimulates optimal balancing risk and operational effectiveness within the performing team. This beneficial effect has been reported by industry on numerous occasions.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-00-9-0015, Modification P00003

Type of Agreement: Other Transaction for Prototype

Title: Orbital Express Advanced Technology Demonstration (ATD) Program, Phase II

Awarding Office: Defense Advanced Research Project Agency (DARPA)

Awardee: The Boeing Company

Effective Date: 8 Mar 2002

Estimated Completion or Expiration Date: 7 Sep 2005

U. S. Government Dollars: \$ 99,144,499

Non-Government Dollars: Not Required – Original Award Made On 29 Sep 2000

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

Phase II of this Program will establish a routine, cost-effective, autonomous capability for re-supply and reconfiguration of on-orbit spacecraft. This capability will (1) increase the useful lifetime of satellites, (2) provide spacecraft with unprecedented freedom of maneuver, allowing satellite coverage to be adjusted or optimized at will, (3) enable spacecraft to employ unpredictable maneuvers to counter possible threats or adversary activity. Routine, autonomous, preplanned upgrades or reconfiguration of spacecraft components will result in substantial reductions in space system acquisition and launch costs by significantly extending satellite on-orbit mission lifetimes and permitting reductions in spacecraft launch volume and mass. The program will develop autonomous guidance navigation and control system and a standard spacecraft servicing interface.

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 current team, led by Boeing, is comprised strictly of major defense suppliers, the use of an other transaction will allow future flexibility to add commercial firms and small businesses to the team as technical needs dictate.

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

The use of another transaction provided sufficient flexibility for the Boeing team to use on the Orbital express effort existing rapid prototyping processes validated on a previous NASA program. These processes provide greater ability to achieve DARPA's technical goals while ensuring cost, schedule and technical control. This results in DARPA having access to new technology more quickly, because more effort can be focused on true engineering activities rather than lengthy, generic military specification processes and paperwork that would have little value on a concept development effort. An equally important effect of doing this is reducing cost of technology while making that technology available much sooner than could be expected under a typical procurement contract.

Since the Orbital Express project involves development of new technologies, system design concepts and architectures, and concepts of operations, there will likely be several changes in the baseline approach as the study progresses and lessons are learned. The DARPA team can be more productive if the team can be rapidly applied to address issues as they develop without regard to questions of in- or out-of-scope contract changes. The government/industry team can work together towards common goals without the distraction of maintaining audit trails on technical performance. Resources applied to solving technical problems, rather than assuring strict contract compliance, will return more benefits to the project in terms of cost, schedule, and technical performance. A related

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

benefit is the reduced requirement for formal reports and reviews which would consume valuable program funding and schedule without a significant increase in visibility into the program's status and progress. Program information will be available in near real time through various electronic media, and frequent information exchanges. All of these process improvements are possible when a tailored other transaction is the award vehicle.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0001, Amendment P00009

Type of Agreement: Other Transaction for Prototype

Title: **Quiet Supersonic Platform (QSP) Systems Studies and Technology Development, Phase II**

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Northrop Grumman Corporation

Effective Date: 11 Mar 2002

Estimated Completion or Expiration Date: 31 Dec 2002

U. S. Government Dollars: \$ 2,699,780

Non-Government Dollars: Not Required – Original Award Made On 30 Oct 2000

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 continue the development and validation of multiple breakthrough technologies for long-range, advanced supersonic aircraft having substantially reduced sonic boom, reduced take off and landing noise and increased efficiency. Advanced airframe technologies will continue to be explored to minimize sonic boom and vehicle drag, including natural laminar flow, aircraft shaping, plasma, heat particle injection, and low weight structures. The technology area is advanced airframes.

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 Phase II of the agreement, the flexibility inherent in an other transaction will continue to foster synergy among Northrop Grumman, its subcontractors, and team members including commercial entities, educational institutions and governmental agencies. Raytheon Aircraft Company, a world-renowned commercial, business jet manufacturer, which is not a traditional defense supplier, continues to be involved in the program. The broader advantage of the other transaction process is the government/industry partnership environment it helps foster, rather than the traditional customer/contractor arms-length adversarial relationship.

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:

Phase II of the agreement will foster and strengthen new relationships and practices that support national security through the requirement for technology infusion from a vast array of sources. The other transaction has enabled Northrop Grumman to search out and establish relationships with many technological firms instead of limiting the market place to traditional DoD-type companies. Through the use of the other transaction the Government can lead the way toward developing the technology and ensuring the resulting products have a future market, thereby reassuring traditionally commercial companies future return on their investment.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0002, Amendment P00008

Type of Agreement: Other Transaction for Prototype

Title: **Quiet Supersonic Platform Studies and Technology Development Phase II**

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Lockheed Martin Aeronautics Company (LMAC)

Effective Date: 25 Mar 2000

Estimated Completion or Expiration Date: 31 Dec 2002

U. S. Government Dollars: \$ 2,427,009

Non-Government Dollars: \$ 1,365,542

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 continue development and validation of a long-range, advanced supersonic aircraft having substantially reduced sonic boom, reduced take off and landing noise and increased efficiency but with a military strike vehicle focus. Advanced airframe technologies will be explored to minimize sonic boom and vehicle drag, including natural laminar flow and balanced field length. The technology area is advanced airframes.

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 Phase II of this agreement, the use of an other transaction agreement continues to allow Lockheed Martin to propose commercial streamlined processes and reporting practices. Lockheed Martin has brought in Arizona State University (ASU) and Intelligent Aerodynamics, both nontraditional defense contractors, to perform significant roles in this effort. ASU will perform extensive research into laminar flow airfoils and will develop laminar flow design criteria for Lockheed Martin's design concept. Intelligent Aerodynamics will perform CFD design optimization and analysis of the QSP vehicle design concept.

Lockheed Martin has increased the amount of company investment in the program from Phase I to Phase II. The DoD benefits through the development of a high-risk technology applicable to their needs; industry benefits by being able to rapidly develop technologies with commercial applications, and protect intellectual property through independent research and development.

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 new relationships and practices that support national security through the requirement for technology infusion from a vast array of sources. The identification assessment, and maturation of Quiet Supersonic Platform-relevant technologies are being conducted with all QSP participants (Government, small businesses, academia, suppliers, etc.). This has promoted relationships with dozens of small technology companies (commercial and non-commercial). The other transaction has enabled Lockheed Martin to search out and establish relationships with many technological firms instead of limiting the market place to traditional DoD-type companies. Often competitive concerns and protection of intellectual property serve as significant impediments to exploring partnerships. The structure of this other transaction encouraged the interchange of ideas by allowing sharing among system integrators. Through the use of the other transaction the Government can lead the way toward developing the technology and ensuring the resulting products have a future market, thereby reassuring traditionally commercial companies future return on their investment.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0005, Modification P00007

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Ground Combat Vehicle (UGCV), Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Carnegie Mellon University

Effective Date: 1 Jul 2002

Estimated Completion or Expiration Date: 31 Dec 2003

U. S. Government Dollars: \$ 5,499,410

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:

During Phase II of this effort, Carnegie Mellon will advance the final design to minimum rollout functionality by December 15, 2002. During the initial build phase all team members will build components and perform subsystem pre-tests at their respective locations. Major components will be integrated in Pittsburgh at Carnegie Mellon. Extending functionality is continued into 2003 while vehicle tests are underway. By June of 2003, the vehicle will be operating up to full design specifications. The technology area is military robotic vehicle 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 other transactions has made it possible for the Department of Defense to gain access to two non-traditional defense contractors which have joined the team headed by Carnegie Mellon University. These two firms are Timoney Technology of Meath, Ireland, and PEI Electronics, Inc., of Huntsville, AL. The flexibility of an other transaction allowed these firms relief from the normal intellectual property regime and flow-down requirements of standard Government contracts. In addition, Timoney Technology reported that it was attracted to participate by the simplified reporting and accounting system requirements that are possible under other transactions. As a result, use of an other transaction broadened the industrial base by facilitating access to global and commercial technology 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:

The use of an other transaction has allowed the team leader to assemble a diverse team whose members vary in size, for-profit status, and amount of defense experience, which is ideally suited to the technical demands of the project. The team leader is the National Robotics Engineering Consortium (NREC), a commercialized entity of Carnegie Mellon. The low overhead cost structure of NREC yields more program hours under the tight budget. The flexible tracking and reporting allowed by other transactions enables NREC to manage the project without expensive tracking systems normally associated with procurement contracts. Additionally, team members forego fee or profit and contribute substantial background technology in return for the more flexible intellectual property arrangements available under the other transaction.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0006, Modification P00006

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Ground Combat Vehicle (UGCV), Phase IB

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Science Applications International Corporation

Effective Date: 12 Oct 2001

Estimated Completion or Expiration Date: 31 Oct 2002

U. S. Government Dollars: \$ 1,500,000

Non-Government Dollars: \$ 89,894

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

During Phase IB of this effort, Science Applications International Corporation (SAIC) will advance its UGCV design developed in Phase I in preparation for vehicle fabrication and testing stages through detailed design activities and risk reduction efforts. SAIC will continue to refine the vehicle design through modeling and analysis, update design and operating constraints, and revise the program risk management plan. The technology area is military robotic vehicle 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 performing organization on this effort is a team, headed by SAIC, which includes a large business with global reach (United Defense LP), three universities (Texas, Georgia Technology, and Stanford) and a nontraditional defense contractor, Precision Magnetic Bearing Systems, Inc. It is unusual to have collaboration on a military prototype program from organizations as diverse and innovative as these. The use of an other transaction fostered this collaboration and helped provide access to these sources, thus broadening the existing 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:

Although the team leader, SAIC, is a traditional defense supplier, the structure of the performing organization is that of a true team. The other transaction award facilitates good communication, rapid surfacing and correction of problems, a spirit of teamwork, and leveraging of team resources.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0009, Modification P00008

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Ground Combat Vehicle (UGCV), Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Lockheed Martin Fire Control Division

Effective Date: 1 Jul 2002

Estimated Completion or Expiration Date: 31 Dec 2003

U. S. Government Dollars: \$ 5,499,982

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 UGCV program is one of several DARPA programs developing key enabling technologies under the DARPA/Army Future Combat Systems (FCS) program. During Phase II of the UGCV effort, Lockheed Martin will advance its UGCV design in preparation for vehicle fabrication and testing stages through detailed design activities and risk reduction efforts. It will also continue to refine the vehicle design through modeling and analysis, update design and operating constraints, and revise the program risk management plan. Prototypes resulting from this program will point toward significant increases in combat utility for FCS by virtue of its increased deployability, endurance, and ability to negotiate off-road terrains compared with manned 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 broadens the technology and industrial base by providing access to primarily non-traditional companies that joined Team Retiarus, led by Lockheed Martin, a traditional defense contractor. The team continues to include such nontraditional defense contractors as Rod Millen Special Vehicles and Universal Instruments Corp. The use of an other transaction fosters an unusual collaboration between several diverse and innovative parties including traditional defense contractors, national laboratories, international firms and small nontraditional companies.

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 Phase II, though the team leader, Lockheed Martin, is a traditional defense supplier, the structure of Team Retiarus continues to be that of a consortium, with the parties participating in decisions. This arrangement facilitates good communication, rapid surfacing and correction of problems, a spirit of teamwork, and leveraging of team resources. Further, the use of an other transaction provides freedom from the standard intellectual property regime and mandatory flowdown clauses that are obstacles to commercial participation and practice.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0010, Modification P00003

Type of Agreement: Other Transaction for Prototype

Title: Unmanned Ground Combat Vehicle (UGCV), Phase IB

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: General Dynamics Robotic Systems

Effective Date: 12 Oct 2001

Estimated Completion or Expiration Date: 30 Aug 2002

U. S. Government Dollars: \$ 1,500,000

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:

During Phase IB of this effort, General Dynamics Robotic Systems (GDRS) will further refine and improve upon the designs and capabilities that it developed and employed during Phase I. The key to the GDRS concept is a variety of new design approaches and technologies that are both unique and cutting edge and offer high payoff in performance. The UGCV program is one of several DARPA programs developing key enabling technologies under the DARPA/Army Future Combat Systems program. The technology area is military robotic vehicle 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 headed by GDRS, includes two nontraditional defense contractors, as well as a small business and two universities. The nontraditional defense contractors are Avalanche Engineering, Inc., an expert in off-road vehicles, and PercepTek, an expert in robotic control technologies. The use of an other transaction provided access to these firms by allowing relief from the normal intellectual property regime and flow-down requirements of standard procurement contracts. This, in turn, 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 nontraditional defense contractors on the team advise that due to the flexible nature of the other transaction, there are rapid turnaround times, a reduction in onerous regulations, and certification requirements and continuation of their commercial operating practices. These flexibilities help to forge new relationships and practices, all of which enhance this military prototype program and national security.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0013, Modification P00002

Type of Agreement: Other Transaction for Prototype

Title: Perception for Off-Road Mobility (PerceptOR), Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: General Dynamics Robotic Systems (GDRS)

Effective Date: 14 Dec 2001

Estimated Completion or Expiration Date: 31 Dec 2002

U. S. Government Dollars: \$ 3,750,000

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:

Phase II of the PerceptOR program will select and integrate promising new perception technologies into the PerceptOR system in order to enhance the ability to navigate in complex and dynamic environments. The PerceptOR program will continue to complement the FCS program by establishing cutting edge vehicle concepts and robotic technology research. The technology area is robotic sensors.

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 other transactions on this program has broadened the technology and industrial base by providing access to primarily commercial companies that joined the teams led by traditional defense contractors. The main reasons these firms could participate was that the other transactions allowed them relief from the normal intellectual property regime and flow-down requirements of Government contracts. On this effort, the team headed by GDRS includes a newly formed commercial company, PercepTek, two universities, and one government laboratory. These diverse sources are participating because of the flexible nature of the other transaction. PercepTek has experienced robotics system personnel, but would find it difficult to compete as a prime at this time. The other transaction allows it to participate as a nontraditional defense contractor on the GDRS team due to the quick turnaround time and reduction in the number of regulations and certifications that it must meet. Further, the other transaction allows PercepTek to operate in a manner similar to the commercial ventures it is presently involved in.

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 allows the diverse members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures. It would have been impossible, for example, for PercepTek to comply with the cost accounting and technical reporting systems normally required of defense suppliers. As a result of the other transaction, however, collaboration and use of commercial practice were fostered.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0015, Modification P00004

Type of Agreement: Other Transaction for Prototype

Title: Perception for Off-Road Mobility (PerceptOR), Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Science Applications International Corporation

Effective Date: 21 Dec 2001

Estimated Completion or Expiration Date: 31 Oct 2002

U. S. Government Dollars: \$ 3,750,000

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 of Phase II is the development of a complete perception subsystem that can be used under a variety of terrain and environmental conditions. SAIC's efforts will involve experimental refinement of the perception algorithms and lessons learned from Phase I. The PeceptOR program will continue to compliment the FCS program by establishing cutting edge vehicle concepts and robotic technology research. The technology area is robotic sensors.

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 other transactions on this program broadened the technology and industrial base by providing access to primarily commercial companies that joined the teams led by traditional defense contractors. The main reasons these firms could participate was that the other transactions allowed them relief from the normal intellectual property regime and flow-down requirements of Government contracts. On this effort, the team headed by SAIC included two primarily commercial companies, Applied Perception, Inc. (API), and Visteon Corporation, the second largest automotive supplier in the world. Although they normally do not do business with DoD, the barriers to participation were removed by the use of an other 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:

Three relationships/practices are advantageous to the Government: First, the contractor is driven, not by the incurrence of cost or the prospect of receiving progress payments, but rather by achieving specific technical milestones that have specific achievement criteria. Second, since either party may terminate the agreement without recourse to elaborate termination procedures, neither party can profit from termination. Real profit derives from success in achieving the agreement's technical objectives. Third, the contractor has the opportunity to examine, at least, employing its commercial management and control systems in support of this effort, rather than continuing to employ separate, Government-directed and approved management and control systems.

The team leader, SAIC, states that commercial companies are painfully aware of the need for trade secrets and protection of their intellectual property rights. Visteon and API were primarily interested in two areas that are fundamental features of the agreement: (1) the opportunity for exclusivity for a designated period of time in order for a commercialization plan to work; and, (2) postponement of assumption of rights for a period to facilitate commercialization. The Government's flexibility was a very attractive feature of the other transaction to both companies.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0016, Modification P00004

Type of Agreement: Other Transaction for Prototype

Title: Perception for Off-Road Mobility (PerceptOR), Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Carnegie Mellon University

Effective Date: 13 Dec 2001

Estimated Completion or Expiration Date: 30 Nov 2002

U. S. Government Dollars: \$ 3,750,000

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 in Phase II is to select among the promising new perception technologies developed by the team and integrate them into the PerceptOR system in a manner that enhances the ability to navigate in complex and dynamic environments. The goal of the PerceptOR program is to develop prototype approaches to improve off-road obstacle detection for robotic systems. The technology area is robotic sensors.

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 on this program broadened the technology and industrial base by providing access to RedZone Robotics, a small robotics company. RedZone will lead the ATV retrofit design and fabrication effort and manage the experimentation activity. The use of an other transaction attracted RedZone to the program by allowing relief from the normal intellectual property regime and flow-down requirements of government contracts. The government was willing to accept less rights in intellectual property in exchange for enhanced programmatic insight into the performance of the contractor.

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 performing team, led by a university, includes three traditional defense contractors (Boeing Company, Sarnoff Corp., and Rockwell Science Center), as well as RedZone Robotics, a small commercial firm. The use of an other transaction allows the diverse members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures. It would have been impossible, for example, for RedZone to support the full cost accounting and technical reporting system normally required of defense suppliers. However, the flexibility of the other transaction fostered this technical collaboration of diverse sources.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0017, Modification P00007

Type of Agreement: Other Transaction for Prototype

Title: Organic Air Vehicle, Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Micro Craft, Inc.

Effective Date: 28 Mar 2002

Estimated Completion or Expiration Date: 19 May 2005

U. S. Government Dollars: \$ 15,000,000

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:

In Phase II, Micro Craft will utilize the technologies developed under the Organic Air Vehicle (OAV) Phase I program and will develop a micro air vehicle (MAV) that can be carried by a single infantry soldier as part of backpackable field equipment. A small, lightweight, hand held ground station will also be developed as part of this effort. The technology area is vertical take off and landing unmanned air vehicles.

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 other transactions under the OAV program broadened the technology and industrial base by providing access to primarily commercial companies that joined the teams led by traditional defense contractors. A primary reason these firms decided to participate was that the other transactions allowed them relief from the normal intellectual property regime and flow-down requirements of Government contracts. The Government was willing to accept less rights in intellectual property in exchange for enhanced programmatic insight into the activities of the Micro Craft team. Furthermore, Micro Craft states that an other transaction allows for the broader use of technology-level companies that provide a more competitive level of product capability. This will broaden the base of technology suppliers. On this effort, the team includes Altrydune, a commercial firm that is not a traditional defense supplier.

Extent to which the 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 allows the diverse mix of performers on the team, including large defense suppliers, small businesses, and a commercial firm, to collaborate in an effort to achieve maximum technical accomplishment for the funding available. Team members utilize their existing practices, rather than being forced to adhere to standardized defense requirements for cost accounting, reporting and oversight. As a result, better collaborative relationships and practices are being fostered.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0018, Modification P00004

Type of Agreement: Other Transaction for Prototype

Title: Organic Air Vehicle, Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Honeywell International

Effective Date: 2 Apr 2002

Estimated Completion or Expiration Date: 20 Mar 2004

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

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 Phase II of the OAV program is to develop detailed designs of three OAV system sizes. Prototype systems will be developed, fabricated, integrated and qualified for conducting demonstrations such as flying in adverse weather and autonomous flight including autonomous takeoff and landings. The primary objective the OAV design will fulfill is the "fine" (or close in) reconnaissance capability for the Future Combat Systems (FCS). The technology area is vertical takeoff and landing unmanned air vehicles.

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 team, led by Honeywell International, includes several small commercial companies such as MLB Company, D-Star Engineering, and Techsburg, which are contributing needed expertise, but would have been prevented from bidding or teaming under normal DoD procurement regulations because they have never held a DoD cost reimbursement contract. The use of an other transaction provided relief from accounting standards, expensive reporting requirements, and program office oversight which allowed these firms to participate, thus broadening the technology base. Honeywell estimates that the cost to carry such activities under normal procurement regulations can increase the bid price by 50 to 75 percent.

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 allows the diverse mix of performers on the team, including large businesses, small businesses and a government research center (NASA Ames), to collaborate in an effort intended to produce maximum technical achievement for minimal cost. The existing commercial practices of the small firms are accepted by the team, rather than adherence to standardized procurement requirements for cost accounting, reporting, and oversight. As a result, new relationships and practices are being fostered.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0021, P00001

Type of Agreement: Other Transaction for Prototype

Title: Conceptual Studies of a Multi-Use Quiet Supersonic Platform

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Gulfstream Aerospace Corporation

Effective Date: 13 Jul 2001

Estimated Completion or Expiration Date: 31 Dec 2002

U. S. Government Dollars: \$ 437,923

Non-Government Dollars: \$ 14,229

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 perform a series of design studies of multi-use Quiet Supersonic Aircraft (QSA) to quickly and efficiently develop and evaluate overall system and program feasibility. The design studies will include QSA configurations and a technology flight demonstration vehicle. The purpose of the additional work is to create a conceptual design study of a high stiffness flutter resistant structure for the multi-use, Quiet Supersonic Aircraft. The technology area is aeronautical 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 agreement has allowed the participation of a non-traditional defense contractor, Gulfstream Aerospace Corporation (Gulfstream). Gulfstream is performing all of the work under this effort. The use of an other transaction has facilitated Gulfstream's participation as Gulfstream was unwilling to accept the audit or cost accounting standards provisions required 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 use of an other transaction has established a new relationship between the government and industry to the extent that the government was never able to gain access to the technology being developed by Gulfstream. Now that the government has the access, the parties can work together in the development of a QSA that will serve the needs of the military and support our national security in a more efficient manner.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0022, Modifications P00002 and P00005

Type of Agreement: Other Transaction for Prototype

Title: FCS Communications Integration and Demonstration (FCS Comms), Options I and II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Raytheon Company

Effective Date: 31 Dec 2001

Estimated Completion or Expiration Date: 31 Oct 2002

U. S. Government Dollars: \$ 18,690,966

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 for Options I and II of the FCS Communications Program are to progressively integrate and demonstrate state-of-the-art advancements in communications technology necessary to support notional FCS operational concepts. Providing the data rates, range, LPD, and robustness to jamming necessary to meet FCS operational needs will require significant advancements in low-band and high-band components (transmitters, receivers, etc.), directional antenna technology which can be made suitable for FCS platforms, and mobile ad hoc networking techniques utilizing directional antennas. The FCS Communications Program is one of several DARPA programs developing key-enabling technologies to support the DARPA/Army FCS program.

Extent to which the 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 on this program broadened the technology and industrial base by providing access to primarily non-traditional companies that joined the teams led by traditional defense contractors. The main reasons these firms could participate was that the other transactions allowed them relief from the normal intellectual property regime and flow-down requirements of Government contracts. The Government was willing to accept less rights in intellectual property in exchange for enhanced programmatic insight into the effort. The Raytheon team includes three commercial firms, Agile Communications, NuWave, and Protean, plus a variety of other businesses and universities.

Extent to which the 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 will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: MDA972-01-9-0023, Modifications P00002 and P00005

Type of Agreement: Other Transaction for Prototype

Title: FCS Communications Integration and Demonstration (FCS Comms), Options I and II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: TRW Inc.

Effective Date: 10 Dec 2001

Estimated Completion or Expiration Date: 31 Oct 2002

U. S. Government Dollars: \$ 19,082,966

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 provide the enabling technology, and system integration and demonstration for a communications system capable of achieving a significant increase in communications capability. TRW will design, develop, integrate and test of the FCS-C SI&D Demo 2 system. The FCS communications program is one of several DARPA programs developing key enabling technologies to support the DARPA/Army FCS 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 other transactions on this program broadened the technology and industrial base by providing access to primarily non-traditional companies that joined the teams led by traditional defense contractors. The main reason these firms participated was that the other transaction allowed them relief from the normal intellectual property regime and flow-down requirements of Government contracts. The Government is willing to accept less rights in intellectual property in exchange for enhanced programmatic insight into the effort. The TRW team includes a commercial firm, Agile Communications, as well as a variety of other businesses and a university.

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 will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: F33615-98-9-2880, Modification P00025

Type of Agreement: Other Transaction for Prototype

Title: Affordable Rapid Response Missile Demonstrator (ARRMD), Hypersonic Flight (HyFly), Phase II

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: The Boeing Company

Effective Date: 01 Jul 2002

Estimated Completion or Expiration Date: 01 May 2006

U. S. Government Dollars: \$ 112,214,000

Non-Government Dollars: \$ 4,962,000

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 DARPA/ONR HyFly program is to demonstrate the hypersonic propulsion and vehicle characteristics of a solid motor boosted hypersonic long-range cruise missile, which, when fully developed will have capabilities of rapid response and penetration of deeply buried targets. The first flight of the dual combustion ramjet (DCR)-powered HyFly vehicle is scheduled for November 2004.

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 Boeing team includes two nontraditional defense contractors, Vela and PanAero, which would otherwise have not been interested in this program but for the flexibility offered by an other transaction. As this program continues, involvement by nontraditional defense contractors will increase synergy and result in a successful next-generation program for 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 use of an other transaction will result in a more flexible, tailored allocation of intellectual property rights than is possible under a procurement contract. It will also allow the members of this team to utilize their normal operating practices, whether commercial or government oriented, without being forced into standardized government systems and procedures, especially for accounting, reporting, and making changes. This flexibility contributes to innovative pursuit of technical accomplishment, free of rigid requirements which are not appropriate for this collaboration.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: HQ0006-02-9-0002

Type of Agreement: Other Transaction for Prototype

Title: Missile Defense National Team Battle Management, Command and Control, and Communications

Awarding Office: Missile Defense Agency (MDA)

Awardee: Lockheed Martin Mission Systems, as the lead for Missile Defense National Team Battle Management, Command & Control, and Communications – Industry (MDNTB(I))

Effective Date: 15 Feb 2002

Estimated Completion or Expiration Date: 31 Dec 2003

U. S. Government Dollars: \$131,719,835

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 for this effort is to transform the Missile Defense Program into a single integrated and layered Ballistic Missile Defense System (BMDS) that no longer differentiates between theater and national missile defense. This BMD System will provide initial capabilities and enhance these capabilities over time (block upgrades) by developing and testing defenses that employ complementary sensors, weapons, and communications/decision support systems to engage threats in the boost, mid-course, and terminal phases of flight. The BMDS capability will increase over time through an evolutionary process as technologies mature and are proven through testing. The Missile Defense National Team Battle Management, Command and Control, and Communications (MDNTB) Industry (I) Team has the following technical objectives: Define the battle management, command and control, and communications (BMC² & C) composite element capabilities and the evolutionary plan for achieving those capabilities, design, build, integrate, and demonstrate a supportable prototype System Level BMC² & C capability that will possess military utility and operational usefulness and that could be deployed in a pre-operational environment, define the components and attributes of the necessary acquisition package for transitioning the BMC² & C to full-scale development and deployment. The MDNTB(I) shall accomplish the above in alignment with the National Team responsible for establishing the overall System Engineering and Integration approach for BMDS, the MDNTS(I). Continued development of block capabilities will be accomplished through modifications to this agreement.

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:

It is the objective of the Other Transaction Agreement (OTA) to create a collaborative environment with open interaction across the entire Government and Industry Team. MDNT members (Government, Federally Funded Research and Development Centers (FFRDC), University-Affiliated Research Centers (UARC), System Engineering and Technical Assistance (SETA) support providers and Industry) will be trusted advisors, providing an honest broker approach in an effort to broaden the technology base and share key capabilities, process methodologies, tools and proprietary knowledge associated with the Missile Defense program. The proprietary data will be shared freely inside a firewall that is designed to maintain a high performance, product oriented focus during the development of an integrated BMDS. The six traditional defense industry contractors supporting the Missile Defense National Team (Boeing, TRW, Lockheed Martin, Raytheon, Northrop Grumman, and General Dynamics) will provide the best and most experienced people in the area of BMC² & C to accomplish the objective with the anticipated benefit to the Government being a unique defense capability not currently available.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

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 this OTA was based on the determination of the MDA Senior Procurement Executive that exceptional circumstances justify the use of an OTA in order to establish innovative business arrangements and structures that would not be feasible or appropriate under a procurement contract.

MDA requires the best and most experienced people from industry, the Government, FFRDCs, and SETAs to solve technical problems in an open, seamless, fully integrated and collaborative team environment. The degree of collaboration and openness needed from these partners is unprecedented and must go far beyond the coordination and knowledge sharing traditionally seen in government-to-contractor and contractor-to-contractor business relationships. An OTA will provide for this type of environment more efficiently and effectively than the use of a procurement contract because an OTA permits the use of tailored provisions that are not found in the standard Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) clauses of a contract vehicle. Further, since FAR/DFARS clause waivers will not need to be sought for these tailored provisions, acquisition cycle time will be reduced.

Under a traditional contract, the Government does not have the ability to select subcontractors, approve or disapprove subcontracts (although the FAR does give the contracting officer limited authority to provide or withhold "consent" to subcontract proposed by prime contractors in certain circumstances) and has limited visibility into the contractual arrangement between the prime contractor and its subcontractors.

Use of the OTA gives the Government the ability to select members of the entire industry team, promotes collaboration among the team members through required flow-down of selected MDA tailored provisions, enhances performance by using mechanisms that reward team partners on an equal footing with the team leads, and gives the Government the ability to review and approve prime/subcontractor (i.e., supplemental agreement) contractual arrangements. The degree to which the Government will communicate and work directly with industry team members and promote direct dialogue among these industry team members, and also between the team members and the FFRDCs, UARCs and SETAs, would not be appropriate under a procurement contract. The benefits associated with this dialogue are expected to be much more rapid and streamlined technological development and smoother business transactions, and the fostering of a culture that may lead to continued collaboration and the development of better technology by these entities in the future, all of which will promote defense objectives

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: HQ0006-02-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Missile Defense National Team Systems Engineering and Integration

Awarding Office: Missile Defense Agency (MDA)

Awardee: The Boeing Company

Effective Date: 15 Feb 2002

Estimated Completion or Expiration Date: 31 Dec 2003

U. S. Government Dollars: \$148,993,563

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 for this effort is to design a system to support the transformation of the Missile Defense Program into a single integrated and layered Ballistic Missile Defense System (BMDS) that no longer differentiates between theater and national missile defense. This System will provide initial capabilities and enhance these capabilities over time (block upgrades) by developing and testing defenses that employ complementary sensors, weapons, and communications/decision support systems to engage threats in the boost, mid-course, and terminal phases of flight. BMDS capability will increase over time through an evolutionary process as technologies mature and are proven through testing. The Missile Defense National Team System Engineering and Integration (MDNTS) Industry (I) Team has the following technical objectives: Assess and provide alternatives for interfaces within the BMDS and BMDS element operational capabilities; conduct architecture evolution design and analysis; identify system assessment metrics; define candidate BMDS Blocks and evolve the BMDS using the spiral block evolution process; define the technical baseline by defining the BMDS-level requirements of the System Capability Specification; develop and validate a virtual system-level model of the BMDS which will be used to evaluate the technical feasibility of the BMDS concept; develop block-level System test objectives and a comprehensive BMDS Integration Strategy; provide an end-to-end risk assessment that addresses both system and element technical, developmental and integration risks; and assess advanced concepts, technologies and risk reduction experiments to refine the block definition. Continued development of block capabilities of the BMDS will be accomplished through modifications to this agreement.

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:

It is the objective of the Other Transaction Agreement (OTA) that, at a minimum, the six traditional defense contractors supporting the Missile Defense National Team System Engineering and Integration effort, Boeing, TRW, Lockheed Martin, Raytheon, Northrop Grumman, and General Dynamics, which are referred to as the MDNTS(I), will provide the best and most experienced people in the area of system engineering and integration and that they will have the ability to bring into the firewall specifically developed for this program the knowledge, processes and proprietary technology necessary in conjunction with the Federally Funded Research and Development Centers (FFRDC), System Engineering and Technical Assistance (SETA) support providers and Government to develop an integrated Ballistic Missile Defense System. The anticipated benefit is that the Government will obtain a unique defense capability 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:

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

The use of this OTA was based on the determination of the MDA Senior Procurement Executive that exceptional circumstances justify the use of an OTA in order to establish innovative business arrangements and structures that would not be feasible or appropriate under a procurement contract.

The SE&I work performed under this effort will guide the development and integration of elements comprising a single, integrated, layered Ballistic Missile Defense System. The specifications and virtual prototypes developed will be the basis for a defense unique Ballistic Missile Defense System. While certain technical expertise and talent are available across the Government network of program offices and in parts of industry, it would be exceedingly risky, costly and not in the nation's best interest to rely on one specific entity to solve the complex engineering challenge of creating an evolving layered ballistic missile defense system. This is a unique approach in that the main management objective is to draw the best and most experienced people from industry, the Government, FFRDCs, and SETAs to solve technical problems, and working with them to determine the most cost effective and efficient ways to ultimately field a layered BMDS. The MDNTS(I) will not only have to work amongst themselves, it will also need to work closely with the Missile Defense National Team Battle Management, Command & Control and Communications to ensure that seamless integration is engineered into the BMDS. The contractors will be required to work in an unprecedented collaborative environment. The openness required of the personnel in the MDNT and the need to be able to reach out to industry and certain parts of Government, FFRDCs and SETAs can more efficiently and effectively be accomplished through the use of tailored provisions under an other transaction. Since FAR/DFARS waivers will not have to be sought, contracting cycle time can be reduced further. The benefits associated with this dialogue are expected to be much more rapid and streamlined technological development and smoother business transactions, and the fostering of a culture that may lead to continued collaboration and the development of better technology by these entities in the future, all of which will promote defense objectives.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: F33615-02-9-5324

Type of Agreement: Other Transaction for Prototype

Title: The Accelerated Radiation Hardened Microelectronics Capital Expansion (CAPEX) Project

Awarding Office: U.S. Air Force, Air Force Research Laboratory, Materials and Manufacturing Technology Directorate, Title III Program Office

Awardee: BAE Systems Information and Electronic Systems Integration, Inc

Effective Date: 31 May 2002

Estimated Completion or Expiration Date: 31 May 2003

U. S. Government Dollars: \$ 19,110,203

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 Capital Expansion (CAPEX) Project provides capitalization funds for radiation hardened (rad hard) microelectronics production facilities. This acquisition seeks to establish a domestic prototype manufacturing capability to produce 0.25 micron (and ultimately 0.15 micron) rad hard electronic devices under the authority of Title III of the Defense Production Act (DPA) (50 U.S.C. App. 2061 et seq.)

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 resulted in nontraditional defense suppliers participating who would not have otherwise participated in the project. Use of the OT has enabled the government to benefit from this participation to the extent that these nontraditional defense suppliers are providing technology and equipment, at a cost savings, otherwise unavailable to the industrial base through a FAR contract. The amount of this participation is estimated to be 70% of the program value. Specific nontraditional benefits are:

- 1) Applied Materials is a commercial supplier of semiconductor wafer processing tools with a primary customer base consisting of semiconductor manufacturers. Applied Materials' tools are based on core offerings that are customized to meet specific customer's requirements. Applied Materials does not have catalogue prices for the equipment or for the technical support required for the foundry modernization and would be unwilling to provide cost and pricing data to establish fair and reasonable prices. This would be onerous for the commercial supplier and would result in either 1) their unwillingness to provide the tooling or 2) in increased cost, and/or 3) significantly longer delivery schedules. Any of those three outcomes would be extremely detrimental and unacceptable to the CAPEX manufacturing process prototype program.
- 2) Leica is another example of a supplier of semiconductor processing tools to commercial industry who would not have participated for the same reasons as detailed for Applied 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:

The overall objective of this project is to acquire, install and qualify processing equipment required to establish a prototype manufacturing capability. The OT recognizes that the BAE Systems anticipates making substantial economic contributions to the Project with the expectation/potential of receiving substantial compensating benefits. The compensating benefits may include, but are not limited to, rent-free use of government property on a non-interference basis and potential transfer of title of the government property to the Awardee upon successful

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

completion of the Project. In order for the title to transfer, BAE must demonstrate commitment, performance and economic viability on the project. The OT allows BAE SYSTEMS to capture financial contributions to the Project through non-traditional means that would otherwise not be available under FAR.

The OT has created a shared focus between the government and BAE Systems on the technology, marketing and business plan for the radiation hardened foundry industry. This joint focus aims to ensure that the technology required to meet future national security missions is available domestically, while detailing the economic environment required to sustain such a capability.

The OT enabled BAE SYSTEMS to utilize best commercial practices when identifying and selecting tool vendors. It allows BAE SYSTEMS to select from all tooling providers, not just those able to meet CAS standards or those with all necessary products listed with catalogue prices. Additionally, it provides the flexibility for BAE Systems to implement subcontract relationships in a streamlined method and it enables the inclusion of technical support agreements with the tooling providers to ensure that the products are installed and integrated into the manufacturing flow as efficiently as possible.

Other benefits to the DOD through use of this agreement:

The primary benefits to the DoD gained by using this agreement have been described in the response to Questions 1 and 2.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: F33615-02-9-5325

Type of Agreement: Other Transaction for Prototype

Title: The Accelerated Radiation Hardened Microelectronics Capital Expansion (CAPEX) Project

Awarding Office: U.S. Air Force, Air Force Research Laboratory, Materials and Manufacturing Technology Directorate, Title III Program Office

Awardee: Honeywell International Inc., Space Systems Plymouth, Plymouth, MN

Effective Date: 30 Jun 2002

Estimated Completion or Expiration Date: 30 Jun 2003

U. S. Government Dollars: \$ 30,042,264

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 Capital Expansion (CAPEX) Project provides capitalization funds for radiation hardened (rad hard) microelectronics production facilities. This acquisition seeks to establish a domestic prototype manufacturing capability to produce 0.25 micron (and ultimately 0.15 micron) rad hard electronic devices under the authority of Title III of the Defense Production Act (DPA) (50 U.S.C. App. 2061 et seq.)

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 equipment to manufacture the technology associated with the CAPEX project are driven almost exclusively by commercial markets. The CAPEX project is based on much of the same manufacturing technology that is used in the commercial industry. The use of an Other Transaction Agreement resulted in nontraditional defense suppliers participating who would not have otherwise participated in the project. These nontraditional defense contractors use commercial business practices rather than traditional DoD procurement practices and these companies are solely driven by the needs of the commercial market. They do not generally have the capability to accept FAR requirements such as examination, audit, and access to records. These are not requirements of their commercial business and it is not economically viable for them to establish this type of support for the relatively small portion of their business that is related to the DoD. OTA has enabled the government to benefit from this participation to the extent that these nontraditional defense suppliers are providing technology and equipment otherwise unavailable to the industrial base through a FAR contract.

The primary nontraditional defense contractors involved in this CAPEX effort are KLA-Tencor and ASML. KLA-Tencor is the leading manufacturer of semiconductor processing inspection equipment and ASML is a leading suppliers of photolithography equipment. Both of these companies play leading roles in their segments of the semiconductor equipment market and their equipment is used in many of the current commercial semiconductor foundries. Their capabilities are critical to the success of this CAPEX project and are not available from traditional defense contractors.

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 overall objective of this project is to acquire, install and qualify processing equipment required to establish a prototype manufacturing capability. The OT recognizes that Honeywell anticipates making substantial economic contributions to the Project with the expectation/potential of receiving substantial compensating benefits. The compensating benefits may include, but are not limited to, rent-free use of government property on a non-interference

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

basis and potential transfer of title of the government property to the Awardee upon successful completion of the Project. In order for the title to transfer, Honeywell must demonstrate commitment, performance and economic viability on the project. The OT allows Honeywell to capture financial contributions to the Project through non-traditional means that would otherwise not be available under FAR.

The OT has created a shared focus between the government and Honeywell on the technology, marketing and business plan for the radiation hardened foundry industry. This joint focus aims to ensure that the technology required to meet future national security missions is available domestically, while detailing the economic environment required to sustain such a capability.

The OT enabled Honeywell to utilize best commercial practices when identifying and selecting tool vendors. It allows Honeywell to select from all tooling providers, not just those able to meet CAS standards or those with all necessary products listed with catalogue prices. Additionally, it provides the flexibility for Honeywell to implement partnering/subcontract relationships in a streamlined method and it enables the inclusion of technical support agreements with the tooling providers to ensure that the products are installed and integrated into the manufacturing flow as efficiently as possible. The type of relationship between Honeywell and the nontraditional defense contractors includes supplying equipment, and also providing services for installation, equipment acceptance, and qualification. The nontraditional defense contractors have unique knowledge and expertise for establishing the respective capabilities and unit process technologies for the various steps in the wafer fabrication process. Their provided expertise includes installation and technology transfer, optimizing the performance of the equipment to meet acceptance and qualification specs, and training for the operators.

Other benefits to the DOD through use of this agreement:

The primary benefits to the DoD gained by using this agreement have been described in the response to Questions 1 and 2.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N68335-02-9-3217

Type of Agreement: Other Transaction for Prototype

Title: Synthetic Instrumentation for DOD ATS (SIDA). This effort in support of the Commercial Operations and Support Savings Initiative (COSSI) is to develop, test, demonstrate, produce, and deliver three Synthetic Instrument (SI) prototype kits for insertion into fielded Automated Test Equipment (ATE) Systems.

Awarding Office: Naval Air Warfare Center Aircraft Division, Lakehurst

Awardee: McDonnell Douglas Corporation A Wholly Owned Subsidiary of the Boeing Company

Effective Date: 15 May 2002

Estimated Completion or Expiration Date: 15 Feb 2005

U. S. Government Dollars: \$ 4,462,182

Non-Government Dollars: \$ 500,000*

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 introduce commercial-off-the-shelf (COTS) technology, into existing fielded systems, which will provide operation and support cost benefits as well as functional test enhancements for legacy ATE 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 agreement has allowed both the Government and McDonnell Douglas Corporation (MDC) to consider using the technology that now exists with several non-traditional defense contractors, for insertion into existing fielded Automated Test Systems, without degrading the systems. The use of the technology made available from these non-traditional defense contractors should reduce obsolescence, reduce operation and support costs, extend the life of the legacy systems, and enhance performance.*

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 agreement allows the Government and the contractor to act as an IPT in identifying the non-traditional contractors who will participate. Because of the use of an other transaction the U.S. Navy, the U.S. Marine Corps, and the U.S. Army will be able to work as a team with MDC and have continuous involvement with MDC throughout the process. Representatives from the Army, the Marines and the Navy will participate in the evaluation of proposed non-traditional subcontractors and have input to their selection. Selections are scheduled to be completed by June 2003. The DoD will have access to research results and certain rights in data and patents. In lieu of being bound together by contractual restraints, the Government and MDC are bound to each other by a duty of good faith and best research efforts in achieving the goals of the program.

Other benefits to the DOD through use of this agreement:

Because of the use of this other transaction, DoD will experience an immediate cost savings due to the Phase II COSSI procedures for acquiring production kits. The procurement cycle will be greatly simplified and the kits immediately inserted into the field. Not only will the DoD experience dramatic cost savings results, these results will be realized in a very short period of time. The estimated overall savings to DoD is \$111 million.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00024-01-9-4021

Type of Agreement: Other Transaction for Prototype

Title: Integrated Fight-Through Power Phase 2

Awarding Office: Naval Sea Systems Command (NAVSEA), SEA 02425

Awardee: General Atomics, Inc.

Effective Date: 19 Dec 2000

Estimated Completion or Expiration Date: 19 Dec 2001

U. S. Government Dollars: \$4,095,498

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 IPS program explores alternatives to the present ship system architectures, which provide separate propulsion and ship service power. IPS ships are electric drive, with the production of electric power for ship propulsion and ship service requirements from common prime movers.

The goal of the Integrated Fight Through Power (IFTP) system is to reliably convert and distribute electric power to loads at the appropriate quality level as efficiently as possible. This function is achieved by using direct current electrical distribution within a zonal architecture where ship service loads are divided into separate electrical zones. Each electrical zone contains appropriate power conversion and distribution to support system level requirements (including zonal fight through) and to meet the power interface requirements of the consumers. Nominal configuration is with two separate converters, one connected to the port bus and the other to the starboard bus. This arrangement leaves one converter for redundancy. Port and starboard busses are not usually connected together to prevent a fault on one bus from propagating to the other bus. The system supports sharing of zonal load between busses for maximizing system efficiency. The system is modular and each power conversion module contains a module controller that supports autonomous system operation.

To bring this configuration to a point where hardware can be demonstrated, a three-phased approach will be employed. The Phase 1 effort required the preliminary design of system modules and the refinement of the module interface specifications to ensure interoperability and commercial application. Phase 2 (the instant effort) entails the detailed design and risk reduction for the prototype hardware builds. Phase 3 will involve the construction of prototypes based on the preceding designs for both land based (3A) and at-sea (3B) demonstration.

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 IPS development approach was designed to leverage and adapt commercial items and commercial technologies wherever possible, identify unique Navy requirements and conduct research and development in these areas, investigate the feasibility and cost effectiveness of multiple platform applications, establish baseline architectures as appropriate, and establish and maintain appropriate test facilities. Early and sustained interaction between Government and industry in the development of the IPS power conversion modules was envisioned to maximize cost savings and reduce the time required to develop the designs and fabricate the prototype hardware and is, therefore, a critical part of the proposed acquisition strategy, making use of "other transactions" authority suitable. Use of standard contract procedures was rejected because it will result in the administrative burden and cost of conventional contract oversight, limitation caused by conventional progress payment mechanisms, the possibility

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

that new industry involvement would be discouraged, and delays in development of the design inherent in the use of traditional acquisition methods.

The use of the other transaction agreement significantly reduced the complexity of the contracting instrument. This shortened the process for developing contract clauses and reduced the burden those clauses would place on the contractor in order to lure new players and new products to the development. The reduced contractual requirements allowed vendors to identify non-military technologies that would improve the overall performance of the IPS modules and make them more contemporary with the state of the art in power equipment. The reduced or eliminated set of flow-down requirements allowed the use of non-traditional subcontractors. Of particular interest is the use of a commercially based transformer manufacture that would not have ordinarily met many of the requirements the FAR would have placed on the 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:

This has been a continuation of the effort in the previous phase that involved a strong interaction among all of the IFTP participants. IFTP requirements have been developed jointly by the Navy and by the vendors participating in the agreements, starting with the six original vendors and proceeding through the current roll of three vendors after competitive down-select. It was envisioned that a traditional FAR contract would have imposed rules that would have impeded the level of communication necessary to set industry standards for the type of power conversion equipment developed.

Other benefits to the DOD through use of this agreement:

With the removal of the FAR accounting and reporting requirements, the Navy was able to reduce costs by allowing commercially based equivalents. This also reduced the turn-around time on agreement modifications and cost proposals.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00024-01-9-4020

Type of Agreement: Other Transaction for Prototype

Title: Integrated Fight-Through Power Phase 2

Awarding Office: Naval Sea Systems Command (NAVSEA), SEA 02425

Awardee: L-3 Communications, Power Systems Group

Effective Date: 19 Dec 2000

Estimated Completion or Expiration Date: 19 Dec 2001

U. S. Government Dollars: \$2,609,266

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 IPS program explores alternatives to the present ship system architectures, which provide separate propulsion and ship service power. IPS ships are electric drive, with the production of electric power for ship propulsion and ship service requirements from common prime movers.

The goal of the Integrated Fight Through Power (IFTP) system is to reliably convert and distribute electric power to loads at the appropriate quality level as efficiently as possible. This function is achieved by using direct current electrical distribution within a zonal architecture where ship service loads are divided into separate electrical zones. Each electrical zone contains appropriate power conversion and distribution to support system level requirements (including zonal fight through) and to meet the power interface requirements of the consumers. Nominal configuration is with two separate converters, one connected to the port bus and the other to the starboard bus. This arrangement leaves one converter for redundancy. Port and starboard busses are not usually connected together to prevent a fault on one bus from propagating to the other bus. The system supports sharing of zonal load between busses for maximizing system efficiency. The system is modular and each power conversion module contains a module controller that supports autonomous system operation.

To bring this configuration to a point where hardware can be demonstrated, a three-phased approach has been employed. The Phase 1 effort required the preliminary design of system modules and the refinement of the module interface specifications to ensure interoperability and commercial application. Phase 2 entails the detailed design and risk reduction for the prototype hardware builds. Phase 3 will involve the construction of prototypes based on the preceding designs for both land based (3A) and at-sea (3B) demonstration.

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 IPS development approach was designed to leverage and adapt commercial items and commercial technologies wherever possible, identify unique Navy requirements and conduct research and development in these areas, investigate the feasibility and cost effectiveness of multiple platform applications, establish baseline architectures as appropriate, and establish and maintain appropriate test facilities. Early and sustained interaction between Government and industry in the development of the IPS power conversion modules was envisioned to maximize cost savings and reduce the time required to develop the designs and fabricate the prototype hardware and is, therefore, a critical part of the proposed acquisition strategy, making use of "other transactions" authority suitable. Use of standard contract procedures was rejected because it would have resulted in administrative burden and cost of conventional contract oversight, limitations caused by conventional progress payment mechanisms, the possibility

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

that new industry involvement would be discouraged, and delays in development of the design inherent in the use of traditional acquisition methods.

The use of the other transaction agreement significantly reduced the complexity of the contracting instrument. This shortened the process for developing contract clauses and reduced the burden those clauses would place on the contractor in order to lure new players and new products to the development. The reduced contractual requirements allowed vendors to identify non-military technologies that would improve the overall performance of the IPS modules and make them more contemporary with the state of the art in power equipment. The reduced or eliminated set of flow-down requirements allowed the use of non-traditional subcontractors. Of particular interest is the use of a commercially based main power converter step. The unit was developed commercially and the interest in participating with the Government in using the drive step was enhanced by the reduction in contractual requirements the FAR may have otherwise imposed. This allowed the prime contractor to consider alternate sources that would have not been feasible otherwise.

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 has been a continuation of the efforts in the previous phase that involved a strong interaction among all of the IFTP participants. IFTP requirements have been developed jointly by the Navy and by the vendors participating in the agreements, starting with the six original vendors and proceeding through the current roll of three vendors after competitive down-select. It was envisioned that a traditional FAR contract would have imposed rules that would have impeded the level of communication necessary to set industry standards for the type of power conversion equipment developed.

Other benefits to the DOD through use of this agreement:

With the removal of the FAR accounting and reporting requirements, the Navy was able to reduce costs by allowing commercially based equivalents. This also reduced the turn-around time on agreement modifications and cost proposals.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: N00024-01-9-4022

Type of Agreement: Other Transaction for Prototype

Title: Integrated Fight-Through Power Phase 2

Awarding Office: Naval Sea Systems Command (NAVSEA), SEA 02425

Awardee: Eaton Corp.

Effective Date: 19 Dec 2000

Estimated Completion or Expiration Date: 19 Dec 2001

U. S. Government Dollars: \$4,186,000

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 IPS program explores alternatives to the present ship system architectures, which provide separate propulsion and ship service power. IPS ships are electric drive, with the production of electric power for ship propulsion and ship service requirements from common prime movers.

The goal of the Integrated Fight Through Power (IFTP) system is to reliably convert and distribute electric power to loads at the appropriate quality level as efficiently as possible. This function is achieved by using direct current electrical distribution within a zonal architecture where ship service loads are divided into separate electrical zones. Each electrical zone contains appropriate power conversion and distribution to support system level requirements (including zonal fight through) and to meet the power interface requirements of the consumers. Nominal configuration is with two separate converters, one connected to the port bus and the other to the starboard bus. This arrangement leaves one converter for redundancy. Port and starboard busses are not usually connected together to prevent a fault on one bus from propagating to the other bus. The system supports sharing of zonal load between busses for maximizing system efficiency. The system is modular and each power conversion module contains a module controller that supports autonomous system operation.

To bring this configuration to a point where hardware can be demonstrated, a three-phased approach has been employed. The Phase 1 effort required the preliminary design of system modules and the refinement of the module interface specifications to ensure interoperability and commercial application. Phase 2 entails the detailed design and risk reduction for the prototype hardware builds. Phase 3 will involve the construction of prototypes based on the preceding designs for both land based (3A) and at-sea (3B) demonstration.

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 IPS development approach was designed to leverage and adapt commercial items and commercial technologies wherever possible, identify unique Navy requirements and conduct research and development in these areas, investigate the feasibility and cost effectiveness of multiple platform applications, establish baseline architectures as appropriate, and establish and maintain appropriate test facilities. Early and sustained interaction between Government and industry in the development of the IPS power conversion modules was envisioned to maximize cost savings and reduce the time required to develop the designs and fabricate the prototype hardware and is, therefore, a critical part of the proposed acquisition strategy, making use of "other transactions" authority suitable. Use of standard contract procedures was rejected because it would have resulted in administrative burden and cost of conventional contract oversight, limitations caused by conventional progress payment mechanisms, the possibility

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

that new industry involvement would be discouraged, and delays in development of the design inherent in the use of traditional acquisition methods.

The use of the other transaction agreement significantly reduced the complexity of the contracting instrument. This shortened the process for developing contract clauses and reduced the burden those clauses would place on the contractor in order to lure new players and new products to the development. The reduced contractual requirements allowed vendors to identify non-military technologies that would improve the overall performance of the IPS modules and make them more contemporary with the state of the art in power equipment. The reduced or eliminated set of flow-down requirements allowed the use of non-traditional subcontractors. Of particular interest is the use of a commercially based main power converter step. The unit was developed commercially and the interest in participating with the Government in using the drive step was enhanced by the reduction in contractual requirements the FAR may have otherwise imposed. This allowed the prime contractor to consider alternate sources that would have not been feasible otherwise.

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 has been a continuation of the efforts in the previous phase that involved a strong interaction among all of the IFTP participants. IFTP requirements have been developed jointly by the Navy and by the vendors participating in the agreements, starting with the six original vendors and proceeding through the current roll of three vendors after competitive down-select. It was envisioned that a traditional FAR contract would have imposed rules that would have impeded the level of communication necessary to set industry standards for the type of power conversion equipment developed.

Other benefits to the DOD through use of this agreement:

With the removal of the FAR accounting and reporting requirements, the Navy was able to reduce costs by allowing commercially based equivalents. This also reduced the turn-around time on agreement modifications and cost proposals.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Master Agreement Number: NMA401-02-9-2001

Type of Agreement: Other Transaction for Prototype

Title: National Technology Alliance Prototype Program

Awarding Office: National Imagery and Mapping Agency, Innovision Directorate (ID),
National Technology Alliance (NTA)

Effective Date: 19 Feb 2002

Estimated Completion or Expiration Date: 18 Feb 2007

U.S. Government Dollars: See Individual Task Orders

Non-Government Dollars: \$0

Dollars Returned to Government Account: \$0

Discussion: This master agreement in support of the National Technology Alliance (NTA) was competitively awarded with an estimated value of \$217,000,000.00 over a 5-year agreement term. A general discussion is provided below of the benefits resulting from the use of an other transaction agreement. Separate discussions will be provided with each task order issued against the Agreement that will identify the task order number, the expected period of performance, the Government dollars, and other technical information or benefits unique to that order.

Technical objective of this effort including the technology area in which the project was conducted:

The technology areas that the weapons systems related prototype projects will demonstrate are varied and will include: Imagery, GIS and Cartography; Digital Processing, Analysis, and Management; and Digital Technology Infrastructure.

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:

Orders placed under this other transaction master 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 an Other Transaction Agreement allows for an environment that fosters teaming among these world-class companies and organizations. As each team member discusses its particular projects, the other teams members will gain insight into their most guarded proprietary projects and will offer expertise in overcoming various technical obstacles. This mix of commercial companies and Government experts working together in a collaborative environment would not be possible under a standard contracting vehicle.

Other Benefits to the DoD through Use of This Agreement:

The likelihood that some of these prototypes will be commercialized will provide contractors the incentive to contribute their own resources to make the prototype projects successful, even though cost sharing is not required by the agreement.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0001

Title: Program Management and Independent Assessment and Evaluation in Support of the National Technology Alliance Prototype Program

Awarding Office: National Imagery and Mapping Agency, Innovision Directorate (ID),
National Technology Alliance (NTA)

Effective Date: 19 Feb 2002

Estimated Completion or Expiration Date: 18 Feb 2007

U.S. Government Dollars: \$30,894,991

Technical objective of this effort including the technology area in which the project was conducted:

This effort will provide for the overarching management in support of weapons systems related prototypes in the following technology development areas: Imagery, GIS and Cartography (IGC); Digital Processing, Analysis, and Management (PAM) ; and Digital Technology Infrastructure (DTI). Overarching Management includes Program Management and Independent Assessment & Evaluation (IA&E) support to assess both commercial technology trends and developments and evaluate Government users' technology needs, in order to provide recommendations for technology developments and technology transfer roadmaps.

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 will provide for the overarching infrastructure necessary to manage and lead a teaming arrangement that includes 25 leading edge commercial companies that would not engage in a traditional FAR covered contract due to the patent requirements and cost account standards (CAS) typically imposed on FAR contracts. The U.S. Government greatly benefits from this other transaction by being able to directly access the commercial side of IGC, PAM, and DTI companies and the critical technologies that drive the marketplace. Through this access, the DoD benefits through the creation of solutions that are marketable technology and products, allowing acceleration of product development items, design for manufacturer, and the ability to manufacturer in a cost-effective manner.

Extent to which the cooperative agreement of 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 allows for an environment that fosters teaming among the member companies and organizations. Teaming benefits the U.S. Government by bringing together commercial partners with complementary, world-class technology strengths, ensuring that U.S. Government gets the best possible product. This Agreement supports the national security of the USA by assessing technology trends and accelerating development of products that meet critical DoD needs.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0002

Title: NIMA Customer Communications Center (NC3) Prototype Project

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 22 May 2002

Estimated Completion or Expiration Date: 10 Jul 2002

U. S. Government Dollars: \$147,767

Technical objectives of this effort including the technology areas in which the project was conducted:

The objective of the NC3 Prototype project is to provide information about NIMA to customers ensuring their awareness of NIMA's impact, capabilities, and to stimulate interest in and understanding of NIMA's products and services, as well as the importance of the next generation of Geospatial and Visualization tools. The NC3 Prototype falls under the technology area of Geospatial Intelligence.

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; Applied Minds, Incorporated (AMI). AMI was recently founded as a research and development company creating a range of new products and services in software, entertainment, electronics, biotechnology, and mechanical design. Applied Minds customers are primarily in the broadcast and entertainment industry. Applied Minds is the primary technical lead for this 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:

The use of an Other Transaction Agreement (OTA) has provided incentives to teaming and technical leveraging that would not be possible under a traditional contract. Award as an OTA has resulted in the standup of an NTA contractor base that includes significant participation from non-traditional contractors. AMI is one of these contractors and brings leading commercial products and design techniques in the areas of interest to the NTA and the subject effort. These products and techniques will be used to conduct the efforts associated with the prototype project. AMI will remain involved through the entire project, providing the NTA the benefit of their expertise in the form of refinements to their proposed design, and in directions suggested by the experimental results. Any such improvements will likely influence their next generation the NC3 Prototype.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0003

Title: Integrated Automatic Quality Assessment and Vertical Obstruction Detection (IAQAVOD) Prototype

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 03 Jul 2002

Estimated Completion or Expiration Date: 02 Feb 2003

U. S. Government Dollars: \$431,560

Technical objectives of this effort including the technology areas in which the project was conducted:

The objective of the IAQAVOD Prototype project is to improve NIMA production throughput, latency and efficiency with respect to populating their Digital Vertical Obstruction File (DVOF) and preparing datasets within the Front-End Processing Element (FPE). The expected outcome is a semi-automated image quality assessment and vertical obstruction detection (with hooks for full-automation) capability installed at a specified processing center. The IAQAVOD Prototype falls under the technology area of Geospatial Intelligence (GI).

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 (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was recently 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 OTA 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 OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA 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.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0004

Title: Automated Media Fabrication for Holographic Storage Devices

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 08 Aug 2002

Estimated Completion or Expiration Date: 07 Mar 2003

U. S. Government Dollars: \$790,502

Technical objectives of this effort including the technology areas in which the project was conducted:

This prototype project will focus on developing automated manufacturing methods to fabricate media capable of accommodating high capacity, reliable, long-life storage of data resulting in the delivery of more timely, accurate, and complete information to the warfighter. The outcome of the project will be a prototype for holographic recording media produced via a process capable of being scaled to high-volume. This prototype falls under the technology area of Digital Technology Infrastructure.

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 (OTA) has resulted in the participation of two non-traditional defense contractors, Rosettex Technology and Ventures Group and InPhase Technologies, Inc. Technical efforts will be conducted by InPhase Technologies which was founded in December 2000 as a Lucent Technologies venture, spun out of Bell Labs research. While InPhase's roots lie in the company's unparalleled technical expertise in areas such as the holographic polymer media, holographic storage techniques, laser optics and drive technology, their greatest strength is the creative application of pure science and experience engineering for the next generation of storage technology. In addition, the engineering and business teams have many years of experience successfully developing and bringing to market a wide range of commercial storage products. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development and commercialization of a unique and innovative storage technology. Rosettex, which was recently formed to provide innovative solutions to government intelligence community user needs, will provide the overall program management for this 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 OTA fosters research and development practices that are more like those in commercial organizations, resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship, resulting in increased willingness by industry team members to commit their personnel and resources to projects than they 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 and national security needs.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0005

Title: Information Services on a Semantic Network Prototype

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 20 Jun 2002

Estimated Completion or Expiration Date: 19 Sep 2003

U. S. Government Dollars: \$1,206,811

Technical objectives of this effort including the technology areas in which the project was conducted:

The objective the effort is to demonstrate how XML-based content routing systems enhance Command and Control by delivering better information (timelier, accurate, and complete) across echelons. Data will be taken from authoritative Service or Defense Agencies and fused with "in-theater" sources to translate those data or asset visibility into actionable information. The information will be utilized in collaborative planning, course of action analysis and development, and the preparation of logistics estimates and deployment data.

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 nontraditional defense contractor, Semandex Networks, will conduct the technical efforts under this prototype project. Founded in 2000, Semandex is a software infrastructure company building the next generation of content routers for business networks. The Semandex platform products handle human-to-human or machine-to-machine interaction, dynamically matching originator with end-user without the need for elaborate, costly, and static distribution architectures. Semandex boasts an experienced technical staff and a highly qualified management team to position its solutions for marketplace success. The prototype project will result in improved technology available to DoD for translating and delivering intelligence data across echelons that support national security.

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 cooperative nature of the Other Transaction as compared to a customary FAR contract will contribute to achieving commercialization of this technology, which will in turn provide for more economical support of the Government's increasing needs for imagery information within the DoD and intelligence community.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0006

Title: Open Source eXtraordinary Program (OSXP)

Awarding Office: National Imagery and Mapping Agency, ATTN, National Technology Alliance (NTA)

Effective Date: 18 Jul 2002

Estimated Completion or Expiration Date: 17 Mar 2003

U.S. Government Dollars: \$322,337

Technical objective of this effort including the technology area in which the project was conducted:

The primary focus of the project is to determine the structure and implementation plan for an Open Source eXtraordinary Program (OSXP), which will provide a mechanism for government programs to leverage Open Source Software development methodologies. Open Source Software has already been demonstrated under previous studies to be a more efficient means for developing information technology for multi-agency collaboration than traditional methods because it taps a large pool of interested development talent at low cost to the user. Specific tasks will focus on Open Source Geographic System (PostGIS) and feature extraction goals. PostGIS provides NIMA with an open source spatial data engine for the open source postgres relational database. Associated surveys of Open Source Projects and organizations that would employ Open Source Software will be used to define the OSXP implementation plan. Consultations with leaders in open software development, government contractors, national labs, academic institutions, and government agencies will be used in implementing a plan. The OSXP prototype falls under the technology area of Geospatial Intelligence (GI).

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 (OTA) has resulted in the participation of three nontraditional defense contractors, Rosettex Technology and Ventures Group, ImageLinks and Refractions. Rosettex was recently formed to provide innovative solutions to government intelligence community user needs. While providing program management for this effort, Rosettex will rely on ImageLinks to provide research and development services for integrating Open Source Development methodologies. This methodology is vastly different from traditional program management and software development within government agencies. ImageLinks, a lead provider of information processing technology, will work with Refractions, the primary lead for the PostGIS code development to demonstrate that enhancements and modifications to PostGIS can be developed to meet government needs. For the war fighter, this translates into a mechanism to directly participate in the design of GI technologies. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability. It directly addresses a defense objective by developing a Case Study on PostGIS, taking a specific look at a high interest open source project.

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 into Open Source Software development that are more like those in commercial organizations. This OTA study is expected to result in the rapid development of a new technology that is a paradigm shift in the way that software technology is traditionally developed and maintained over time. This methodology dramatically increases the speed of development and robustness of solutions at decreased cost of ownership. To the war fighter, this translates into better solutions at reduced cost. It also provides the war fighter with a mechanism to directly participate in the design, evolution, and maintenance of GI technologies. The instant OTA places non-traditional defense contractors, Rosettex, ImageLinks, Refractions 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 where there is clear potential for commercial marketability as well as solutions for governmental programs. The OSXP will focus on an organizational structure that could bridge the traditional methodologies for software development with the Open Source Software development so that the military will benefit from the increase in technology leverage.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

The use of an Other Transaction Agreement has resulted in new relationships between Rosettex, ImageLinks, a leader in image processing technology and Refractions, a leader in PostGIS code development. Through briefings and technical meetings, the NTA and the Intelligence Community will gain a valuable insight into the advantages of Open Source. 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 OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0007

Title: Geospatial Conflation Tools Development (Phase 1)

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 15 Aug 2002

Estimated Completion or Expiration Date: 14 Mar 2003

U.S. Government Dollars: \$179,846

Technical objective of this effort including the technology area in which the project was conducted:

The technical objective is to focus on the key elements of conflation to recognize the different versions of the same feature and use elements from each source version to build a new "best" version that meets the prevailing needs of a user such as most current, most accurate, and richest in attribution. The conflation tools would greatly facilitate the updating task in mapping agencies, and it would be extremely useful in generating geospatial databases in emergency situations. In addition to this, a need assessment will be performed to focus on 1) core conflation algorithms and techniques and 2) system and interoperability requirements to ensure conflation functionality is staged effectively with open interfaces to data sources. The conflation project falls under the technology area of Geospatial Intelligence (GI).

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 partnering of two subcontractors; Swiftsure Spatial Systems, a nontraditional defense contractor and a world-class conflation expert and the University of Southern Mississippi, currently on a ten-year research program on conflation. Swiftsure is the primary technical lead for this 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:

The use of an Other Transaction Agreement (OTA) has provided incentives for teaming that's not possible under a traditional contract. These subcontractors will bring leading commercial products and research capabilities to create an inventory of existing capability in support of the Conflation Development. These products and capabilities will be used to define a conflation product and investment plan to manage and disseminate datasets across the military forces.

Other Benefits to the DoD through Use of This Agreement:

The OT Instrument has allowed the Government to procure these products/services in a timelier manner than traditional DoD procurement methods would allow. Most important it allows the Government to work with commercial companies that have technical expertise in the conflation field whereas the Government currently does not have access.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0008

Title: Rivendell Project (Unclassified Name)

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 06 Sep 2002

Estimated Completion or Expiration Date: 05 Sep 2003

U. S. Government Dollars: \$380,788

Technical objectives of this effort including the technology areas in which the project was conducted*:

The technology area is Digital Technology Infrastructure; however, the specific technical objectives of this effort 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 OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative capability in the field of biometrics.

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 will fosters research and development practices that are more like those in commercial organizations resulting in the more rapid development of a new technology for use by DoD and the intelligence community.

* Limited information is provided due to the classified nature of the project.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0009

Title: Transition Plan – Communications Programs

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 11 Sep 2002

Estimated Completion or Expiration Date: 11 Sep 2003

U.S. Government Dollars: \$146,688

Technical objective of this effort including the technology area in which the project was conducted:

A primary recommendation of the Defense Science Board Task Force Report on Tactical Battlefield Communications addressed the application of IP based packet switched technology to support the convergence of voice, data and video services for all DoD C4ISR systems. Convergence is a key feature of both the Tactical Battlefield Communications DSB Report and the Transformational Communication Study; the technologies that support convergence are currently under development. The overall goal of this study is to develop a comprehensive communication program transition plan to achieve a ubiquitous packet-switched IP network 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:

The use of an Other Transaction Agreement (OTA) has resulted in the participation of two nontraditional defense contractors, Rosettex Technology and Ventures Group and Sullivan Haave Associates, Inc. Rosettex was recently 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, transition of technology into the commercial market place, and Independent Assessment and Evaluation of technologies. Sullivan is providing subject matter experts in support of the Independent Assessment required for this task. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging a transition of DoD Communication capabilities to packet-based networks, thus opening these programs to new technology providers with packet network 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 OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA 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. Within the context of this specific task, the transition to IP-based networks will provide a large opportunity to take advantage of commercial network practices and entirely new relationships, based on new technology providers.

Other Benefits to the DoD through Use of This Agreement:

The agreement provides a mechanism for DoD to quickly access the broad range of commercial standards and practices developed in the commercial world that can be used as the basis for DoD network solutions.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0010

Title: Surveillance Video Motion Mining Techniques

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 13 Sep 2002

Estimated Completion or Expiration Date: 12 Mar 2003

U. S. Government Dollars: \$499,978

Technical objectives of this effort including the technology areas in which the project was conducted:

The DoD and the Intelligence Community have the requirement to monitor video data for surveillance and physical security purposes. Currently this video data is watched and exploited by personnel without assistance from automated indexing systems. In the case of aerial video, as the DOD increasingly collects video data at all echelons using unattended air vehicles (UAV), the volume of video data needing review will require new tools to provide analysts with automated assistance. Under this project the contractors will develop a motion mining prototype system that will dramatically increase the productivity of the analysts through providing automated video analysis and search mechanisms that are cognizant of dynamic events in video streams. Through the use of interactive queries, analysts can access the motion mining data representing moving objects in their interactions stored in a database along with the raw video clips associated with motion mining events. The Surveillance Video Motion Mining Techniques project falls under the technology area of Geospatial Intelligence (GI).

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 (OTA) has resulted in the participation of two nontraditional defense contractors, Rosettex Technology and Ventures Group and Virage, Inc. Rosettex was recently 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. Virage, Inc. is the leading provider of enterprise-scale video content management and publishing solutions for a broad range of markets. By simplifying and scaling video content management, Virage increases the value of video to the user. Rosettex will rely on members of its team, including Virage, Inc. to develop the motion mining prototype system. The use of an OTA 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 OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. This OTA study is expected to result in the rapid development of a prototype motion mining system that will dramatically increase the productivity of image analysts. This OTA places non-traditional defense contractors, Rosettex and Virage, other 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 where there is a clear potential for commercial marketability as well as solutions for government programs.

The use of an Other Transactions Agreement has resulted in a new relationship between Rosettex and Virage, a leader in video archiving and retrieval technology, and other industry team members. Through collaboration and technical exchange, the DoD and the Intelligence Community will gain valuable insight into the management and analysis of video data. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0011

Title: Military Overlay Editor (MOLE)

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 23 Sep 2002

Estimated Completion or Expiration Date: 22 Aug 2003

U. S. Government Dollars: \$192,474

Technical objectives of this effort including the technology areas in which the project was conducted:

The DoD has the requirement to monitor and map military activity in different parts of the world. In general, analyzing regional military activity and documenting the location of military units at specific points in time accomplish this. DoD elements will then produce, on an as needed basis, maps that show the locations of these units with respect to a static topographical map background using MIL-STD 2525B symbology. Under this project, the contractor will provide support the enhancement of the commercial Geographic Information System (GIS) software to meet DoD needs for unit location map production, as well as fulfilling the additional need for complex data queries, reporting, and unit tracking analysis.

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 (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group and Environmental Systems Research Institute Inc. (ESRI), Rosettex was recently 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. ESRI will enhance Military Analyst software with a new release that will meet NIMA's existing need for unit location map production as well as fulfilling the additional need for complex data queries, reporting, and unit tracking analysis.

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 OTA places non-traditional defense contractors, Rosettex and ESRI, other 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 OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2001

Task Order:0012

Title: RAPTOR Operational Transition

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Effective Date: 26 Sep 2002

Estimated Completion or Expiration Date: 26 Sep 2003

U.S. Government Dollars: \$550,010

Technical objective of this effort including the technology area in which the project was conducted:

The goal of the RAPTOR (Robust Adaptive Platform Technology for Operational Response) program is to deliver a capability that will allow multiple decision-makers in a Joint Task Force command environment to achieve and maintain customized battlespace situational awareness from a common operational database regardless of their physical location. The RAPTOR capability has now been prototyped and demonstrated sufficiently that it is expected to be transitioned by one or more of the services into an acquisition program baseline in FY03. The transition from a prototype set of technologies into an acquisition baseline is a large one, and this NTA effort provides the support for that transition. The goal of this task is to interact with several existing programs in order to be able to specify appropriate interfaces for the RAPTOR architecture in an operational environment.

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 (OTA) has resulted in the participation of three nontraditional defense contractors, Rosettex Technology and Ventures Group, Georgia Tech Research Institute (GTRI), and Semandex Networks. Rosettex was recently 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, will provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. Sarnoff Corporation, GTRI, and Semandex Networks will conduct technical efforts. Sarnoff Corporation, an independent product development company, has been the primary developer of the RAPTOR capability. GTRI has provided core video rendering technology used in the visualization portion of the RAPTOR program. Founded in 2000, Semandex is a software infrastructure company building the next generation of content routers for business networks, and for the RAPTOR infrastructure. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the transition of a commercial technology-based, next generation command and control capability into an operational program.

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 OTA 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. The open command and control architecture developed in the RAPTOR capability provides a basis for new technology insertion practices that support continued update of the command and control capability with the best commercial and DoD technologies available.

Other Benefits to the DoD through Use of This Agreement:

The OTA Agreement provides a flexible, fast turnaround mechanism for ongoing support and technology insertion of commercial technologies over the lifetime of the command and control capabilities developed here.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Master Agreement Number: NMA401-02-9-2002

Type of Agreement: Other Transaction for Prototype

Title: National Technology Alliance Prototype Program

Awarding Office: National Imagery and Mapping Agency, Innovision Directorate (ID),
National Technology Alliance (NTA)

Effective Date: 15 Mar 2002

Estimated Completion or Expiration Date: 14 Mar 2007

U.S. Government Dollars: See Individual Task Orders

Non-Government Dollars: \$0

Dollars Returned to Government Account: \$0

Discussion: This master agreement in support of the National Technology Alliance (NTA) was competitively awarded with an estimated value of \$73,000,000.00 over a 5-year agreement term. A general discussion is provided below of the benefits resulting from the use of an other transaction agreement. Separate discussions will be provided with each task order issued against the Agreement that will identify the task order number, the expected period of performance, the Government dollars, and other technical information or benefits unique to that order.

Technical objective of this effort including the technology area in which the project was conducted:

The technology area that the weapons systems related prototype projects will demonstrate is Chemical, Biological, and Radiological Defense.

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:

Orders placed under this other transaction master 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 an Other Transaction Agreement allows for an environment that fosters teaming among these world-class companies and organizations. As each team member discusses its particular projects, the other teams members will gain insight into their most guarded proprietary projects and will offer expertise in overcoming various technical obstacles. This mix of commercial companies and Government experts working together in a collaborative environment would not be possible under a standard contracting vehicle.

Other Benefits to the DoD through Use of This Agreement:

The likelihood that some of these prototypes will be commercialized will provide contractors the incentive to contribute their own resources to make the prototype projects successful, even though cost sharing is not required by the agreement.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2002

Task Order:0001

Title: Program Management and Independent Assessment and Evaluation in Support of the National Technology Alliance Prototype Program

Awarding Office: National Imagery and Mapping Agency, Innovision Directorate (ID),
National Technology Alliance (NTA)

Effective Date: 15 Mar 2002

Estimated Completion or Expiration Date: 14 Mar 2007

U.S. Government Dollars: \$7,246,164

Technical objective of this effort including the technology area in which the project was conducted:

This effort will provide for the overarching management in support of weapon systems related prototypes in the area of Chemical, Biological and Radiological Defense (CBR). Overarching Management includes Program Management and Independent Assessment & Evaluation (IA&E) support to assess both commercial technology trends and developments and evaluate Government users' technology needs, in order to provide recommendations for technology developments and technology transfer roadmaps.

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 will provide for the overarching infrastructure necessary to manage and lead a teaming arrangement that includes 19 leading edge commercial companies that would not engage in a traditional FAR covered contract due to the patent requirements and cost account standards (CAS) typically imposed on FAR contracts. The U.S. Government greatly benefits from this other transaction by being able to directly access the commercial side of CBR companies and the critical technologies that drive the marketplace. Through this access, the DoD benefits through the creation of solutions that are marketable technology and products, allowing acceleration of product development items, design for manufacturer, and the ability to manufacturer in a cost-effective manner

Use of the other transaction supports consortia with diverse or even competing participants who traditionally have been unwilling to pool resources due to the prime/subcontractor relationship under a traditional FAR contract. The co-prime relationship among consortia members avoids costs associated with loading of funding through a prime contractor to a subcontractor. Collaborations among defense contractors and commercial firms encourages research in the private sector with the result of earlier introduction to the market place of commercial products needed by the military at a reduced price. The U.S. Government benefits because research work progresses more efficiently and technical progress is achieved more rapidly since the consortium structure makes possible information sharing based on mutual trust and cooperation.

Extent to which the cooperative agreement of 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 allows for an environment that fosters teaming among the member companies and organizations. Teaming benefits the U.S. Government by bringing together commercial partners with complementary, world-class technology strengths, ensuring that U.S. Government gets the best possible product. This Agreement supports the national security of the USA by assessing technology trends and accelerating development of products that meet critical DoD needs.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2002

Task Order:0002

Title: Pathogenic Agent Detector Prototype Based on Bioluminescence (Bio-Canary), Phase II (Bio-Sensor)

Awarding Office: National Imagery and Mapping Agency, ATTN, National Technology Alliance (NTA)

Effective Date: 14 May 2002

Estimated Completion or Expiration Date: 13 Nov 2002

U. S. Government Dollars: \$300,000

Technical objectives of this effort including the technology areas in which the project was conducted:

The objective of Task Order 0002 to the Pathogenic Agent Detector Prototype Based on Bioluminescence (Bio-Canary), Phase II (Bio-Sensor) is to enhance real-time bio-sensing applications by increasing test sensitivity, selectivity, and speed through advanced sample preparation approaches. The sample prep procedure resulting from the work will ultimately be integrated into a disposable microfluidic cartridge (outside scope of this work) used with a handheld detector to provide a simple, robust, automatic and portable field test that requires no calibration or special training to use. Data provided will support the feasibility and performance of two advanced sample preparation conceptions designed to enhance delivery of the target microbe to the sensor surface, increasing the binding efficiency of the microbe to the sensor. Products resulting from this effort will enhance demonstration of a first-generation pathogenic agent detection system that is capable of providing early warning based on the detection and identification of specific types of known biological warfare (BW) agents.

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 definitely broadened the technology and industrial base for meeting DoD needs by enabling Honeywell and 3M to combine DoD funded technology (Honeywell photonics) with commercially developed technology (3M bio-sensors and cell-culture support technology). 3M is a non-traditional defense contractor that will play a significant role on this prototype demonstration. They bring to this prototype demonstration years of experience in the commercialization of bio-related technologies. Specifically, they have developed materials that function as “durable” substrates to support the micro-organisms engineered to show bio-agent specificity. They have developed the techniques of genetically engineering the organisms to provide an optical signal indicative of their viability. The relationship between Honeywell and 3M within the Chemical, Biological and Radiological Technology Alliance (CBRTA) under the OTA would not exist otherwise; hence, this agreement and funding vehicle certainly facilitates this type of 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 use of an other transaction agreement has enabled Honeywell and 3M to team in such a way that facilitates the integration of DoD funded technologies (photonics-DARPA) with 3M’s commercially developed technology. This cooperation supports the national security of the US from the standpoint of providing new technologies to protect our soldiers, embassies, military bases, etc. The expected outcome of this integration is a technical capability that could provide a quantum leap in the state-of-the-art for bio-agent detection. For example, the national laboratories are very active in PCR, mass spectrometry, and other approaches to bio-agent detection. However, the technology developed in the national laboratories does not have a direct path to commercialization. Likewise, DoD funding sources such as DARPA, Army, Navy, and Air Force also sponsor bio-agent detection R&D and have used programs such as “Dual Use” to encourage the commercialization of such technology. This new relationship between Honeywell and 3M under the other transactions agreement provides a direct path of DoD funded technology to commercialization. The demonstration of the prototype proposed under this relationship provides a new bio-agent detection mechanism that supports the national security of the US with protection capability for our soldiers, embassies, military bases, etc.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: NMA401-02-9-2002

Task Order:0003

Title: Perform Other Transaction for Research Assessment of Motorola eSensor™ DNA Detection Technology

Awarding Office: National Imagery and Mapping Agency, ATTN, National Technology Alliance (NTA)

Effective Date: 09 Sep 2002

Estimated Completion or Expiration Date: 08 Sep 2003

U.S. Government Dollars: \$1,023,300

Technical objective of this effort including the technology area in which the project was conducted:

The primary focus of the project will be to provide new design data for a possible operational system to be deployed by the US Government to detect pathogen targets within a few years following the execution of the proposed program. The currently proposed effort is to organize and thereby expand the sensitivity limits of Motorola's commercial eDD system through specific, organism-detection evaluations. Most importantly, Motorola will evaluate significant new detection technology aimed at sensitivity improvements through developing assays for detecting of three (3) Sponsor-selected organisms. The Contractor will make best use of the initial effort, together with several exciting, specific, new technology developments, to develop a future generation, commercial e-Sensor™ DNA detection (EDD) instrument. Such an improved eDD would be very convenient and very likely small enough to be portable as well as self-contained. Technical analyses of the existing technology and possible device/system improvements will indicate the ultimate achievable sensitivity and optimal configuration. The US Government must improve the end-to-end system sensitivity to allow general-purpose, field use. Motorola has already deployed some commercial eDD systems, beginning in 2001. The present stage of development of the sensitivity and selectivity of their technology is driven primarily by targeted business markets and the cost to manufacture affordable genotyping, diagnostic products. The eDD has been tested The OSXP prototype falls under the technology area of Chemical, Biological and Radiological Technology Defense(CBRDGI).

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 (OTA) has directly benefited the Intelligence Community and the United States Government by allowing for detailed evaluations of Motorola's innovative, commercial eDD product technology, using a simplified contracting vehicle. Motorola Life Sciences is a non-traditional defense contractor, whose commercial business operations are not yet audited by the government for awards for standard, CPFF etc., type FAR regulated contracts and would not be able to respond to the Government's RFP without use of the NIMA agreed, OTA process. Motorola Labs, the project managing and R&D organization, is already established by DCAA, as a contractor with accredited commercial operations.

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 permitted Motorola to use its novel commercial products for biotechnology devices, which may include other subcontractors, who are not yet accredited as suppliers to the government. Motorola has developed biotechnology, with a range of other commercial companies, for exploratory research in bringing these technologies to the commercial market place. As a result the government will be able to make rapid use of the resulting technical advances, and also the affordability benefits of commercially available technology.

Other Benefits to the DoD through Use of This Agreement:

The OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAD19-02-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Investigation and Development of PC-Based Configuration Management and Intrusion Detection Technologies

Awarding Office: US Army Robert Morris Acquisition Center, RTP Contracting Division, AMSSB-ACC-R

Awardee: Seventh Knight, Inc.

Effective Date: 2 Apr 2002

Estimated Completion or Expiration Date: 2 Aug 2002

U. S. Government Dollars: \$ 25,340

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 investigate and test a prototype Officeware Server/Client in the Army Research Laboratory (ARL) enterprise environment for the purpose of ascertaining the scalability and usability of the product. This unique software product is early in the design phase and under this prototype effort, ARL will be participating in the development of this product and thus ensuring that it will address the Army's critical intrusion detection needs associated with 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:

The use of an other transaction agreement has contributed to a broadening of the technology and industrial base available for meeting DoD needs. Under this agreement, the Government will have access to previously developed proprietary technical advances that will be exploited so that a product will meet the needs of ARL and the Army. The Recipient is a Non-Traditional Defense contractor with no previous Government involvement. Under this agreement, ARL will tap into the research and development and potential commercial solution being accomplished by a nontraditional defense contractor and ARL will be able to influence the development of this product to meet the requirements of the Army.

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 new relationship with a nontraditional defense contractor in critical computer network technology that supports national security. ARL has been involved in developing and testing network intrusion detection systems since 1995 and has developed very robust models that are currently being deployed throughout DoD and federal agencies, e.g. the FAA. Development of this unique product will enhance situational awareness in network infrastructures and host monitoring to formulate and support an attack sensing and response management capability.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAD19-02-9-0003

Type of Agreement: Other Transaction for Prototype

Title: Laser Additive Manufacturing

Awarding Office: US Army Robert Morris Acquisition Center, RTP Contracting Division, AMSSB-ACC-R

Awardee: AeroMet Corporation

Effective Date: 27 Sep 2002

Estimated Completion or Expiration Date: 27 Sep 2006

U. S. Government Dollars: \$ 19,345,000

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 this effort is to fabricate and deliver small lot, full scale prototype structures of selected defense platform components to demonstrate the production capability of laser additive manufacturing, and to establish the technology and infrastructure as capable of providing the industrial base necessary to supplying high quality metal components for critical defense platforms at reduced cost to the Department of Defense and to the commercial aircraft sectors.

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 a broadening of the technology and industrial base available for meeting DoD needs as this agreement was awarded to a nontraditional defense contractor that was willing to modify its commercial manufacturing process for use by the Government, but was unwilling to accept a contract. The prototypes developed in mini-production runs under this agreement are expected to establish the defense readiness of this technology, are expected to win acceptance of laser formed parts by the DoD platform original equipment manufactures (OEM) community, and are expected to certify a new manufacturing process as qualified to provide components to key platforms, e.g. Comanche, Blackhawk, F-18, F-22, C-17, JSF, and missiles such SM and Patriot. A parallel development program will support the resolution of DoD specific technical issues encountered in the program. By leveraging previous research and technology development done by the awardee, the use of an other transaction will facilitate the acquisition of more affordable components using this manufacturing capability for selected metal structures in defense platforms. The Awardee is a large business that has developed a very promising technology with significant potential DoD applications to weapon systems. Through the prototype agreement the Government gains access to this technology and is able to leverage it to develop prototype technology to meet military 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:

The use of an other transaction agreement has fostered a new relationship with a large business with a unique manufacturing technology. The result of the activity under this agreement will be the establishment of a new manufacturing infrastructure for the industrial base for Defense platforms, expected to offer considerable savings and faster delivery over more traditional manufacturing processes. Under this agreement, Laser Additive Manufacturing will make substantial contributions to the enhancement of the industrial capacity available to the DoD and the nation, and will foster considerable cost savings to the DoD for the manufacturing of new, advanced defense platforms now in production, or beginning new production. Thus, the establishment of this new relationship supports the national security of the USA through its ability to infuse this technology into key organizations throughout DoD.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAH10-02-9-0002

Type of Agreement: Other Transaction for Prototype

Title: Integrated Mechanical Diagnostics System (IMDS)

Awarding Office: Aviation Applied Technology Directorate (AATD), US AMCOM (AMSAM-RD-AA-C)

Awardee: Simmonds Precision Products, Inc. d/b/a Goodrich Fuel & Utility Systems

Effective Date: 02 Jul 2002

Estimated Completion or Expiration Date: 31 Jan 2005

U. S. Government Dollars: \$ 8,913,840

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:

The objective of this project is to integrate a Cockpit Voice/Flight Data Recorder (CV/FDR) with the Goodrich IMDS (also referred to as Integrated Mechanical Diagnostic Health and Usage Management System (IMD HUMS)) and modify a U.S. Army UH-60L aircraft to incorporate the IMD HUMS and CV/FDR and subsequently conduct an operational demonstration. Application of HUMS technology is anticipated to reduce operational and support costs, improve force protection, accelerate the flow of information and improve maintainability. The CV/FDR modification will assist in accident investigation and post-flight training. The instant demonstration is needed to develop the operational procedures and processes necessary to achieve the maximum benefit from such systems and develop a performance specification that could be used for competitive procurement. Additionally, demonstration will permit PM Utility to assess the suitability of IMDS technology and its capability to satisfy the Operational Requirements Document (ORD) For The Digital Source Collector (DSC); ORD # 05028 associated with the H-60 fleet of aircraft. The originating office for the ORD is the U.S Army Training and Doctrine Command (TRADOC), 30 June 1996. To achieve cost benefits from using IMD-HUMS technology in Army operational and logistics environments will require process reengineering. Such things as developing the new inspection requirements based on continuous monitoring; adjusting limitation and maintenance flight requirements using continuous rotor track and balance; developing HUMS and maintenance management data processes for Army infrastructure; correlating HUMS data to component conditions; changing aircraft manuals to reflect use of HUMS will be subjects of the demonstration enabled by this project.

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 an 845 prototype agreement has contributed to a broadening of the technology and industrial base for meeting DoD needs by facilitating integrated product development and establishing new relationships. Predecessor projects undertaken as other transactions by both the Navy and the Army have investigated benefits of HUMS technology as operations and costs saving measures. The underlying commercial product Goodrich brings to this project has been maintained as a trade secret to a significant extent by Goodrich and its subcontractor, Vibro-Meter, a nontraditional defense contractor. For this project, Vibro-Meter, which Goodrich characterizes as a "partner," contributes applied intellectual property and manufacturing capacity for major capability afforded by the IMDS. The intellectual property derives from a co-held patent for rotor track and balance, a key capability for IMD HUMS. Vibro-Meter provides almost all of the accelerometer components in the IMD HUMS, the heat protected engine sensors/accelerometers, the charge converters, cables for the charge converters and engine sensors and, very significantly, one of the two primary cards in the main processor unit, the vibration processing unit (VPU) card. The VPU card analyzes helicopter component vibrations to determine the health of the helicopter components and recommends maintenance actions (e.g., rotor track and balance). This is the primary capability of the IMD HUMS as

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

installed on the UH-60 aircraft. Vibro-Meter located in Fribourg, Switzerland is an operating company within the Meggitt Aerospace Systems Division of Meggitt Avionics. Use of this other transaction for prototype agreement will yield benefits for defense research that likely would not be realized if awarding another type of instrument. The collaborative research environment established by this agreement will improve the capabilities of both the private sector and the Government. Had the Other Transaction authority not been available, it is doubtful that the Government could have accessed this specific technology so affordably for DoD use. Use of this Other Transaction authority has afforded the opportunity for a highly collaborative effort that will improve the capabilities of both the private sector and the Government. The success of the program will be supported through substantial Government involvement. This is an example of the benefits of the more flexible business practices afforded by the Other Transaction authority and of how the DoD can achieve more with less. It is an example of how the Government can work in mutual accord with industry so that each achieves synergy.

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 more flexible intellectual property terms and relief from the administrative burden typical of a conventional contract has enhanced the Government's ability to access the technology. The patent terms in the predecessor agreements reach only inventions the contractor chooses to seek patent protection for and NOT all inventions conceived and/or reduced to practice under the agreements which means the Government has license or march-in rights under these agreements only in those inventions that Goodrich chooses to patent. Under these predecessor agreements, Goodrich was permitted to retain as a trade secret a subject invention. The conditions under which the Government may obtain title normally imposed by Bayh-Dole are substantially reduced as are the circumstances under which the Government may march in. In the event that Goodrich retains a patent on a subject invention, a license is available to the Government only if Goodrich is no longer in the health systems business. Under the predecessor agreements, Goodrich was not obliged to keep the kinds of records and make the invention reports they would be obliged to do under a Bayh-Dole compliant agreement. The foregoing agreements make an other transaction the only reasonable approach to satisfy this instant requirement. The Government continues to pursue commercial solutions to defense requirements. The Government continues to assert that initiatives which serve to integrate the production bases will afford benefit in defense weapon systems. The instant acquisition seeks to demonstrate that potential benefit and establish affordable capabilities for Army implementation.

Other benefits to the DOD through use of this agreement:

Force XXI and Army 2010 and beyond requirements dictate that the fleet must be digitized and provided increased lift, range, and greater survivability. Also, O&S costs must be reduced while reliability and maintainability are improved. HUMS offers a means to lowering O&S costs which historically account for 70% of system life cycle cost. Use of on-condition maintenance, which would be afforded by a mature health usage management philosophy, would result not only in a reduction of total ownership costs but also improved safety and equipment reliability and readiness. The proposed demonstration will assess a technology important to optimizing the Army UH-60 modernization program and has potential to accelerate application of embedded diagnostics into the Army weapon system. The capability afforded by HUMS is an integral component of the evolving digitized Army worldwide logistics system and will facilitate logistics innovations.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAH10-02-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Tactical Common Data Link (TCDL) Integration in support of the Hunter Stand-Off Killer Team (HSKT)
Advanced Concept Technology Demonstration (ACTD)

Awarding Office: Aviation Applied Technology Directorate (AATD), US AMCOM (AMSAM-RD-AA-C)

Awardee: L3 Communications Corporation -Communications Systems West

Effective Date: 06 Jun 2002

Estimated Completion or Expiration Date: 30 Sep 2006

U. S. Government Dollars: \$ 2,492,869

Non-Government Dollars: \$ 1,901,459 (includes contributions by L3 Communications.)

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The HSKT ACTD is a systems of systems concept which will integrate advanced technologies and war fighting concepts of operations to give a Joint Task Force (JTF) Commander and his manned assets the necessary tools to wage a continuous / uninterrupted air, surface and ground campaign with accurate reconnaissance, surveillance and precision targeting capability, while continuously adapting to the rapidly changing battle environment. HSKT will give the war fighter a direct sensor to shooter link and will be a significant departure from the current war fighting approach, i.e. delaying the ground war by days until the battle damage assessment (BDA) data is processed and analyzed prior to executing an attack plan. HSKT decision aiding software tools and data links between manned and unmanned systems will yield real-time reconnaissance, surveillance, target acquisition (RSTA) and BDA, allowing the campaign to be fought continuously on-the-move, with greater lethality, survivability, and responsiveness. HSKT will accomplish this by integrating mature technologies, verifying subsystem interoperability, and demonstrating the combined advanced capability. Via the contemplated Other Transaction agreement, the collaborative team will concentrate on TC DL integration and connectivity that will effect manned-unmanned teaming so critical to defense needs in the battlefield of the future. This project affords an outstanding opportunity to provide the Army a significant command and control advance and thereby significantly improve war fighting capability that will provide the Army with a very capable force multiplier well into the 21st century. Additionally, it enhances aircrew situational awareness and decreases cockpit workload. A primary objective of the ongoing demonstration effort is to prove that it is possible to control multiple UAVs from manned platforms from a significant standoff distance. TC DL affords potential benefit in both distance and bandwidth and moves UAV control from hand-held or fixed controllers into a new realm that opens many doors both for the Army and in the commercial marketplace. The basic technology associated with TC DL integration and connectivity has application in numerous military, commercial, and civil arenas, including very large livestock and herding operations that use multiple aircraft, crop dusting, aerial fire-fighting operations, search and rescue, nuclear power plant control and disaster response, and others. This highly collaborative effort will help assure US industry as a world leader in their military, commercial, and civil 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:

Use of an 845 prototype agreement has contributed to a broadening of the technology and industrial base for meeting DoD needs by facilitating integrated product development and establishing new relationships among a diverse, albeit traditional defense contractor base. The concept of a common data link was initially explored by DARPA using Other Transaction authority. L3 Communications has made substantial private investment in the technology and has developed business plans around these core technologies. Working in concert with the Army and its numerous contractors whose products will feed HSKT, L3 will have opportunities for a robust evaluation of

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

its hardware performance and the enabling technologies. Participation in this project will enable insight into integration challenges across a number of vehicles, both manned and unmanned. Use of this other transaction for prototype agreement will yield benefits for defense research that likely would not be realized if awarding another type of instrument. The collaborative research environment established by this agreement will improve the capabilities of both the private sector and the Government. Had the Other Transaction authority not been available, it is doubtful that the Government could have accessed this specific technology so affordably for DoD use. Additionally, L3 Communications is extremely cautious about intellectual property rights. It is clear that L3 maintains some processes and know-how as trade secrets. Use of an Other Transaction enabled the Army to access the technologies, negotiate minimum essential rights in data and contract on terms that enabled L3 to protect its intellectual property. Use of this Other Transaction authority has afforded the opportunity for a highly collaborative effort that will improve the capabilities of both the private sector and the Government. The success of the program will be supported through substantial Government involvement and technology contributions from numerous other contractors working in concert with the HSKT team. The specific use of bailed L3 owned assets and cost contribution leverage particularly the terms arranged would have not been achieved under a procurement contract. The past investments of L3 and the DoD will serve as leverage and enable introduction of the TCDLs into current Army assets. This is an example of the benefits of the more flexible business practices afforded by the Other Transaction authority and of how the DoD can achieve more with less. It is an example of how the Government can work in mutual accord with industry so that each achieves synergy.

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 HSKT ACTD has afforded the opportunity for L3 Communications to establish business alliances and accrue mutual benefits through a uniquely structured collaboration atypical of that found under FAR based contracts. This Other Transaction affords a funding instrument under which industry and military services can to work together to achieve HSKT ACTD demonstration goals. Using Other Transaction authority for the TCDL integration effort enables the Government to take advantage of rapidly changing technology that is inherent in the components brought to the program by L3. The more flexible intellectual property terms and relief from the administrative burden typical of a conventional contract has enhanced the Government's ability to access the technology. In addition, the Government is effecting a highly collaborative HSKT team, each member bringing specialized capability and each member also have highly diverse, sometimes competing, business strategies. Through these arrangements, the HSKT will have the opportunity to explore, more affordably, the technology barriers associated with hardware and software integration. . This is a significant undertaking, but it has great potential for future application. Although L3 is a traditional defense contractor, there is adequate commercial interest to attract a significant percentage of cost contribution (43.27%). The Government continues to pursue commercial solutions to defense requirements. The Government continues to assert that initiatives which serve to integrate the production bases will afford benefit in defense weapon systems. The instant acquisition seeks to demonstrate that potential benefit and establish affordable capabilities for Army implementation. It is clear that this integration effort is a challenge that necessitates highly interactive collaboration rarely practiced in a conventional contracting arrangement.

Other benefits to the DOD through use of this agreement:

The use of an Other Transaction has resulted in additional benefits. The negotiation dynamic is different when negotiating a project of mutual benefit and a project for the direct benefit of the Government. The development investment is offset by a significantly more rigid intellectual property negotiation position. Insertion of technology into a fielded military system, especially one with airworthiness/flight safety implications, requires disclosure of more information and delivery of more data (and providing Government rights to data) than firms desire. It can be very difficult to achieve balance with regard to intellectual property and rights in data that recognize the interests of each of the parties. The investment in developing a new product offering and the strategic planning involved in market analysis and business alliances complicates the negotiation dynamic. The civil sector is outspending DoD on research and development of many technologies. Without these flexible instruments many technologies which are of benefit to our helicopter fleet and developmental weapon systems will go untapped. In this instance, the cost share/investment of L3 adds leverage and high probability of success. Without that leverage, the benefits of Level 4 UAV control, RSTA and BDA, allowing a campaign to be fought continuously on-the-move, with greater lethality, survivability, and responsiveness, while reducing cockpit workloads, would be unaffordable and unavailable in the HSKT timeframe.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAD16-02-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Objective Force Warrior, Phase I, Concept Development

Awarding Office: US Army Robert Morris Acquisition Center, Natick Contracting Division, AMSSB-ACN-S

Awardee: Eagle Enterprise, Inc.

Effective Date: 29 Aug 2002

Estimated Completion or Expiration Date: 28 Apr 2003

U. S. Government Dollars: \$ 7,499,999

Non-Government Dollars: \$ 2,500,000

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The Objective Force Warrior (OFW) Advanced Technology Demonstration (ATD) program will demonstrate an integrated Soldier and Small Team System of Systems aimed at achieving revolutionary advances for the dismounted warfighter in Networked Communications/ Collaborative Situational Awareness (NC/CSA), integrated combat ensemble, netted lethality, man-portable power sources, soldier mobility/sustainability and human performance for the Objective Force. This OFW System of Systems will be fully integrated with the Future Combat System of Systems (FCS), other Objective Force platforms, and robotic air/ground platforms to form adaptive, distributed sensor networks for better warfighter situational understanding and networking and capability to leverage the entire force. Using Land Warrior 1.0 as a baseline and point of departure, OFW will employ open architectures and high-risk/high payoff technologies to yield a revolutionary warfighting system, integrated with multi-function sensors, weapons, physiological status monitoring, and embedded training capabilities. The OFW program will leverage relevant ongoing Army Science and Technology Objectives (STOs) and Defense Advanced Research Projects Agency (DARPA) initiatives to the maximum extent possible. Key performance goals include 50 lbs maximum fighting load per warfighter; 24 hour individual, and 72 hour autonomous team operations; full NC/CSA and integration with Warfighter Information Network-Tactical (WIN-T)/Joint Tactical Radio System (JTRS).

Extent the other transaction has contributed to a broadening of the technology and industrial base available for meeting DoD needs:

The diverse technical challenges facing the OFW program implicate virtually every sector of the Defense industrial base except for shipbuilding and aircraft production. However, integration of these technologies has never before been attempted at the soldier and small unit level. Use of a Section 845 Other Transaction for Prototype Projects (Section 845 OTPP) is central to this integrative effort, which effectively broadens the industrial base by more closely integrating existing disparate technologies. The essential utility of the Section 845 OTPP to the program is the flexibility it provides to program managers and their industry counterparts to jointly manage the efforts of dozens of prime and subcontractors, Government (DoD and non-DoD) laboratories and test centers, Federally Funded Research and Development Centers, and even other programs such as Future Combat Systems (FCS), a complementary pillar of the Army's transformation, which is also managed via a Section 845 OTPP.

Moreover, this agreement also directly contributes to a broadening of the technology and industrial base available to DoD. The Eagle Enterprise team includes two nontraditional defense contractors who bring unique areas of expertise/technology: A123 Systems – Lightweight/Long Life Battery Power; and Command Systems, Inc. – Command and Control. These contractors represent a significant technical contribution for the OFW program, providing key technology available from no other source. A123 Systems has pioneered breakthrough technology in high energy density packaging systems that may represent the only means to meet the power goals of the OFW

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

program by 2015. Command Systems, Inc. offers the Eagle Enterprise team a proven Command and Control (C2) approach that is currently utilized in the UK (Bowman), New Zealand, Australia, and Canada. In addition, they are the C2 designer for the FCS Lead Systems Integrator (LSI) team that will help ensure compatibility between FCS and OFW. These nontraditional companies are a key to chartering Eagle's success in the follow-on phases because the unique technologies and the techniques they represent cannot be obtained from any other sources. The Government would not normally have access to these technology areas or commercial products except through the OTPP. The use of a Section 845 OTPP has allowed the government access to technologies of government FAR requirements. By leveraging off of the advancements of these companies, the Army avoids duplication of effort for critical components and achieves overall cost savings.

Extent the other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the United States:

The 845 OTPP has provided increased flexibility to enter into agreements with non-traditional companies offering technology solutions not otherwise readily available to the Government when utilizing traditional FAR contract vehicles (as discussed above). The flexibility engendered by the Section 845 OTPP to attract companies with unique technologies not normally available to the Government, provides an avenue for the Objective Force Warrior, a revolutionary, next generation individual warrior and small combat team system of systems, and a key element in Army Transformation, to become a reality. The objective of the OFW program is to provide a quantum advance over existing capabilities of soldier systems presently completing development. Such advances require technologies at the cutting edge of the state of the art. Often such technology is found only in companies that have neither the experience nor the infrastructure to respond to traditional FAR contract vehicles. Attainment of OFW program goals due to access to nontraditional defense contractor technologies accommodated by the Section 845 OTPP, will provide the United States an overwhelmingly lethal and survivable soldier system of systems that is capable of dominance across the spectrum of operations from major theater war to stability and support in all environments from urban and other complex terrain to open and rolling terrain, and in all climates to protect the United States against terrorism and all other enemies.

Other benefits to the DoD of the use of this agreement:

Eagle has stated that it will be continually reviewing the industry base for other nontraditional defense contractor candidates. By using small, innovative companies, Eagle will increase the government's available industrial base. The flexibility provided by OTPP Authority provides the means to quickly negotiate mutually agreed-to terms and conditions for new technologies and in the event Eagle needs to quickly obtain new subject matter expertise. No FAR provisions are imposed, which reduces the type of terms and conditions flowed to their industry partners. This flexibility allows for an increase in the nontraditional (commercial) industry base. Other features that can compress the schedule are the ability to more quickly accommodate changing program conditions and the maximum use of non-developmental, commercial items, which reduce or eliminate obsolescence or diminishing manufacturing sources [DMS] issues. This type of agreement facilitates the transition of technology from development into the hands of the Warfighter. Schedule compression is achieved, in part, because oversight requirements are reduced. This means that program resources can be used in the most effective and efficient manner to achieve program goals.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAD16-02-9-0002

Type of Agreement: Other Transaction for Prototype

Title: Objective Force Warrior, Phase I, Concept Development

Awarding Office: US Army Robert Morris Acquisition Center, Natick Contracting Division, AMSSB-ACN-S

Awardee: Exponent, Inc.

Effective Date: 29 Aug 2002

Estimated Completion or Expiration Date: 28 Apr 2003

U. S. Government Dollars: \$ 7,498,690

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:

The Objective Force Warrior (OFW) Advanced Technology Demonstration (ATD) program will demonstrate an integrated Soldier and Small Team System of Systems aimed at achieving revolutionary advances for the dismounted warfighter in Networked Communications/ Collaborative Situational Awareness (NC/CSA), integrated combat ensemble, netted lethality, man-portable power sources, soldier mobility/sustainability and human performance for the Objective Force. This OFW System of Systems will be fully integrated with the Future Combat System of Systems (FCS), other Objective Force platforms, and robotic air/ground platforms to form adaptive, distributed sensor networks for better warfighter situational understanding and networking and capability to leverage the entire force. Using Land Warrior 1.0 as a baseline and point of departure, OFW will employ open architectures and high-risk/high payoff technologies to yield a revolutionary warfighting system, integrated with multi-function sensors, weapons, physiological status monitoring, and embedded training capabilities. The OFW program will leverage relevant ongoing Army Science and Technology Objectives (STOs) and Defense Advanced Research Projects Agency (DARPA) initiatives to the maximum extent possible. Key performance goals include 50 lbs maximum fighting load per warfighter; 24 hour individual, and 72 hour autonomous team operations; full NC/CSA and integration with Warfighter Information Network-Tactical (WIN-T)/Joint Tactical Radio System (JTRS).

Extent the other transaction has contributed to a broadening of the technology and industrial base available for meeting DoD needs:

The Exponent, Inc. Team, designated Wolfpack Enterprise, has stated that it will be continually reviewing the technology and industry base for other nontraditional defense contractor candidates. By using innovative companies, Exponent, Inc. will broaden the technology and industrial base available for meeting DoD's needs as compared to a traditional FAR contract. The Section 845 Other Transaction for Prototype Projects (Section 845 OTPP) flexibility and relative simplicity are expected to efficiently focus limited resources on the vital interests of the program and to expand the population of highly qualified contractors to those who would otherwise not do business with the Federal Government. The flexibility provided by the OTPP Authority also provides the means to quickly negotiate mutually agreed-to terms and conditions in the event Exponent needs to quickly fund and move in a different direction. No FAR provisions are imposed, which reduces the type of terms and conditions flowed to their industry partners.

Exponent, Inc.'s team currently includes one non-traditional contractor, Wexford Group International (WGI). WGI will participate in OFW activities to a significant extent (16% of the Phase I effort). Specifically, WGI will provide a Principal Deputy to the Wolfpack Program Manager to directly influence the direction and activities of Wolfpack as they relate to OFW requirements, with particular attention to soldier applications. WGI will also provide Combat Applications and Operational Feasibility Support; Wolfpack administration support; Life Cycle Cost Estimating and

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Containment Strategy Support; and Earned Value Management System Support Services. WGI is also the recipient of the CECOM Land Warrior Consortium agreement and brings to the OFW program vision, expertise, and experience not available from any other industry partner.

Extent the other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the United States:

The 845 OTPP has provided increased flexibility to enter into agreements with non-traditional companies offering technology solutions not otherwise readily available to the Government when utilizing traditional FAR contract vehicles (as discussed above). The flexibility engendered by the Section 845 OTPP to attract companies with unique technologies not normally available to the Government, provides an avenue for the Objective Force Warrior, a revolutionary, next generation individual warrior and small combat team system of systems, and a key element in Army Transformation, to become a reality. The objective of the OFW program is to provide a quantum advance over existing capabilities of soldier systems presently completing development. Such advances require technologies at the cutting edge of the state of the art. Often such technology is found only in companies that have neither the experience nor the infrastructure to respond to traditional FAR contract vehicles. Attainment of OFW program goals due to access to nontraditional defense contractor technologies accommodated by the Section 845 OTPP, will provide the United States an overwhelmingly lethal and survivable soldier system of systems that is capable of dominance across the spectrum of operations from major theater war to stability and support in all environments from urban and other complex terrain to open and rolling terrain, and in all climates to protect the United States against terrorism and all other enemies.

Other benefits to the DoD of the use of this agreement:

Other benefits to DoD by using this OTPP agreement is that this type of agreement facilitates the transition of technology from development into the hands of the Warfighter by enabling schedule compression. Schedule compression is achieved, in part, because oversight requirements are reduced. Other benefits are the ability to more quickly accommodate changing program conditions, and the maximum use of non-developmental, commercial items, which reduce or eliminate obsolescence or diminishing manufacturing sources [DMS] issues. Overall, use of this agreement permits program resources to be used in the most effective and efficient manner to achieve program goals.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-02-9-B220

Type of Agreement: Other Transaction for Prototype

Title: United States Army Initiative for Integrated Army System Solutions

Awarding Office: United States Army Communications Electronics Command (CECOM), AMSEL-ACCA-RT-L

Awardee: Rosettex™ Technology and Ventures Group (A Joint Venture of SRI International and Sarnoff Corporation)

Effective Date: 30 Sep 2002

Estimated Completion or Expiration Date: 29 Sep 2007

U. S. Government Dollars: \$ 0 To be determined per task order (Two orders placed in FY02 for a total value of \$200K)

Non-Government Dollars: \$ 0 To be determined per task order

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 carry out basic, advanced and/or applied research, followed by prototyping, demonstrations, evaluations, and development of technology solutions through teaming with industry and academic institutions in the following technology areas:

1. Information Assurance for Tactical Networks

2. Antenna Research for SATCOM On The Move (SOTM)
3. Airborne Communications Relay
4. Free Space Optical Comm for Fixed & Mobile Tactical Networks (FOCUS-T)
5. Positioner/Tracker Antennas
6. Dynamic Re-addressing & Management for Army 2015(DRAMA)

**7. Multifunctional On-the-Move Secure Adaptive Integrated Communications
(MOSAIC)**

8. Advanced Antennas for Future Combat Systems (A2FCS)

9. VHF/UHF Multiband Multiplexer

10. Course of Action (COA) / Continuous Planning
11. Intelligent Agents
12. Interactive Information Visualization
13. Knowledge Management and Warehousing
14. Modeling & Simulation
15. Adaptive Applications
16. Tele-maintenance / Tele-diagnostics / Tele-medicine
17. Intelligent Power Management System (IPMS) Enhancements
18. Network Assisted GPS
19. GPS Pseudolite Signal/Receiver Definition and Demonstration
20. Integrated GPS/Navigation Simulation Tool Suite
21. GPS Integration Methodology Definition and Demonstration Using INS (MEMS), Filters and Oscillators
22. Integrated GPS/Navigation System Host, Test and Evaluation Tool Suite
23. GPS Interface Definition and Demonstration
24. Advanced Anti-Jam GPS Antennas, Filters and Processing Techniques Definition and Demonstration
25. GPS Jammer Terrestrial Propagation Delay Investigation

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

26. GPS Satellite Signal Propagation Through Foliage
27. GPS Multipath Reduction/Utilization
28. Collect – Collection Systems – General
29. Collect – Signals Intelligence (SIGINT)
30. Collect – Direction Finding (DF) Development and Enhancements
- 31. Collect – Emitter Intercept Techniques**
32. Collect – Electronic Intelligence (ELINT)
33. Collect – Measurement and Signature Intelligence (MASINT)
34. Electronic Warfare (EW)
35. Information Operations (IO) – Attack
36. Information Processing, Dissemination and Display
37. Modeling and Simulation (M&S) Initiatives
38. Command and Control Protect and C4-ISR Penetration Testing and Vulnerability Analyses

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 a broadening of the technology and industrial base available for meeting DoD needs by taking advantage of a unique teaming arrangement and management approach of Rosettex™ Technology and Ventures Group. For each task order awarded under this Agreement, a determination will be made to utilize significant participation of non-traditional defense contractors, or cost-sharing. Rosettex has teaming arrangements with over 60 industry partners, many of which are non-traditional defense contractors that would not be interested in obtaining Government work under a different arrangement. Rosettex is continuously adding new partners. The list of Rosettex partners on the date the Agreement was signed is as follows:

Applied Minds

Applied Signal Technology, Inc

Aquilent, Inc. (formerly Commerce One e-Government Solutions)

Atinav Inc

Autometric, Inc. (a wholly owned subsidiary of the Boeing Company)

BBN Technologies

Brilliant Media, Inc.

Cambridge Display Technology (CDT)

Carnegie Mellon University

Center of Higher Learning

Compaq Federal, LLC

Computer Sciences Corporation, Defense Group

Cree, Inc.

EarthWatch Incorporated D.B.A. DigitalGlobe

Environmental Systems Research Institute Inc. (ESRI)

ERDAS, Inc

Eye Research Institute

Fortrex Technologies, Inc.

Gartner, Inc.

General Dynamics Advanced Information Systems

George Mason University

Georgia Tech Applied Research Corporation (GTARC)

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

ImageLinks, Inc.
In-Phase Technologies
Iridian Technologies, Inc.
KPMG Consulting, Inc
Lambertville Eye & Laser, Hopewell Eye & Laser
Lockheed-Martin Management & Data Systems (M&DS)
McKinsey & Company, Inc.
Microlab
Midwest Research Institute
Mississippi Enterprise for Technology
Mississippi Space Commerce Initiative
mPower3/Emerge E-ConAgra.com, Inc.)
Northrop Grumman Information Technology, TASC
ObjectFX Corporation - Government Division
Observera, Inc.
Orbital Imaging Corporation (ORBIMAGE)
PacketVideo
Pennsylvania State University Applied Research Laboratory
Potomac Strategies & Analysis, Inc.
PricewaterhouseCoopers, LLP
Princeton University
Purdue University
Radiance Technologies, Inc.
RF Micro Devices, Charlotte (formerly RF Nitro)
Rockwell Scientific Company, LLC
Saffron Technology, Inc.
SAIC, Reconnaissance and Surveillance Operation
Sarnoff Corporation
Scyld Computing Corporation
Semandex Networks, Inc
Southwest Research Institute
SRI International
Sullivan-Haave Associates, Inc.
Swiftsure Spatial Systems Inc.
Syntek Technologies, Inc.
Terabit Corporation
Teranex
The SPECTRUM Group
Titan Systems Corporation
U. S. Display Consortium
Unisys Corporation

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

University at Buffalo, Center for Computational Research
University of Florida, Division of Sponsored Research
University of Illinois Urbana Champaign, National Center for Supercomputing Applications
University Of Southern Mississippi, Signal Research Center
University of Texas, Medical Branch at Galveston
User Systems, Inc.
Vexcel Corporation
Virginia Polytechnic Institute & State University, Mobile & Portable Radio Research Group
Wavexpress, Inc.
West Virginia University Research Corporation on Behalf of West Virginia University

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 further fosters new relationships and practices that support the national security of the USA by encouraging technology commercialization. For each task order awarded under this Agreement, a determination will be made to utilize significant participation of non-traditional defense contractors, or cost-sharing. When cost sharing is utilized for tasks, contractors share in the risk if technology development and commercialization of technologies of interest to the Government.

Other benefits to the DOD through use of this agreement:

The use of an other transaction has resulted in additional benefits, not addressed above. This Agreement allows for a Two-Phase task order for Phase I Independent Assessment & Evaluation (IA&E) and Phase II Prototyping Activities based on the results obtained in Phase I thereby implementing a unique and innovative approach to streamline R&D analysis and prototyping. Through teaming with over 60 partners in industry, educational institutions and non-profit groups, Rosettex plans to identify and implement solutions to a broad range of technology areas competitively identified in multiple Broad Agency Announcements currently being solicited by the RDEC. Additionally, Rosettex proposed to foster commercialization of promising technologies, products and fund emerging companies by funding the Rosettex Venture Capital Fund with any profit received from the Government.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-02-9-J213

Type of Agreement: Other Transaction for Prototype

Title: Head Tracked Sensor Suite (HTSS)

Awarding Office: Commander, U.S. Army Communications-Electronics Command (CECOM), CECOM Acquisition Center, ATTN: AMSEL-AC-CC-RT-F

Awardee: NYTECH Integrated Infrared Systems

Effective Date: 28 Jun 2002

Estimated Completion or Expiration Date: 31 Dec 2002

U. S. Government Dollars: \$250,000

Non-Government Dollars: \$125,000

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The HTSS system will provide vehicle commanders with a day/night 360° (Azimuth) x 110° (-20° to +90°) (Elevation) dome of situational awareness (SA) coverage, enabling optical connectivity with the dismounted infantry in closed hatch operations, critical for Military Operations on Urbanized Terrain (MOUT). HTSS is slaved to the movement of the commander's head; employs the Low Power Uncooled InfraRed (LPUiR) FLiR (provided as GFE or offeror may propose use of alternate uncooled FLiR that possesses the same characteristics of a LPUiR FLiR) that is image fused with Image Intensified (I2) imagery for optimum performance and to see battlefield pointers; has a coded high power laser pointer to direct fire for other vehicles or dismounted soldiers; uses an eye-safe laser rangefinder (ELRF) to facilitate precise target location; and has an on-board intrusion detection system to provide the crew SA in the immediate vicinity of the vehicle to protect from a dismounted attack. HTSS will be integrated into the SA Tactical Internet network, assisting the commander in quickly locating enemy targets, enabling coordinated fires with other force assets, and providing enhanced close combat 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:

Successful completion of the Two Phases of the HTSS effort will result in a Low Rate Initial Production (LRIP) Award, with anticipation on a full scale production buy to assimilate this new technology into all mechanized vehicular platforms.

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:

Several teaming arrangements have come about as a result of the HTSS dual award OT's, including the recent merger of DRS Infrared Systems and NYTECH Integrated Infrared Systems and Raytheon's partnering with Harsh Environment Applied Technologies (HEAT). These relationships have enhanced the government's production base, thus ensuring timely delivery of hardware in a full scale production scenario, while fostering price competition and technology sharing.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAB07-02-9-J214

Type of Agreement: Other Transaction for Prototype

Title: Head Tracked Sensor Suite (HTSS)

Awarding Office: Commander, U.S. Army Communications-Electronics Command (CECOM), CECOM
Acquisition Center, ATTN: AMSEL-AC-CC-RT-F

Awardee: Harsh Environment Applied Technologies, Inc.

Effective Date: 28 Jun 2002

Estimated Completion or Expiration Date: 31 Dec 2002

U. S. Government Dollars: \$250,000

Non-Government Dollars: \$20,000 (Non-Traditional Defense Contractor)

Dollars Returned to Government Account: \$ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

The HTSS system will provide vehicle commanders with a day/night 360° (Azimuth) x 110° (-20° to +90°) (Elevation) dome of situational awareness (SA) coverage, enabling optical connectivity with the dismounted infantry in closed hatch operations, critical for Military Operations on Urbanized Terrain (MOUT). HTSS is slaved to the movement of the commander's head; employs the Low Power Uncooled InfraRed (LPUIR) FLIR (provided as GFE or offeror may propose use of alternate uncooled FLIR that possesses the same characteristics of a LPUIR FLIR) that is image fused with Image Intensified (I2) imagery for optimum performance and to see battlefield pointers; has a coded high power laser pointer to direct fire for other vehicles or dismounted soldiers; uses an eye-safe laser rangefinder (ELRF) to facilitate precise target location; and has an on-board intrusion detection system to provide the crew SA in the immediate vicinity of the vehicle to protect from a dismounted attack. HTSS will be integrated into the SA Tactical Internet network, assisting the commander in quickly locating enemy targets, enabling coordinated fires with other force assets, and providing enhanced close combat 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:

Successful completion of the Two Phases of the HTSS effort will result in a Low Rate Initial Production (LRIP) Award, with anticipation on a full scale production buy to assimilate this new technology into all mechanized vehicular platforms.

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:

Several teaming arrangements have come about as a result of the HTSS dual award OT's, including the recent merger of DRS Infrared Systems and NYTECH Integrated Infrared Systems and Raytheon's partnering with Harsh Environment Applied Technologies (HEAT). These relationships have enhanced the government's production base, thus ensuring timely delivery of hardware in a full scale production scenario, while fostering price competition and technology sharing.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0009

Type of Agreement: Other Transaction for Prototype

Title: Energetic Thermoplastic Elastomer (ETPE) Pilot Plant

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: ATK THIOKOL PROPULSION and ALCOA BUSINESS

Effective Date: 22 Apr 2002

Estimated Completion or Expiration Date: 22 Apr 2003

U. S. Government Dollars: \$299,997

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 contract work statement addresses the continuation of the ETPE process optimization program to establish of the pilot-scale facility capable of producing at least 2500 kg / yr of the ETPE BAMO-GAP. Once established, the facility will also be capable of manufacturing multiple other ETPEs and energetic thermoplastics (ETPs), such as BAMO-AMMO, CE-BAMO, BAMO-PGN etc., with a maximum production rate that is dependent on the particular formulation manufactured. In addition to establishing the pilot plant, the original three phase program proposed to identify, definitize and optimize the parameters necessary for scaling the manufacturing process from the laboratory scale to the pilot plant and to perform demonstration testing of the pilot-scale facility.

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 new energetic materials, including ETPEs, is key to producing increased performance propellant formulations that will meet requirements of the FCS fast-core geometry propellant program. Thiokol Propulsion has been working closely and successfully with the DoD during the past several years in developing both new energetic materials and increased performance propellant formulations. Under a previously funded Task Order, improvements resulted in a much higher throughput using the existing reactors. Instead of the originally envisioned major modification to the existing pilot plant equipment during this phase, the addition of some much less capital-intensive support equipment is requested, together with funding for some optimization investigations aimed at cost reduction, creation of product acceptance criteria, and development of the final product delivery form, thereby making it more useable with automated handling equipment.

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) for Prototype resulted in a unique teaming arrangement between Government and Industry. Under the OT WETC and NVEC members work together to create and support an annual plan for accomplishment of the long and short-term goals of the WETC government members. This has resulted in a better understanding of the government planning and budgeting process by the NVEC members and the focusing of NVEC member's IR&D to meet WETC objectives.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0010

Type of Agreement: Other Transaction for Prototype

Title: High Energy Density Hybrid Propellants

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: General Dynamics Ordnance and Tactical Systems

Effective Date: 23 Apr 2002

Estimated Completion or Expiration Date: 23 Apr 2003

U. S. Government Dollars: \$294,446

Non-Government Dollars: \$29,472

Dollars Returned to Government Account: \$0

Technical objectives of this effort including the technology areas in which the project was conducted:

The objectives of this effort are to demonstrate the performance gains which Hybrid propellants can achieve with both conventional and nitramine ingredients and validate the interior ballistic models of the propellant. The program will begin with a loose charge optimization, demonstrating ballistic performance for a charge with an impetus of 1150 J/gm and nominal bulk density of 1 gm/cc. A densified charge will then be optimized for the same gun system. This ultimate High Density Hybrid charge will be targeted to have equivalent performance to a 1.3 gm/cc density charge of 1300 J/gm impetus. Both loose and compacted charges will be designed, so that the gun gas temperatures they produce are less than those produced by propellant with a flame temperature of 3450°K. Concurrent to this effort will be the development of a loose nitramine Hybrid propellant with a nominal composition of 50% RDX. Based on these subscale demonstrations, Hybrid propellant can be designed and built for full scale FCS firings at a designated government test facility. Follow-on work will allow these charge designs to be integrated with an electro-thermal-chemical (ETC) ignition system and fired at UDLP or ARDEC's ETC equipped test range. While demonstrating this in a suitable medium caliber test vehicle the technology can be scaled up to any gun system chosen for the Future Combat 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:

Under the FCS Multi-Role Armament And Ammunition Advanced Technology Demonstration (ATD), an ETC Propulsion System is being developed. ETC gun propulsion is a hybrid propulsion concept that uses both chemical and electrical energy to accelerate the projectile. Electrical energy, in the form of a plasma, is used to augment/control the release of chemical energy from high energy, high loading density propellants. This technology provides for a more efficient and effective utilization of chemical energy technology. This specific effort will involve development of formulations of hybrid propellants with increased performance gains that can be integrated into an ETC Propulsion 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:

Use of the Other Transaction (OT) for Prototype resulted in a unique teaming arrangement between Government and Industry. Under the OT WETC and NVEC members work together to create and support an annual plan for accomplishment of the long and short-term goals of the WETC government members. This has resulted in a better understanding of the government planning and budgeting process by the NVEC members and the focusing of NVEC member's IR&D to meet WETC objectives.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0011

Type of Agreement: Other Transaction for Prototype

Title: Development Of Multipurpose Warhead Prototypes For The Bunker Defeat Munitions

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: General Dynamics Ordnance and Tactical Systems

Effective Date: 17 May 2002

Estimated Completion or Expiration Date: 16 May 2007

U. S. Government Dollars: \$5,406,506

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 approach for this effort is that the components of the warhead for the Bunker Defeat Munitions will be developed as a system capable of being placed as a generic delivery system, from a shoulder fired weapon to a gun launched projectile. In order to meet design goals, it will require the evaluation, enhancement, and blending of unique and innovative warhead design concepts. This program effort will involve an extensive series of iterative design excursions to appraise and then advance the necessary state-of-the-art in warhead technology. Design iterations include high rate dynamic computational modeling of warhead and grenade configurations, fabrication of hardware and components, loading and assembly of warheads and components for evaluation, testing of warheads against multiple target configurations and extensive data analysis. This data will be incorporated and used in subsequent design iterations to further advance performance.

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 proposed technology is capable of being used in individual munitions as part of the kill mechanism for the defeat of multiple targets sets. The demonstrated data against concrete walls shows significant hole size and the potential to defeat multiple targets with a follow-through grenade. The technology is based on the warhead of the German Bunkerfaust weapon. This project will bring that technology on shore and will adapt it to a smaller and lighter weapon system. This technology will then be available on shore for other weapon systems.

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) for Prototype resulted in a unique teaming arrangement between Government and Industry. Under the OT WETC and NVEC members work together to create and support an annual plan for accomplishment of the long and short-term goals of the WETC government members. This has resulted in a better understanding of the government planning and budgeting process by the NVEC members and the focusing of NVEC member's IR&D to meet WETC objectives.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0012

Type of Agreement: Other Transaction for Prototype

Title: Improved Combustible Cartridge Case

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: ATK Thiokol Propulsion

Effective Date: 1 Jul 2002

Estimated Completion or Expiration Date: 30 Jun 2004

U. S. Government Dollars: \$798,215

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 is a multi-year program designed to refine compositions, develop and demonstrate the use of processing technology, and manufacture prototype cases for the FCS and the 120 mm mortar cases. The first task is to improve the strength and burning properties of previous formulations and produce the material on a form that is conducive to a molding technique. Next the contractor shall determine a manufacturing process for the molding techniques and equipment that can be used to mold the material into different combustible case designs with a low cost processing technology. Upon completion of these tasks the contractor shall supply 20 lbs of material to be molded into combustible cases for the FCS and the 120mm mortar cases.

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:

There is only one manufacturer of combustible cartridge cases in the US. The current design for combustible cases uses a proprietary process that requires cotton lintners from off shore sources. The new design and process will use injection molding of domestically available Energetic Thermo Plastic Elastomers. In the event of mobilization any plastic molding factory in America can produce these combustible cartridge cases.

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 injection molding of combustible cartridge cases is a new practice that allows the mass production of insensitive Ordnance Materiel in private industry when required.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0013

Type of Agreement: Other Transaction for Prototype

Title: Pyrotechnic Decoy Munition

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: Kilgore Flares Co., LLC

Effective Date: 1 Jul 2002

Estimated Completion or Expiration Date: 30 Jun 2003

U. S. Government Dollars: \$878,824

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 will conduct treat analysis, modeling and simulation, decoy requirements analysis, dispense requirements, systems integration requirements, material studies, initiator, delay & transfer mechanism studies and trajectory studies. From the results of these studies the contractor will create designs for the decoy. The goal is generate at least two designs for each decoy subassembly of the munition. Technical down-select of the designs will take place in phase II and the contractor will fabricate prototype test sub-assemblies for each decoy designed.

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 broadens the base by expanding the technology used for aircraft decoy flares to ground combat vehicles. New ingredients and improved formulations will be spun back to the aircraft decoys for use in Homeland 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 other transaction establishes the new practice of adapting aircraft flare technology to ground combat vehicles. The sensors of smart weapons that will attack future ground vehicles are similar to current threat anti aircraft sensors. These new relationships between ground and air decoy technologists will provide improved ingredients and formulations for National Defense.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0014

Type of Agreement: Other Transaction for Prototype

Title: Scale-up of PAX-2A

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: ATK Thiokol Propulsion

Effective Date: 17 Jun 2002

Estimated Completion or Expiration Date: 16 Jun 2004

U. S. Government Dollars: \$472,903

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 will 1) vary key processing metrics in the PAX-2A batches to optimize production cost reductions; 2) conduct studies to determine the minimum solvent content required thereby reducing the drying time for each PAX-2A batch; and 3) will collect and analyze particle size data to determine the optimized mixing process.

Throughout the effort the contractor shall deliver 12,500 pounds of PAX-2A to the Lone Star Army Ammunition Plant (LSAAP) for M80 grenade production loading material and verification of the data collected during the production of the PAX-2A..

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 contributes to the broadening of the base by integrating the activities of the private sector explosive producer with the employees of the Lone Star Army Ammunition Plant and the government engineers at Picatinny Arsenal and with Project Manager personnel. This interaction has enabled the employees to parlay their research off the information provided by their public-private team members.

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:

These new relationships accelerate the spiral development of the Artillery Ammunition through technology insertion of the insensitive explosive.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0015

Type of Agreement: Other Transaction for Prototype

Title: Alternate Manufacturing Techniques and Energetics Materials for the Improved Propellant Cases

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: Armtec Defense Products Co.

Effective Date: 9 Sep 2002

Estimated Completion or Expiration Date: 8 Sep 2002

U. S. Government Dollars: \$96,793

Non-Government Dollars: \$32,265

Dollars Returned to Government Account: \$0

Technical objectives of this effort including the technology areas in which the project was conducted: Investigate an alternate combustible casing manufacturing technique from a large-scale producibility standpoint. This investigation will concentrate on the molding of ETPEs in the manufacture of combustible propellant containers. Research on the integration of fibers into the energetic thermoplastic elastomers will be conducted to determine the structural integrity required to fabricate large caliber combustible ordnance products using the injection molding.

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 successful technology development of alternate combustible casing manufacturing techniques would provide a benefit to the ballistic characteristics of numerous ordnance products for 1) higher energy combustible cases in increased velocities and lethality; 2) thinner/rugged combustible cases resulting in greater propellant volume, increased velocities and improved lethality; and 3) increased Insensitive Munitions (IM) characteristics.

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:

Thru the sharing of data by the National Warheads and Energetics Consortium members at the meetings that have been set forth in the Other Transaction, Armtec Defense Products Co. had the opportunity to relay their research information to the representatives of ATK Thiokol Propulsion and Aerojet-General on how Armtec could integrate the ETPEs that Thiokol and Aerojet are developing into their manufacturing of combustible cartridge cases. These interactions will accelerate the development of combustible cartridge cases for DoD requirements.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0016

Type of Agreement: Other Transaction for Prototype

Title: Transition of ETPE Synthesis from Laboratory to Pilot Plant – Monomer Scale-Up and Optimization

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: Aerojet

Effective Date: 3 Jul 2002

Estimated Completion or Expiration Date: 2 Jul 2003

U. S. Government Dollars: \$294,181

Non-Government Dollars: \$28,000

Dollars Returned to Government Account: \$0

Technical objectives of this effort including the technology areas in which the project was conducted:

The contractor will investigate reducing labor costs, improving producibility and quality of the monomers to feed the polymerization, which will allow cost reductions to be realized for the final ETPE product cost and improve the quality of material produced. At the completion of this ManTech effort, the contractor will have a process capable of producing sufficient quantities of ETPE, up to 2500 kg per year, to meet the needs of the Future Combat 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:

Through this effort an Energetic Thermo Plastic Elastomers an on shore source of energetic binders for advanced propellant and combustible cartridge cases will be developed.

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 Energetic Thermo Plastic Elastomers provide an onshore ability to injection mold combustible cartridge cases. In an emergency any plastic injection molding factory in the country can quickly be converted to producing combustible cartridge cases.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0017

Type of Agreement: Other Transaction for Prototype

Title: Application of Nanometer Sized Materials

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: ATK Thiokol Propulsion

Effective Date: 20 Aug 2002

Estimated Completion or Expiration Date: 19 Aug 2004

U. S. Government Dollars: \$1,332,089

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: Energetic material ingredients utilized in advanced formulations must meet specific and stringent performance criteria with respect to energy density, vulnerability response, and other properties. The proposed program will evaluate nano-materials for various explosive applications including multipurpose (metal driving and high blast) high performance pressed formulations, thermobaric (long duration blast overpressure) formulations, and fuze 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:

Use of Nano materials will reduce the number of materials that must be procured offshore. The nano materials which are made in the US can replace materials such as nitroguanadine and black powder.

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 teaming between industry and government Public Private Partnerships such as the Nano Valley prototyping capability is expected to set the pattern for future arrangements. Nano materials are a rapidly expanding technology area that affects many other technology areas.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

Agreement Number: DAAE30-01-9-0800

Task Order: 0018

Type of Agreement: Other Transaction for Prototype

Title: Synthesis of Novel Energetic Materials

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: GEO-CENTERS

Effective Date: 25 Sep 2002

Estimated Completion or Expiration Date: 24 Sep 2002

U. S. Government Dollars: \$297,033

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 explosives with at least 15% more energy than LX-14, reduced sensitivity, environmentally friendly and easy to demilitarize through the synthesis of compounds similar in performance to CL-20 that will lead to the scale-up and testing of novel energetic 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:

By developing novel energetic material that has increased energy, reduced sensitivity, environmental and easy to demilitarize, the warheads that the soldier will use will be smaller and lighter and thus support the rapid movement of troops while leaving less of a "footprint" on the battlefield environment.

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 is one of the first Army Projects awarded under the National Advanced Energetics Initiative. This initiative infuses resources and impetus into a declining industrial base.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

The following charts provide a summary of DoD’s use of the three statutory reasons an agency can use to award new Prototype OTs and the level of participation of non-traditional contractors in new OTs.

Prototype OT Award Reason Code	Number of New Awards	% of Total New Awards	# Distinct Non-Traditional Firms Participating
“A” = Non-traditional significant participation	42	78	21
“B” = Cost Sharing	10	18	9
“C” = SPE Determination of Exceptional Circumstances	2	4	0

# Non-traditional companies participating	30
# Non-traditional Companies as Prime Contractors	12

Fifty-four of the seventy-seven prototype summaries contained in this Report to Congress are categorized as “New Agreements”*. Those summaries which do not qualify as New are:

- a. Two (2) new master agreements awarded by NIMA (NMA401-02-9-2001 and NMA401-02-9-2002). The individual tasks awarded under the master agreements are included in the above chart.
- b. Three (3) Navy agreements which were inadvertently excluded from the FY01 report (N00024-01-9-4020, 4021 and 4022).
- c. Eighteen (18) major modifications to existing (pre FY02) agreements issued by DARPA.

* New agreements consist of only those agreements coded as “Initial Award” in the “Type of Action” reporting block of the DD Form 2759, REPORT OF OTHER TRANSACTIONS FOR PROTOTYPE PROJECTS. Major modifications [increased scope of work] and master agreements are not considered to be new agreements.

**COOPERATIVE AGREEMENTS AND OTHER TRANSACTIONS
ENTERED INTO DURING FY02**

