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**Annual**

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**Report To Congress**

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**The Foreign**

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**Comparative**

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**Testing Program**

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**Fiscal Year 1996**

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February 1997

Office of the Under Secretary of Defense

# (Acquisition and Technology)

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## FOREWORD

The FCT Program has demonstrated unsurpassed success in its seventeen year history, and Fiscal Year 1996 is no exception. The Foreign Comparative Testing (FCT) Program continues as a key tool for the Department of Defense (DoD) to improve the readiness of the U.S. Armed Forces while strengthening defense relationships through international armaments cooperation. For only a small investment, the FCT Program achieves these benefits while simultaneously reducing overall acquisition costs.

Some noteworthy accomplishments resulting from the FCT Program in FY 1996 are:

- The Navy's number one flight safety issue for the F-14 Tomcat fighter is being successfully addressed with the adoption of the Digital Flight Control System evaluated in the FCT Program.
- Six successful FCT projects have resulted in recent contracts worth over \$93 million to acquire foreign items to satisfy our warfighting requirements.
- Items procured as a direct result of the FCT Program were in use around the world helping U.S. Armed Forces accomplish their missions. In Bosnia, for example, several systems critical to successful operations were deployed directly from their FCT evaluations.
- Ground work in FY 1996 has paved the way for Spain to become the newest participant in the FCT Program, and earlier FCT efforts with the Republic of South Africa and Russia are likely to result in the first acquisition of a South African and a Russian military item respectively.

This year's report contains some new features:

- FCT Program investment and Service procurement dollar totals are now presented in FY 1996 constant dollars. Previous reports showed a cumulative 'then year' figure which understated the real value of the FCT Program.
- Pictures of items being evaluated in FCT projects are included for easier comprehension.

The FCT Program is good for our Armed Forces and good for U.S. taxpayers. The FCT Program allows earlier fielding of quality nondevelopmental foreign equipment while avoiding costly Research, Development, Test, and Evaluation (RDT&E) expenditures. In fact, over the seventeen year life of the Program, the cost avoidance in RDT&E amounts to almost \$1.5 billion at a cost of only \$599 million. I appreciate your continued support of the FCT Program, and it is with great pleasure that I submit to Congress the Fiscal Year 1996 Annual Report on the Foreign Comparative Testing (FCT) Program.

Paul G. Kaminski

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## OVERVIEW OF THE FOREIGN COMPARATIVE TESTING PROGRAM<sup>1</sup>

The Foreign Comparative Testing (FCT) Program responds to a growing awareness of the potential value of using nondevelopmental items to accelerate the acquisition process and cut rising development costs. Authorized by Congress in 1989, the FCT Program consolidated two earlier programs: the Foreign Weapons Evaluation (FWE) Program and NATO Comparative Test (NCT) Program (widely known as NATO "side-by-side" testing).

The FCT Program tests and evaluates nondevelopmental defense equipment produced by allies and other friendly countries to determine whether these items satisfy Department of Defense (DoD) requirements or address mission area shortcomings. The objectives are to reduce Research, Development, Test, and Evaluation (RDT&E) expenditures by—

- Enhancing standardization and interoperability
- Improving cooperative support
- Promoting competition; and
- Eliminating unnecessary duplication.

The Services (Army, Navy, Air Force) and USSOCOM nominate candidate projects to the Office of the Secretary of Defense (OSD) for FCT funding consideration each year. The OSD Staff screens the proposals to ensure that (1) the proposed nondevelopmental item addresses valid requirements, (2) thorough market surveys were conducted to identify all potential contenders, and (3) the sponsoring organizations have developed viable acquisition strategies. The highest priority for funding is given to projects where there is an intent to procure if the item meets requirements and provides best value. The lowest priority is given to projects that evaluate foreign technologies where there is no intent to procure after the evaluation.

After the OSD Staff evaluates and prioritizes the candidate proposals, Congress is notified of OSD's intent to provide the Services and USSOCOM FCT funds for approved new projects and any projects continuing from prior years. The sponsoring organization then obtains, tests, and evaluates the items selected for consideration. Approved projects are normally funded for one or two years. Ideally, items that successfully pass the test and provide best value will be procured by the sponsoring organization.

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<sup>1</sup> The FCT Program is congressionally mandated in Title 10, United States Code, Section 2350a. Further guidance is found in Part 210, DoD FAR Supplement, and sections of DoD Regulation 5000.2-R, which address the acquisition and distribution of commercial products.

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## HIGHLIGHTS OF THE FY 1996 FCT PROGRAM

FY 1996 was an exciting and productive year. Thirty-seven projects were selected for funding in the FY 1996 FCT Program—17 were new starts and 20 were continuing from previous years. Several items successfully completed test and evaluation and were procured by the Services. These purchases are a direct result of the Program's focus on procurement and of using a disciplined approach to evaluate and select candidate projects. A significant development occurred with the establishment of an FCT Program office at U.S. Special Operations Command (USSOCOM). In the past, USSOCOM relied on the Services to propose and manage projects; but now USSOCOM will build on this experience to manage its own projects.

First time procurement contracts worth \$93.5 million were awarded in FY 1996 for items which passed FCT evaluation. These items are listed below with respective country, foreign vendor, and sponsoring organization.

- 84mm Insensitive Munition High Explosive Anti-Tank Round for the Ranger Anti-Armor, Anti-Personnel Weapons System (Sweden; Bofors AB; Navy)
- Automatic Chemical Agent Detector Alarm (UK; Graseby Dynamics; Army)
- Digital Flight Control System for F-14 (United Kingdom; GEC Marconi; Navy)
- GIANT Infrared Decoy System (Germany; Buck Werke; Navy)
- 2kw Generator Set (Canada; Mechron; Army)
- Modular Reconnaissance Pod (Denmark; Per Udsen; Air Force)
- T45 Trainer Digital Cockpit Display (United Kingdom; Smiths Industries; Navy)

In addition to these procurements in FY 1996, procurement packages are anticipated on additional items recently tested in the FCT Program. These include:

- Eagle Vision Deployable Satellite Ground Receiving and Processing Station—Air Force

- Electronic Warfare Management System—Air Force
- Gun Laying and Positioning System—Army
- M-31 Supersonic Sea Skimming Target—Navy
- Powered Multifuel Burner—Army
- Ultra-Lightweight Camouflage Net System—Army

## **FCT PROGRAM BENEFITS**

### **Summary of FCT Achievements**

The FCT Program has experienced unsurpassed success while being cost effective. Since the Program's inception in FY 1980, OSD has approved funding for **339** projects. **154** of these projects have resulted in successful evaluations; and of these, **78** have resulted in equipment procurements of nondevelopmental items by the Services and USSOCOM worth over **\$4.5 billion**. Over this same period, the Program has generated an estimated Research, Development, Test and Evaluation (RDT&E) cost avoidance of almost **\$1.5 billion** at a cost of only **\$599 million\***. The resulting savings approach **\$1 billion** and provide a nearly two to one benefit for every FCT dollar spent. In addition to monetary advantages, the FCT Program has—

- Improved operational capabilities;
- Generated cost savings due to foreign competition;
- Facilitated the rapid fielding of nondevelopmental equipment;
- Contributed to international armaments cooperation;
- Reduced acquisition costs by avoiding new start developments; and
- Created teaming opportunities for U.S. industry.

\* All amounts in constant FY 1996 dollars

### **Improved Operational Capabilities for U.S. Forces**

Foreign items tested under the FCT Program play a key role in providing the equipment needed to help our servicemen and servicewomen accomplish missions throughout the world. Equipment tested under the FCT Program, such as the Army's Combat Support Boats, the Air Force's Eagle Vision Satellite Ground Receiving and Processing Station, and the Marine Corps' Anti-magnetic Mine Actuating Device, supports U.S. forces in Bosnia. On a day-to-day basis FCT evaluated equipment



has improved the performance or safety of U.S. systems. For example, the Digit Flight Control System has solved the Navy's number one safety of flight issue for F-14 aircraft.

### **Generated Cost Savings Due To Foreign Competition**

An FCT evaluation of a foreign item often has an impact on procurement costs, warranties, or contractual guarantees of competing U.S. items. One such example is the Rolls-Royce/Turbomeca RTM-322 aircraft engine. In 1987, the Navy evaluated the RTM-322 as an alternative to the General Electric (GE) T-700 engine in the SH-60 and UH-60 series helicopters. Although the foreign built RTM-322 did not win the competition, its inclusion significantly reduced U.S. acquisition costs and improved warranty and contractual guarantees of the GE T-700 which the Navy selected as a result of the competition.

### **Facilitated the Rapid Fielding of Nondevelopmental Items**

The United States realized the need to respond rapidly to our nation's warfighting and peacekeeping requirements from its experience in situations such as the Gulf War. The FCT Program has demonstrated the ability to test, evaluate, and facilitate the procurement of systems on short notice in war, operations other than war, or other crises. The focus on nondevelopmental items coupled with a streamlined path to procurement puts needed equipment into the hands of America's servicemen and servicewomen when it is needed.

### **Contributed to International Armaments Cooperation**

The FCT Program strengthens U.S. relationships in the international community by providing tangible evidence of America's commitment to the "two-way" street, and the Program is vital to supporting the U.S. policy of international armaments cooperation. The \$4.5 billion in foreign procurements generated from the Program demonstrate U.S. openness to buying best value from foreign vendors. The FCT Program also broadens the cooperation arena as countries such as South Africa, Spain, and Russia join the ranks of nations already participating in the Program. The reality is a vibrant FCT Program also fosters an environment which helps U.S. vendors sell domestically manufactured defense items overseas.

### **Reduced Acquisition Costs by Avoiding New Start Developments**

The FCT Program reduces overall DoD acquisition costs by promoting the procurement of nondevelopmental items. Every time a nondevelopmental item evaluated under the FCT Program results in a procurement, the DoD and the U.S. taxpayer save money. These savings are in the form of reduced expenditures for research and development; and over the life of the FCT Program, these

savings amount to nearly \$1.5 billion. The additional advantage to DoD (and ultimately the warfighter) is the timely fielding of the best available military equipment at an affordable cost.

**Created Teaming Opportunities for U.S. Industry**

FCT projects frequently catalyze industry teaming which assists each party in the competitive international market. These arrangements include work-sharing or perhaps producing a foreign developed item under license in the United States. This strengthens the U.S. economy and industrial base, creates American jobs, and also improves the two-way street that facilitates U.S. domestic defense industries selling their products overseas.

**FCT PROJECTS**  
**COMPLETED IN FY 1996**

- **Army**

- 25mm Break-Up Ammunition
- Gun Laying and Positioning System
- Omega M127 Electronic Time Fuze
- Powered Multifuel Burner
- Universal/Precision Electronic Time Mortar Fuze

- **Navy/Marine Corps**

- 84mm Insensitive Munition High Explosive Anti-Tank Round
- Advanced Short Range Air-To-Air Missile
- Aircrew Laser Eye Shield
- AVENGER Land Navigation System
- Barracuda Target Boat System
- Digital Flight Control System for F-14 Tomcat
- DYAD Magnetic Sweep
- Laser Airborne Depth Sounder System
- Liquid Gas Eutectic Reaction Process for Porous Materials
- M-31 Supersonic Sea Skimming Target
- PROPSCAN/CSCAN Marine Propeller Inspection System
- "Z" Electro-Optical Payload

- **Air Force**

- 40mm L60/L70 Advanced Gun System for AC-130 Gunships
- Bondline Energy Measurement System
- Eagle Vision Deployable Satellite Ground Receiving and Processing Station
- K-36 Ejection Seat

**ARMY**

**25mm Break-Up Ammunition — Netherlands**

NWM De Kruithoorn B.V. developed and manufactured the 25mm Break-up Cartridge. This cartridge is designed so that the plastic projectile ruptures immediately after leaving the weapon muzzle and falls harmlessly to the ground at a limited distance from the weapon. Technical testing was successfully completed in FY 1995, but the Army user withdrew their requirement. The Army is continuing to investigate whether other users and/or maintainers of the 25mm gun have a requirement.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$284,000	\$0	\$284,000

**Gun Laying and Positioning System (GLPS) — Israel, Switzerland**

The GLPS is a self locating device that gives towed and self propelled artillery batteries all-weather rapid positioning capability. GLPS units evaluated by the Army were made by Leica Heerbrugg AG, Switzerland and IAI Tamam, Israel. Tests were completed in 1995. The Army and Marine Corps have identified a need for more than 600 GLPS. A contract award is pending.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$1,590,0000	\$0	\$1,590,000

**Omega M127 Electronic Time Fuze — Israel**

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The Omega fuze was developed by Reshef Technologies for the Israel Defense Forces for use on their U.S. made M494 Anti-Personnel 105mm rounds. The objective of this project was to evaluate the fuze for the U.S. 105mm Armored Gun System. The Army termination of the Armored Gun System in February 1996 ended the need for this fuze.

FCT FUNDING PROVIDED		
PRIOR YEAR(S)	FY 1996	TOTAL
\$277,000	\$0	\$277,000

### ARMY

#### Powered Multifuel Burner (PMB) — Canada

The International Thermal Research candidate is a powered-type multifuel burner using fuel atomization to achieve clean combustion. This candidate proved to be safer than the Army's standard gasoline-fired M2/M2A field kitchen burner unit. Testing was completed in June 1996, and a competitive procurement is underway with award scheduled for late FY 1997.

FCT FUNDING PROVIDED		
PRIOR YEAR(S)	FY 1996	TOTAL
\$383,000	\$0	\$383,000

#### Universal/Precision Electronic Time Mortar Fuze — Finland, Israel, South Korea

The Army requires a universal precision electronic time mortar fuze and intends to standardize the types of non-practice mortar fuzes being fielded. This project was terminated when it was determined from contractor's data and evaluation that none of the FCT candidates from Finland (Noptel Oy), Israel (Reshef Lambda), and South Korea (Hanwha Limited) met the requirements.

FCT FUNDING PROVIDED		
PRIOR YEAR(S)	FY 1996	TOTAL
\$0	\$78,000	\$78,000

NAVY/MARINE CORPS

**84mm Insensitive Munition High Explosive Anti-Tank (HEAT) Round — Sweden**

The Bofors AB insensitive munitions version of the 84mm FFV 551 HEAT Round used in the Swedish Carl Gustaf M3 recoilless rifle system began testing in FY 1994. The round successfully met Navy insensitive munitions requirements. The round was certified for use and a \$13 million contract was awarded in September 1996 for 3,050 rounds.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$2,277,000	\$372,000	\$2,649,000

**NAVY/MARINE CORPS**

**Advanced Short Range Air-To-Air Missile (ASRAAM) — United Kingdom**

The ASRAAM, developed by British Aerospace Company under United Kingdom Ministry of Defense sponsorship, was evaluated determine whether it met the U.S. short range air-to-air missile requirement. ASRAAM testing focused on the ability to counter threats described in the AIM-9X System Threat Assessment Report. The ASRAAM FCT assisted the U.S. Government in becoming a "smart buyer" for the AIM-9X engineering and manufacturing development source selection process. ASRAAM did not meet the U.S. requirement for AIM-9X.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$15,525,000	\$5,331,000	\$20,856,000

**Aircrew Laser Eye Shield (ALES) — United Kingdom**

Currently the U.S. has no adequate eye protection for night operations against laser weapons, and daytime visors provide only partial protection. Developed by Pilkington Optronics, the ALES visor was reported to provide protection against main battlefield laser threats for day and night tactical operations. The Navy terminated the project in early FY 1996 when the vendor was unable to deliver items for testing.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$0	\$19,000	\$19,000

**AVENGER Land Navigation System — Germany, Israel**

The AVENGER land navigation systems being evaluated were hybrid, inertial dead reckoning/global positioning systems developed by Taman Precision Instrument/IAI of Israel, and Bosch TELDIX of Germany. Test articles were procured, and testing was initiated in FY 1995 to determine if either system met Marine Corps requirements for the land navigation component of the Avenger mobile air defense system. The evaluation was terminated in June 1996 when the Marine Corps rescinded procurement funds.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$439,000	\$386,000	\$825,000

**NAVY/MARINE CORPS**

**Barracuda Target Boat System — Canada**

Developed by Bristol Aerospace, the Barracuda is a recoverable 24-foot rigid hull inflatable boat capable of unmanned, remotely controlled operation as a surface target. The FCT candidate began evaluation in FY 1995 to determine whether the boat remote control system met mission performance standards required by the Navy AEGIS Program for seaborne targets. The FY 1995 FCT funding was placed on hold and eventually terminated by the Navy in March 1996 as a result of other U.S. target assets becoming available.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$0	\$90,000	\$90,000

**Digital Flight Control System (DFCS) for F-14 Tomcat — United Kingdom**

The Navy's number one safety-of-flight issue concerned unrecoverable flat spins in the F-14 fighter aircraft. GEC Marconi's flight control system, originally developed for the Eurofighter 2000 Program, successfully completed evaluation in December 1995. The system's advanced digital technology helped prevent unrecoverable flat spins and significantly improved F-14 flying qualities during carrier landings. An initial production contract was awarded in March 1996 to buy DFCS systems to upgrade 96 F-14A aircraft. The Navy's overall upgrade program will also include 80 F-14B's and 50 F-14 D's.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$20,484,000	\$0	\$20,484,000

**DYAD Magnetic Sweep — Australia**

The DYAD naval mine warfare magnetic sweep used in combination with a water-driven acoustic



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generator, developed by Australian Defence Industries, began evaluation in FY 1995 to determine whether the FCT candidate met Navy requirements for sweeping influence sea mines in shallow and very shallow water for amphibious mine countermeasures missions. DYAD FCT tests were successfully completed in September 1996. A procurement decision is pending.

FCT FUNDING PROVIDED		
PRIOR YEAR(S)	FY 1996	TOTAL
\$871,000	\$221,000	\$1,092,000

### NAVY/MARINE CORPS

#### **Laser Airborne Depth Sounder System (LADS) — Australia**

LADS is a self-contained, laser system produced by BHP Engineering and Vision Systems to map the ocean floor in shallow water regions. When combined with Global Positioning System data, LADS produces the accuracy required for amphibious or other shallow water operations. A procurement decision is pending.

FCT FUNDING PROVIDED		
PRIOR YEAR(S)	FY 1996	TOTAL
\$3,687,000	\$0	\$3,687,000

#### **Liquid Gas Eutectic Reaction Process for Porous Materials — Ukraine**

Dnepropetrovsk Metallurgical Institute developed a revolutionary process for the production of porous materials. The process produces porous manganese, aluminum, and nickel for applications such as self-lubricating bearings, acoustic reflectors, and bulkhead partitions. Although the technical potential of the process was very impressive and possible future applications may develop, the assessment indicated additional improvements in controlling the process were necessary.

FCT FUNDING PROVIDED		
PRIOR YEAR(S)	FY 1996	TOTAL
\$1,125,000	\$0	\$1,125,000

#### **M-31 Supersonic Sea Skimming Target (SSST) — Russia**

The M-31 SSST began FCT evaluation in FY 1995 to determine whether it met a Navy target requirement to simulate low altitude and speed characteristics of current anti-ship missile threats. The missile, developed and manufactured by Zvezda Experiment and Design Bureau, has been in operational use with the Russian Air Force since 1988 and is the target variant of an actual Russian supersonic sea skimming anti-ship weapon. The M-31 missile successfully completed evaluation in September 1996, and the Navy intends to conduct an FCT evaluation of an extended range version starting in FY 1997. A Navy procurement decision on the basic M-31 is anticipated in FY 1997.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$5,839,000	\$0	\$5,839,000

**NAVY/MARINE CORPS**

**PROPSCAN/CSCAN Marine Propeller Inspection System — Australia**

Manufactured by Ryan Marine Products, PROPSCAN/CSCAN is a lightweight, transportable, mechanical-electronic measurement device used to collect and rapidly analyze data from marine propellers for manufacturing, inspection and repair. PROPSCAN testing revealed deficiencies in the system for the way the Navy intended to use the system.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$700,000	\$93,000	\$793,000

**“Z” Electro-Optical Payload (ZEOP) — Israel**

ZEOP, developed by Rafael, was initiated in FY 1994 to determine whether the sensor could meet a DoD requirement for an all-weather, day and night Image Intelligence payload for Unmanned Aerial Vehicles (UAV). The ZEOP FCT was terminated by the Navy in FY 1996 due to configuration uncertainties and advancing UAV payload technologies.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$1,000,000	\$0	\$1,000,000

**AIR FORCE**

**40mm L60/L70 Advanced Gun System for AC-130 Gunships — Sweden**

The L60/L70 advanced gun system was developed by Bofors AB. The FCT evaluation began in FY 1995 to determine whether the gun systems met Air Force Special Operations Command’s (AFSOC) requirement for enhanced lethality of current AC-130 Specter gunships weapons. The project was terminated by USSOCOM in FY 1996 due to changes in AFSOC priorities.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$160,000	\$0	\$160,000



**AIR FORCE**

**Bondline Energy Measurement System — Germany**

Over fifty percent of solid rocket motor failures are at the bondline. The Fraunhofer Institute system consists of laser and optical equipment coupled to a data analysis system for measuring the non-contact biaxial strain distribution at a bondline. Air Force testing was completed in October 1995, and the results were positive. A follow-on FCT project, Multi-Scanner for Aging and Surveillance, was initiated to refine the solutions relative to solid rocket motor bondlines. The Air Force has retained the test unit and plans to use it for continued research.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$248,000	\$0	\$248,000

**Eagle Vision Deployable Satellite Ground Receiving and Processing Station — France**

The Eagle Vision system, developed by Matra CAP, is a mobile satellite receiving station designed for direct reception and rapid processing of unclassified commercial digital satellite imagery. This system integrates photographic satellite data with elevation data to produce three-dimensional views of flight paths and target areas for mission planning and rehearsal. The Eagle Vision test bed completed field operational testing in FY 1995, and OSD approved funding to test LANDSAT capability with Eagle Vision for operations in Bosnia. An Air Force procurement award is anticipated in FY 1997.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$8,991,000	\$0	\$8,991,000

**K-36 Ejection Seat — Russia**

The Zvezda Design Bureau K-36 series of ejection seats are standard equipment in Russian high performance aircraft. A modified K-36 ejection seat was evaluated against contemporary U.S. Air Force and Navy ejection seats to assess fourth generation escape system technologies for safe escape at speeds up to 860 mph. Initial flight testing of the K-36 in Russia produced favorable results. Follow on testing and analysis in the United States proved the K-36 superior to western ejection seats at high speeds and adverse attitudes. It is planned to have a modified K-36 seat considered in the next phase of the Joint Strike Fighter Program. While the K-36 was not procured, the Air Force is

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negotiating a cooperative agreement with Russia to continue K-36 efforts with Air Force funds.

<b>FCT FUNDING PROVIDED</b>		
<b>PRIOR YEAR(S)</b>	<b>FY 1996</b>	<b>TOTAL</b>
\$4,292,000	\$78,000	\$4,350,000

**FCT PROJECTS**  
**CONTINUING INTO FY 1997**

- **Army**

- Automatic Chemical Agent Detector Alarm
- Cordless Communications for Combat Vehicle Crewmen
- FPA Phase IIA - Standard Advanced Dewar Assembly
- FPA Phase IIB - One Watt Linear Drive Cooler
- Improved Ballistic Armored Grille
- Interim Vehicle-Mounted Mine Detector

- **Navy/Marine Corps**

- Acoustic Cladding Underwater Repair System
- Atmospheric Diving Suits
- Bearing Ambiguity Resolving Sonar
- C303S Mobile Torpedo Countermeasure
- Close Air Support/All-Up Round Unitary Warheads
- Communications Faired Mast
- Designated Marksman Rifle Optical Sighting System
- Minimum Aircraft Operating Strip Lighting Kit
- Modular 5"/54 Gun System for DDG-51 Class Ships
- MSG 90 Military Sniper Rifle
- Projectile Attack Trials (Explosive Ordnance Disposal)
- Shipboard Periscope Mast Detection Radar
- Special Warfare Mine Hunting Outboard Motor
- Submarine Antenna Outfit AVD (1)

- **Air Force**

- Electronic Combat Integrated Pylon System
- Infrared Flare for C-17 Aircraft
- Light Defender
- MILSTAR Traveling Wave Tube
- Modular Reconnaissance Pod
- Multi-Scanner for Aging and Surveillance
- Renaissance View Satellite Data

- **U.S. Special Operations Command**

- Chemring Chaff Block

Joint RAAWS Ammunition Upgrades  
Maritime Craft Air Deployment System



**ARMY**

**Automatic Chemical Agent Detector Alarm (ACADA) — Finland, Germany, United Kingdom**

The ACADA candidates developed by Environics (FN), Bruker Franzen and Honeywell (GE), and Graseby Dynamics (UK) were evaluated to provide automatic blister agent and enhanced nerve agent detection capabilities to Army and Air Force users. The Army type classified as generic the ACADA in July 1996, selecting Graseby's detector as the winning candidate. Type Classification-Standard and release for full production is scheduled for FY 1997. A small initial production buy of 30 units has been made by the Army and the Air Force based on the generic type classification. Additional procurements are anticipated pending the completion of standard type classification.

FY 1997 FCT funding approved - \$203,000

**Cordless Communications for Combat Vehicle Crewmen — France**

The French manufacturer SAGEM/SILEC has developed a cordless headset which can be incorporated into the U.S. Army's combat vehicle helmet to satisfy cordless communication requirements. Successful incorporation of the cordless headset into the helmet would allow crew members to communicate untethered inside a vehicle and up to a distance of 500 meters while dismounted. An initial demonstration has been completed, and a contract for the test articles was issued to SAGEM/SILEC in June 1996 to modify 20 combat vehicle helmets. Testing is scheduled to start in early FY 1997.

The Army did not request FY 1997 FCT funds for this project.

**Focal Plane Array Phase IIA - Standard Advanced Dewar Assembly (SADA II) — France**

SADAs are a critical component of all 2nd generation infrared imaging systems. The Army plans to qualify the SOFRADIR produced SADA II as a second source for the DoD Horizontal Technology Integration (HTI) Program. The HTI Program has a funded U.S. requirement for over 6,000 infrared systems. The contract for test articles was awarded in August 1995 and delivery began in FY 1996.

The Army did not request FY 1997 FCT funds for this project.

**Focal Plane Array Phase IIB - One Watt Linear Drive Cooler (OWLDC) — Germany, Netherlands**

Cryogenic coolers are an integral part of the Standard Advanced Dewar Assemblies (SADA) used in 2nd generation imaging systems. The linear drive cooler is state of the art and the most reliable

under the various conditions encountered. The Army plans to qualify two foreign coolers for use in SADA II modules in the Horizontal Integration Program and other systems requiring high quality imaging capability. Contracts with the German (AEG) and Dutch (Signaal) companies for test articles were awarded in late FY 1995 and deliveries began in FY 1996.

The Army did not request FY 1997 FCT funds for this project.

## ARMY

### **Improved Ballistic Armor Grille (IBAG) — Germany**

The Hoestch grille is a louvered grille designed to increase ballistic protection while improving airflow. The grille may be incorporated into new production vehicles or retrofitted into older vehicles without significant impact. The grille is being considered for the Bradley M2/3A3 Upgrade Program which includes the Top Deck Improvements Program. The IBAG project was approved in FY 1996 as an out-of-cycle effort, and a contract for test articles is scheduled for award in FY 1997.

The Army did not request FY 1997 FCT funds for this project.

### **Interim Vehicle-Mounted Mine Detector (IVMMD) — Austria/United Kingdom, Republic of South Africa**

The requirements for an IVMMD system specify it must detect and mark the location of low metallic content mines and provide blast protection for the operator. The Army is evaluating two foreign candidates, one made by Dorbyl of the Republic of South Africa and the other a joint venture by Scheibel, an Austrian company, and Alvis, a United Kingdom company. Initial testing has been favorable, and additional tests are scheduled before a procurement decision can be made.

The Army did not request FY 1997 FCT funds for this project.

## NAVY / MARINE CORPS

### **Acoustic Cladding Underwater Repair System — United Kingdom**

The Navy selected the UMC International system for evaluation in FY 1995. The candidate allows

trained divers to repair and replace permanently submarine hull silencing tiles. The potential exists for significant savings in submarine dry-docking and acoustic cladding costs. Testing to date has identified an environmental issue concerning the use of coal tar-based epoxies with the repair system. Alternative epoxy formulations are being examined.

The Navy did not request FY 1997 FCT funds for this project.

## **NAVY / MARINE CORPS**

### **Atmospheric Diving Suits (NEWTSUIT) — Canada**

NEWTSUIT is a lightweight atmospheric diving system which allows divers to work comfortably and safely to water depths of 1,000 feet of sea water (303 meters). The system relies on pressure balanced rotary joints to provide advanced range of motion in the limbs. Developed by International Hard Suit Inc., the evaluation will determine whether NEWTSUIT meets a Navy requirement for a Submarine Rescue Diving and Recompression System. The test article contract was awarded at the end of FY 1996.

FY 1997 FCT funding approved - \$650,000

### **Bearing Ambiguity Resolving Sonar (BARS) — United Kingdom**

Manufactured by British Aerospace SEMA, the towed sonar provides for instantaneous determination of the direction of incoming torpedoes independent of the ship's maneuver. BARS is optimized for torpedo detection and provides rapid single sensor location of incoming threats, allowing effective countermeasure deployment. The contract for the test article was awarded at the end of FY 1996.

FY 1997 FCT funding approved - \$1,625,000

**C303S Mobile Torpedo Countermeasure — Italy**

Developed by Whitehead (Italy), the C303S device is a self-propelled mobile torpedo countermeasure launchable from submarines. The C303S is under FCT evaluation to determine if it meets requirements of the U.S. Navy Acoustic Device-Countermeasure EX-11. The contract for test articles was awarded in fourth quarter FY 1996.

FY 1997 FCT funding approved - \$401,000

**Close Air Support/All-Up Round Unitary Warheads — France, Israel**

The Matra Defense (France) and Rafael (Israel) blast-fragmentation penetrating warheads are being evaluated to meet the Joint Stand-Off Weapon unitary insensitive warhead requirement. The majority of testing of the candidate items has been completed. The Navy and Air Force have been encouraged by initial observations but are awaiting final testing to be conducted in FY 1997.

FY 1997 FCT funding approved - \$534,000

**NAVY / MARINE CORPS**

**Communications Faired Mast — United Kingdom**

The candidate under evaluation is a composite submarine antenna faired mast developed by Thomson Marconi Underwater Sonar. The fabrication method produces a single piece faired mast that eliminates painting and has potential to reduce fabrication and maintenance costs for the Navy's submarine periscope mounted High Data Rate Communications System. The contract for test articles was awarded in late FY 1996.

FY 1997 FCT funding approved - \$70,000

**Designated Marksman Rifle Optical Sighting System — Austria, Canada, Germany**

Optical sighting systems manufactured by Hensoldt & Sonne, and Schmidt & Bender (both German), Hughes Leitz (Canada), and Khales (Austria) were selected for evaluation in FY 1995 to determine whether they meet a Marine Corps requirement for a Designated Marksman Rifle scope. Initial funding was diverted to support the Advanced Short Range Air-to-Air Missile FCT project. The Optical Sighting System project has been further delayed pending the selection of the Designated Marksman Rifle.

The Navy did not request FY 1997 FCT funds for this project.

**Minimum Aircraft Operating Strip Lighting Kit (MOSKIT) — United Kingdom**

MOSKIT is a self-contained, mobile lighting and visual landing aids package developed by Metalite Aviation Lighting. MOSKIT is undergoing evaluation to determine whether it meets the Marine Corps' requirement for a mobile lighting system for Naval Expeditionary Airfields (NEAF) that is compatible with night vision devices. MOSKIT is a potential replacement for current NEAF lighting which is not compatible with night vision devices and does not satisfy operational requirements.

The Navy did not request FY 1997 FCT funds for this project.

**Modular 5"/54 Gun System For DDG-51 Class Ships — Australia, Germany**

The Modular Gun System (MGS) consists of the 5"/54 caliber gun installed in a module developed and manufactured by Blohm & Voss (Germany). The module is outfitted with all necessary ancillary equipment to allow reduced outfitting and checkout time while enhancing installation standardization. The MGS is also built in Australia under license, and the Royal Australian Navy has loaned the U.S. Navy at no cost an MGS for evaluation.

FY 1997 FCT funding approved - \$140,000

**NAVY / MARINE CORPS**

**MSG 90 Military Sniper Rifle — Germany**

The Heckler and Koch MSG 90 is a precision rifle being evaluated for the Marine Corps two-man sniper team. The MSG 90 began evaluation in FY 1995 to determine whether the rifle met the Marine Corps' requirement for enhanced maritime sniper team lethality and survivability. Operational tests are scheduled to begin in FY 1997.

The Navy did not request FY 1997 FCT funds for this project.

**Projectile Attack Trials Explosive Ordnance Disposal (Dud Disposer) — Germany**

Manufactured by Junghans Feinwerktechnik, the "Dud Disposer" which consists of a shaped charge, master fuze clock, and tripod, is continuing evaluation to determine whether the FCT candidate meets Navy Explosive Ordnance Disposal requirements for safe, reliable, remote detonation of hazardous unexploded ordnance. Operational testing began in late FY 1996.

The Navy did not request FY 1997 FCT funds for this project.

**Shipboard Periscope Mast Detection Radar — Australia**

The candidate system consists a retrospective radar tracker and associated software for specific target detection and operator alert. The CEA Technologies PTY (Australia) product is being evaluated against a Commander-in-Chief, Pacific Fleet (CINCPACFLT) requirement for an affordable interim submarine mast detection system for shallow water anti-submarine warfare and littoral warfare. The system underwent testing during a combined fleet exercise in the Pacific in May 1996 with satisfactory results. FY 1996 FCT funds are temporarily on hold while the Navy assesses procurement intentions if this system meets CINCPACFLT requirements.

The Navy did not request FY 1997 FCT funds for this project.

**Special Warfare Mine Hunting Outboard Motor — United Kingdom**

Mine hunting safety considerations require low signature equipment to avoid unintended detonations. A low magnetic signature outboard motor, developed by E.P. Barrus and in use by the British Special

Boat Service, is being evaluated against USMC, Navy, and USSOCOM requirements. This project was approved out-of-cycle in mid FY 1996.

FY 1997 FCT funding approved - \$213,000



**Submarine Antenna Outfit AVD (1) — United Kingdom**

The Thomson Marconi Sonar system is a broadband high data rate communication/navigation mast antenna system which is being evaluated as a complement to the current U.S. mast development program. A contract for the test article was awarded in late FY 1996 with delivery expected in early FY 1997. Testing is scheduled to begin before the end of the first quarter.

FY 1997 FCT funding approved - \$174,000

**AIR FORCE**

**Electronic Combat Integrated Pylon System (ECIPS) — Denmark**

Produced by Per Udsen Company and in service on Royal Danish Air Force F-16 aircraft, the ECIPS is an F-16 weapons pylon modified to carry electronic countermeasures payloads. ECIPS is continuing evaluation in FY 1997 to test and certify a new configuration of the ECIPS pylon which carries a missile warning system.

The Air Force did not request FY 1997 FCT funds for this project.

**Infrared Flare for the C-17 Aircraft — Germany**

This FY 1996 out-of-cycle FCT project is assessing the effectiveness of a Buck Technologies Infrared Flare to protect USAF C-17 aircraft when combined with countermeasures being examined by the Advanced Strategic and Tactical Infrared Expendables Program. USSOCOM, the Navy, and the Air National Guard have also shown interest in this product.

FY 1997 FCT funding approved - \$400,000

**Light Defender — Israel**

Israeli Military Industries is the prime developer of the Light Defender system which is being considered to satisfy a mission need statement for destruction of surface-to-air threats. During FY 1996, test missions using the Light Defender training pod were flown. Test results are being reviewed by the Air Force to determine if follow-on testing is necessary.

The Air Force did not request FY 1997 FCT funds for this project.

## AIR FORCE

### **MILSTAR Traveling Wave Tube — France**

The Traveling Wave Tube (TWT) developed by Thomson Tubes Electroniques is designed for increased operational life in high power amplifiers. The French item is being evaluated for use in ground and airborne terminals for MILSTAR, a joint services survivable satellite communication system. The TWT under evaluation is air-cooled, provides more power than present TWTs, and incorporates a less expensive, more reliable, off-the-shelf cathode.

FY 1997 FCT funding approved - \$850,000

### **Modular Reconnaissance Pod (MRP) — Denmark**

The Per Udsen manufactured Modular Reconnaissance Pod currently in service with the Royal Danish Air Force on its F-16s is designed to accept various sensor packages without modification. This FY 1996 out-of-cycle evaluation determined that the pod met Air Force requirements for a reconnaissance pod capable of carrying film and electro-optical sensors, digital recording capability, and has growth potential for a digital data link as part of the Advanced Tactical Airborne Reconnaissance System. The Modular Reconnaissance was selected by the Air Force in late FY 1996 for procurements of 15 pods worth \$17 million. Testing continues on the pod to determine if it satisfies other Air Force requirements.

FY 1997 FCT funding approved - \$550,000

### **Multi-Scanner For Aging and Surveillance — Germany**

Fiedler Optoelektronik Ltd. has developed a scanner capable of providing detailed data on surface deformities in test articles and deployed hardware. Surface deformation helps to indicate debonding of solid rocket motor propellants and missile heat shields. The scanner is being evaluated for non-destructive testing of solid rocket motors for debonding failures due to aging.

The Air Force did not request FY 1997 FCT funds for this project.

**Renaissance View Satellite Data — Canada, France, Italy**

Renaissance View, building on the successful Eagle Vision FCT project, evaluates electro-optical and synthetic aperture radar imagery available from multiple commercial foreign satellites. Commercial satellites provide low-cost means to fill the gap between imagery requirements and the ability of existing surveillance satellites. Successful adaptation will dramatically improve information access for a joint or combined commander due to real-time data delivery, all-weather capability, and an absence of security releasability caveats.

FY 1997 FCT funding approved - \$1,500,000

**U.S. SPECIAL OPERATIONS COMMAND**

**Chemring Chaff Block — United Kingdom**

Chaff Block, developed by Chemring Ltd., is a disposable chaff countermeasure unit consisting of 60 chaff cells. The Chaff Block is attached to a reusable electronics interface plate and will be installed in dispensers for evaluation on Air Force Special Operations C-130 aircraft. The UK item is expected to double the number of chaff bursts currently available while reducing munitions loading manpower requirements, reducing item costs, and increasing reliability. A contract for the test articles was awarded in the fourth quarter of FY 1996, and testing is scheduled for FY 1997.

FY 1997 FCT funding approved - \$50,000

**Joint RAAWS Ammunition Upgrades — Sweden**

The testing and evaluation of the Bofors AB High Explosive Anti Tank round and the full caliber TPT 141 training round continues in FY 1997. This evaluation seeks to determine if the candidate items meet the Navy and Army requirements for dual safe fuzes and insensitive munition fills necessary for deployments from naval and airborne vessels.

FY 1997 FCT funding approved - \$860,000

**Maritime Craft Air Deployment System (MADS) — UK**

MADS is a launching platform used by the British Special Boat Service to airdrop rigid inflatable boats. This FY 1996 out-of-cycle FCT will determine if the platform meets a USSOCOM requirement for a capability to insert rigid inflatable boats tactically from C-130 (or larger) aircraft into oceans or lakes without having to depend on the aircraft to land.

USSOCOM did not request FY 1997 FCT funds for this project.

**FCT PROJECTS SELECTED FOR  
INITIATION IN FY 1997**

o **Army**

1.75 Watt Linear Drive Cooler  
7.62 mm Short Range Training Ammunition  
Advanced Tactical Parachute System  
Improved Mobile Subscriber Equipment UHF Radios  
Insensitive Munitions HELLFIRE Missile Motor  
Standard Advanced Dewar Assembly I

o **Navy/Marine Corps**

Attitude Heading Reference System  
Emergency Evacuation Hyperbaric Stretchers  
M-31 Supersonic Sea Skimming Target, Extended Range  
Nuclear, Biological and Chemical (NBC) Analysis System  
Remote Operating Vehicle Hot Tap and Pump System  
Titanium Nitride Coatings for Compressor Blades

o **Air Force**

Castings for Affordable Fighter Structures  
F-15 Countermeasures Dispenser  
F-16 600 Gallon Tanks  
Micro-Satellite for Space Experiments  
Next Generation Small Loader  
Night Vision Goggle Camera  
Parachute Flare Pylon for the F-16

o **U.S. Special Operations Command**

JRAAWS Ammunition Upgrade Phase II  
M72 LAW Insensitive Rocket Motor Propellant

**ARMY**

**1.75 Watt Linear Drive Cooler — Germany**

Linear drive coolers are used for closed cycle cryogenic cooling of Focal Plane Arrays in second generation infrared imaging systems. The German AEG cooler will be evaluated for use in the Standard Advanced Dewar Assembly I modules needed for major systems such as Comanche and the Apache Upgrade.

FY 1997 FCT funding approved - \$340,000

**7.62 mm Short Range Training Ammunition — Canada**

The 7.62 mm training cartridge developed by SNC of Canada is designed for use on ranges where bullets traveling beyond standard target distances pose safety problems. The round can be used safely with no damage to training sites, and the round will be evaluated for potential Army type classification and fielding.

FY 1997 FCT funding approved - \$420,000

**Advanced Tactical Parachute System — France, Spain, South Africa, UK**

The Advanced Tactical Parachute System Project evaluates an integrated main and reserve parachute mounted on the soldier's back. This arrangement eliminates the bulky front mounted reserve parachute currently in use and simplifies the parachute harness design. The candidate systems are manufactured by Aerazur (FR), Parafly (SP), Parachute Industries of Southern Africa (RSA), and Irvin Industries (UK).

FY 1997 FCT funding approved - \$290,000

**Improved Mobile Subscriber Equipment UHF Radios — Canada, Germany, Israel, Sweden**

This project evaluates Mobile Subscriber Equipment UHF Radios developed by Marconi of Canada (Canada), Siemens (Germany), Tadiran (Israel), and Ericsson (Sweden) to determine if they meet Army requirements for improved operation and performance, improved soldier machine interfaces, and enhanced electronic warfare vulnerability resistance. The testing examines the performance and

## Foreign Comparative Testing Program FY 1996

suitability of the products for replacement of existing AN/GRC-226 radios currently used in the Mobile Subscriber Equipment System and the Area Common User System.

FY 1997 FCT funding approved - \$1,900,000

**ARMY**

**Insensitive Munitions HELLFIRE Missile Motor — UK**

This project is to qualify the insensitive munitions HELLFIRE missile motor developed by British Aerospace Defense-Royal Ordnance Rocket Motors Division for improved safety. If qualified, the insensitive motor will be a direct replacement for the existing HELLFIRE missile motor and is scheduled to begin replacing the existing Longbow HELLFIRE Missile Motor in FY 1998/99.

FY 1997 FCT funding approved - \$2,200,000

**Standard Advanced Dewar Assembly I — France, Germany, UK**

A Standard Advanced Dewar Assembly (SADA) is the detector module in an infrared imaging system. Advanced SADAs allow infrared systems to detect images and identify targets at significantly greater distances than first generation devices. This project evaluates SADA I candidates developed by SOFRADIR (France), AEG (Germany), and GEC Marconi (UK) for potential use in major systems such as Comanche and Apache Upgrades.

FY 1997 FCT funding approved - \$4,400,000

**NAVY/MARINE CORPS**

**Attitude Heading Reference System — Italy**

An Attitude Heading Reference System manufactured by Litton Italia will be evaluated to determine whether it meets a Navy requirement to replace the unreliable systems currently in use on Navy aircraft. The Italian candidate is fielded in Italian Navy SH-3D aircraft.

FY 1997 FCT funding approved - \$360,000

**Emergency Evacuation Hyperbaric Stretchers — Italy, UK**

Developed by GSE Trieste (Italy) and SOS Ltd. (UK), these portable, collapsible chambers provide casualty evacuation from a submerged submarine to land-based hospitals. This FCT evaluation will



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determine whether the items meet requirements for integration into the Navy's Submarine Rescue Diving and Recompression System.

FY 1997 FCT funding approved - \$695,000

**NAVY/MARINE CORPS**

**M-31 Supersonic Sea Skimming Target (SSST), Extended Range — Russia**

As a result of the Navy's successful FCT evaluation of the M-31 SSST developed by Zvezda Design and Experiment Bureau, the Navy will conduct an FCT evaluation of an extended range variant of the M-31 to determine if it meets the Navy's longer range target requirements.

FY 1997 FCT funding approved - \$2,855,000

**Nuclear, Biological and Chemical (NBC) Analysis System — Denmark**

Developed by Bruhn NewTech, the NBC Analysis system is a component of the Joint Warning and Reporting Network (JWARN). The core of the JWARN is the NBC Analysis System software. The system is being tested to determine if it provides the Services with a state-of-the-art, compact computerized system that rapidly and reliably predicts the effects of chemical attacks and incidents.

FY 1997 FCT funding approved - \$284,000

**Remote Operating Vehicle Hot Tap & Pump System — Norway**

This FCT will evaluate an advanced oil recovery system in use by the Norwegian Government to determine whether it is a cost-effective alternative to U.S. operations using deep-diving techniques. Manufactured by Frank Mohn Flatoy, the system is a hot-tap integrated with a submersible discharge pump which is mounted on a remotely-operated vehicle. The system is used to recover oil and other pollutants from sunken ships.

FY 1997 FCT funding approved - \$390,000

**Titanium Nitride Coatings for Compressor Blades — Russia**

This project evaluates a Titanium Nitride coating developed by PRAD which is used in Russian civil and military aircraft engines. Titanium nitride coated blades will be evaluated on U.S. military engine components to determine if there is a reduction in compressor blade erosion thereby achieving significant cost savings by reducing vane blade scrap rates.

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FY 1997 FCT funding approved - \$500,000

**AIR FORCE**

**Castings for Affordable Fighter Structures — Russia**

This FCT will evaluate advanced fabrication technology for fighter aircraft structures. A center fuselage section developed by the All Russian Institute of Aviation will be used to determine the structural integrity, affordability and supportability of advanced metallic technologies. The fuselage casting represents a single seat fighter configuration that may have similar characteristics to potential future fighters such as the Joint Strike Fighter.

FY 1997 FCT funding approved - \$449,000

**F-15 Countermeasures Dispenser — Sweden**

This FCT project evaluates a Celsius Tech countermeasures dispenser for USAF F-15s aircraft. This is the same dispenser previously tested under the FCT Program and procured for Navy F-14 aircraft.

FY 1997 FCT funding approved - \$650,000

**F-16 600 Gallon Tanks — Israel**

This FCT evaluates 600 gallon fuel tanks and pylons in service on Israeli F-16 aircraft. These fuel tanks, developed by Israel Military Industries, would supplement or replace the 370 gallon external fuel wing tanks and jettisonable pylons currently on some configurations of USAF F-16s.

FY 1997 FCT funding approved - \$250,000

**Micro-Satellite for Space Experiments — UK**

This FCT project evaluates hardware and services developed by Surrey Satellite Technology, Ltd. to determine whether Air Force requirements for low-cost, quick-response space flight missions for DoD space experiments can be met with an off-the-shelf micro-satellite spacecraft bus.

FY 1997 FCT funding approved - \$2,050,000

**Next Generation Small Loader — Australia, UK**

This FCT project evaluates two foreign loaders to determine if they meet Air Force requirements for the next generation of aircraft cargo loaders to replace the aging and unreliable 25,000lb loaders currently in the inventory. The candidates are developed by Static Engineering (Australia) and Aircraft Maintenance Support Services (UK).

FY 1997 FCT funding approved - \$700,000

**AIR FORCE**

**Night Vision Goggle Camera — Israel**

This FCT will test a Genop, Ltd. camera and optics system that can be mated to current U.S. Night Vision Goggle hardware to record images seen by a pilot flying actual or training missions. The camera can be used for mission reconstruction and debriefing.

FY 1997 FCT funding approved - \$241,000

**Parachute Flare Pylon for the F-16 — Israel**

Israeli Military Industries has developed a wing pylon for the F-16 which can carry flares and other stores. The wing pylon will allow USAF F-16s to carry visible or covert illumination flares required for Night Vision Goggle missions when there is low or no light conditions.

FY 1997 FCT funding approved - \$391,000

**U.S. SPECIAL OPERATIONS COMMAND**

**Joint RAAWS Ammunition Upgrade Phase II — Sweden**

Insensitive munitions are critical for jointly-deployed combat units due to transportability safety issues. This FCT evaluates two types of insensitive ammunition for final certification and also evaluates an anti-personnel round for type classification and fielding. All items being evaluated are developed by Bofors AB for the 84mm Carl Gustaf Recoilless Rifle.

FY 1997 FCT funding approved - \$500,000

**M72 LAW Insensitive Rocket Motor Propellant — UK**

The M72 Light Anti-Tank Weapon (LAW) and its replenishment ammunition are currently being procured for Navy Special Warfare teams under an insensitive munitions waiver. The British Aerospace-Royal Ordnance Division produced insensitive rocket motor propellant is being evaluated to determine if it satisfies the U.S. M72 LAW insensitive munitions requirement.

FY 1997 FCT funding approved - \$1,100,000

**APPENDIX A**

**PARTICIPATION IN THE FCT PROGRAM  
FY 1980-1996**

**FOREIGN PARTICIPATION IN THE FCT PROGRAM**

The FCT Program depends on the acceptance and participation of other countries for success. Table 1 lists the foreign countries that participated in the FCT Program from FY 1980 through FY 1996. Numerous FCT projects involved equipment from two or more countries. Some FCT projects have resulted in the procurement of multiple items.

<b>Country</b>	<b>Number of FCT Projects</b>	<b>FCT Funds Spent (\$ million)</b>	<b>Number of FCT Items Selected for Procurement</b>	<b>Value of Procurements (\$ million)</b>
United Kingdom	129	212.7	29	1,718.7
Germany	64	84.2	16	754.3
France	55	67.3	4	401.7
Israel	45	46.8	8	552.3
Sweden	37	57.1	11	553.6
Canada	30	35.5	4	26.0
Norway	19	19.3	4	457.3
Italy	13	15.4	0	0
Netherlands	14	14.3	0	0
Australia	13	12.4	1	13.1
Denmark	12	7.9	4	38.0
Belgium	11	5.8	1	8.5
Japan	5	2.5	1	0.2
Switzerland	4	1.8	0	0
Austria	5	1.2	0	0
Russia	3	11.0	0	0
Finland	4	2.4	0	0
Ukraine	1	1.2	0	0
South Korea	2	0.3	0	0
South Africa	1	0.7	0	0
<b>Total</b>		<b>\$ 599</b>		<b>\$ 4,524</b>

**Table 1. Foreign FCT Participation by Country**

*Table 1 includes projects conducted under the Foreign Weapons Evaluation and NATO Comparative Testing programs. Funds shown in constant FY 1996 dollars. Columns may not total due to rounding.*



**SERVICE PARTICIPATION IN THE FCT PROGRAM**

The primary purpose of the FCT Program is to improve the readiness of the U.S. warfighter by providing the best equipment at best cost in a timely manner. Success for the Program ultimately depends upon the Services and USSOCOM procuring items that test successfully and are of best value. The following table documents the status of FCT projects in the Services and USSOCOM since FY 1980.

Sponsor	Total Projects FY 1980 - 1996	Projects Completed During FY 1996	Projects Continuing Into FY 1997	Total Projects Passing FCT FY 1980 - 1996 <sup>1</sup>	Projects Resulting In Procurement <sup>2</sup>
Army	114	5	6	61	31
Navy/Marine Corps	154	11	15 <sup>3</sup>	65	32
Air Force	68	4	7 <sup>3</sup>	28	15 <sup>3</sup>
USSOCOM (FY95-96) <sup>4</sup>	3	0	3	0	0
<b>Total</b>	<b>339</b>	<b>20</b>	<b>31</b>	<b>154</b>	<b>78</b>

**Table 2. Service and USSOCOM Participation in the FCT Program, FY 1980 - 1996**

<sup>1</sup>This number does not include projects that were technical assessments, failed the evaluation, or were terminated.

<sup>2</sup>Number represents projects sponsored by a Service/USSOCOM that resulted in procurements through the end of FY 1996. Procurement decisions are pending on some projects.

<sup>3</sup>The Army's Automatic Chemical Agent Detector Alarm project and the Air Force's Modular Reconnaissance Pod project are continuing into FY 1997 but have already resulted in procurements. For additional information see the respective project narratives in the section "Projects Continuing into FY 1997."

<sup>4</sup>Prior to 1 October 1996, USSOCOM relied on the Services to propose to and receive funding from OSD for FCT projects that related to USSOCOM requirements. Beginning with FY 1997, USSOCOM will directly manage its own FCT projects.

**APPENDIX B**

**EQUIPMENT SELECTED FOR PROCUREMENT  
AS A RESULT OF THE FCT PROGRAM  
FY 1980 - FY 1996**

**EQUIPMENT SELECTED FOR PROCUREMENT  
BY THE ARMY, FY 1980 - FY 1996**

<b>EQUIPMENT</b>	<b>COUNTRY</b>	<b>MANUFACTURER</b>	<b>YEAR</b>
2Kw Generator Sets	Canada	Mechron	1996
Automatic Chemical Agent Detector Alarm	United Kingdom	Graesby Dynamics	1996
Focal Plane Array	France	SOFRADIR	1995
Muzzle Velocity System	Israel	Reshef	1994
84mm HEDP Round for Carl Gustaf RAAWS	Sweden	Bofors AB	1994
60mm Mortar Training Cartridges and Refurbishment Kits	Israel	Salgad/Pocal	1993
HAWK Battery Loader-Transporter Modification Kit	Germany	Thyssen Nordseewerke	1993
Improved Chemical Agent Monitor and Retrofit Kits	United Kingdom	Graseby Ionics	1993
35mm TPGID HEAT Rounds	Germany	Diehl	1991
Anti-Magnetic Mine Actuating Device	Israel	Israeli Aircraft Industries	1990
Carl Gustaf M3 (RAAWS)	Sweden	Bofors AB	1990
Digital Signal Processor	Denmark	Weibel	1990
NBC Reconnaissance Vehicle (NBCRS)	Germany	Thyssen Henschel	1990
NBCRS Markers	Germany	Diehl	1990
NBCRS Mass Spectrometer	Germany	Bruker Franzen/Diehl	1990
NBCRS Navigation Instrument	Germany	Teldix	1990
105mm Lightweight Howitzer	United Kingdom	Royal Ordnance	1988
105mm Tank Training Ammunition	Germany	Rheinmetall	1986
81mm Mortar Training Cartridge and Refurbishment Kit	Israel	Salgad/Pocal	1985
Improved 81mm Mortar and Ammunition	United Kingdom	Royal Ordnance	1985
120mm Mortar (Tampella)	Israel	Soltam	1985
Chemical Agent Monitor	United Kingdom	Graseby Ionics/ETG	1985
Kinetic Energy Recovery Rope (KERR)	United Kingdom	Marlow Ropes, Ltd.	1985
5.56mm Plastic Training Ammunition with Bolt	Germany	Dynamit-Nobel	1984
Potable Water Tank	United Kingdom	Airborne Industries	1984
SANATOR Decontamination Unit	Norway	Karl H. Hoie/EASI	1984
4.2" Mortar Training Devices/Rounds	Germany	Nico Pyrotechnik	1983
.50 Cal. Plastic Training Ammunition with	Germany	Dynamit-Nobel	1983

**Foreign Comparative Testing Program FY 1996**

Device

AT4 Lightweight Multi-Purpose Weapon      Sweden      FFV      1983

**EQUIPMENT SELECTED FOR PROCUREMENT  
BY THE ARMY, FY 1980 - FY 1996  
continued**

<b>EQUIPMENT</b>	<b>COUNTRY</b>	<b>MANUFACTURER</b>	<b>YEAR</b>
Small Unit Support Vehicle	Sweden	Haaglands & Soner	1983
.22 Cal. Tank Training Ammunition	United Kingdom	EMI Eley	1982
10 Ton Truck Transporter Vehicle	Germany	MAN GHH	1981
Combat Support Boat	United Kingdom	Fairey Allday Marine	1981
M72A3 LAW Anti-Tank Weapon	Norway	Raufoss	1981
NBC Marking Set	Germany	A. Diedr Dolmeyer	1981

**EQUIPMENT SELECTED FOR PROCUREMENT  
BY THE NAVY AND MARINE CORPS, FY 1980 - FY 1996**

<b>EQUIPMENT</b>	<b>COUNTRY</b>	<b>MANUFACTURER</b>	<b>YEAR</b>
84mm Insensitive Munition HEAT Round for RAAWS	Sweden	Bofors AB	1996
Digital Flight Control System for F-14	United Kingdom	GEC Marconi	1996
GIANT Infrared Decoy System	Germany	Buck Werke	1996
T45 Trainer Digital Cockpit Display	United Kingdom	Smiths Industries	1996
Airtronic Light Oil Burner	Sweden/Luxembourg	Electrolux	1995
Focal Plane Array	France	SOFRADIR	1995
Forward Area Degaussing Range	United Kingdom	Ultra Electronics	1995
High Pressure Pure Air Generator	United Kingdom	Ultra Electronics	1995
IFF Tracker System for EW Training	United Kingdom	Cossor	1995
M72A3/A5 Light Anti-Tank Weapon (LAW)	Norway	Raufoss/Talley Defense	1995
Spray Formed Alloyed 625 Piping	Sweden	AB Sandvik Steel	1995
BOL Chaff System	United Kingdom	Chemring	1994
Active Shaft Grounding System	Canada	W.R. Davis Engineering	1993
Aircraft Cockpit Canopy Covers	United Kingdom	Colebrand	1993
BOL Chaff Dispenser	Sweden	Celsius Tech	1993
Cowan Transportable Recompression Chamber	Australia	Cowan Manufacturing	1993

## Foreign Comparative Testing Program FY 1996

HAWK Battery Loader-Transporter Modification Kit	Germany	Thyssen Nordseewerke	1993
Impressed Current Cathodic Protection System	United Kingdom	Widney Aish	1993

### EQUIPMENT SELECTED FOR PROCUREMENT BY THE NAVY AND MARINE CORPS, FY 1980 - FY 1996 continued

EQUIPMENT	COUNTRY	MANUFACTURER	YEAR
Improved Chemical Agent Monitor	United Kingdom	Graseby Dynamics	1993
EHF Traveling Wave Tubes	Germany	Siemens	1992
MK48 Torpedo Wire Guidance (HOSEPIPE)	United Kingdom	Marconi Underwater Systems	1992
SAM Remote Controlled Minesweeper	Sweden	Karlskronavarvet	1991
Portable Target Scoring System	United Kingdom	BDL Systems	1991
Penguin Missile & Guidance Unit	Norway	Norsk Teknologi	1991
Infrared Imaging System	Israel	El-Op, Tadiran	1991
Aerial Target Vector Scoring	United Kingdom	Cambridge Consultants	1990
Anti-Magnetic Mine Actuating Device	Israel	Israel Aircraft Industries	1990
Lightweight CB Protective Garment	United Kingdom	Compton-Webb Ltd.	1990
MCM-1 Tactical Displays (AIOS)	United Kingdom	Plessey Naval Systems	1990
NBC Reconnaissance Vehicle (NBCRS)	Germany	Thyssen Henschel	1990
NBCRS Markers	Germany	Diehl	1990
NBCRS Mass Spectrometer	Germany	Bruker Franzen/Diehl	1990
NBCRS Navigation Instrument	Germany	Teldix	1990
Night Vision Goggles (Cats Eyes)	United Kingdom	GEC Avionics	1990
TICM FLIR with Thermal Cueing Unit	United Kingdom	GEC Avionics	1990
A-6 Raster Head-Up Display (HUD)	United Kingdom	GEC Avionics	1988
ASW Acoustic Processor	Canada	Computing Devices	1988
E-2C Multifunction Control Display Unit (MFCDU)	Canada	Marconi of Canada	1988
Maritime Decoy (Rubber Duck)	United Kingdom	Irvin Industries	1988
Versatile Exercise Mines (VEMS)	United Kingdom	BAeSEMA	1987
Chemical Agent Monitor	United Kingdom	Graseby Dynamics/ETG	1985
SANATOR Decontamination Unit	Norway	Karl H. Hoie/EASI	1984
.50 Cal. Multipurpose Ammunition	Norway	Raufoss	1981
Combat Support Boat	United Kingdom	Fairey Allday Marine	1981
Integrated Communications System III	United Kingdom	Marconi	1980

**EQUIPMENT SELECTED FOR PROCUREMENT  
BY THE AIR FORCE, FY 1980 - FY 1996**

<b>EQUIPMENT</b>	<b>COUNTRY</b>	<b>MANUFACTURER</b>	<b>YEAR</b>
Automatic Chemical Agent Detector Alarm	United Kingdom	Graseby Dynamics	1996
Modular Reconnaissance Pod	Denmark	Per Udsen	1996
Focal Plane Array	France	SOFRADIR	1995
Enhanced Electronic Warfare Scenario Generator (E-EWSG)	United Kingdom	Data Sciences	1994
Pylon Integrated Dispenser Station (PIDS-3)	Denmark	Per Udsen	1993
I-800 (HAVE NAP) Warhead	Israel	Israel Military Industries	1992
SPOT Satellite Digital Imagery	France	SPOT Image Corporation	1990
ALE-40 Digital Sequencer Switch	Denmark	Terma Elektronik	1990
NBC Aircrew Protective Suit Fabric	Germany	Blucher/Celanese Corp.	1990
Millimeter Wave Communications	Japan	Nippon Electric	1989
Dielectric Measurement Equipment	France	Aerospatiale	1989
HAVE NAP Stand-Off Weapon	Israel	Rafael	1989
Munitions Ejector Release Unit	Germany	Alkan/EDO	1986
Chemical Agent Monitor	United Kingdom	Graseby Ionics/ETG	1985
Rapid Runway Repair Equipment	Germany	Cristiansen Diamond Products	1985
SANATOR Decontamination Unit	Norway	Karl H. Hoie/EASI	1984
DURANDAL Runway Attack Weapon	France	Matra	1983
10 Ton Truck Transporter Vehicle	Germany	MAN GHH	1981

**EQUIPMENT SELECTED FOR PROCUREMENT  
BY SOCOM, FY 1993 - FY 1996**

<b>EQUIPMENT</b>	<b>COUNTRY</b>	<b>MANUFACTURER</b>	<b>YEAR</b>
Focal Plane Array	France	SOFRADIR	1995
Carl Gustaf M3 (RAAWS)	Sweden	Bofors AB	1994
LI-465 Fuzes for PGU-9AB	Sweden	Bofors AB	1993
40mm HEI Round (PGU-37B)	Sweden	Bofors AB	1993

**APPENDIX C**

**EXAMPLES OF EQUIPMENT SELECTED  
OR TARGETED FOR USE IN  
BOSNIA AND/OR DESERT STORM**

**EXAMPLES OF EQUIPMENT SELECTED OR TARGETED  
FOR USE IN BOSNIA & DESERT STORM**

**Project:** Anti-Magnetic Mine Actuation Device (AMMAD)—Bosnia/Desert Storm

**Country/Mfr:** Israel/Israeli Aircraft Industries

**Description:** The AMMAD provided the Army and Marine Corps a new capability for ensuring that land mines were cleared prior to the employment of troops. This system was used during Desert Storm with both M60 Tanks and M1 Main Battle Tanks (MBT) and is currently in Bosnia on M1 MBT.

**Project:** Aircrew Chemical Defense Protective Suits—Desert Storm

**Country/Mfr:** Germany/Blucher GmbH

**Description:** These protective suits for aircrews provided better protection, more comfort, and greater thermal efficiency than previously used suits. Gulf War use resulted in 50 percent reduction in thermal stress to pilots.

**Project:** Fox NBC Reconnaissance Vehicle—Bosnia/Desert Storm

**Country/Mfr:** Germany/Thyssen-Henschel

**Description:** The Fox Reconnaissance Vehicle is equipped with state-of-the-art sensors for detecting chemical and biological agents. The Fox performed admirably during Desert Storm, and the U.S. Implementing Force in Bosnia is using it to identify areas where leaking munitions may have been emplaced or stored.

**Project:** Improved Chemical Agent Monitor (I-CAM)—Bosnia/Desert Storm

**Country/Mfr:** United Kingdom/Graseby Dynamics

**Description:** The I-CAM is a hand held point detector monitor and can be utilized by personnel inspecting vehicles, buildings and other structures. This monitor was used during Desert Storm and is being used by the U.S. Implementing Force (IFOR) in Bosnia. While the threat of chemical attack in Bosnia is slight, there is concern that U.S. Forces may need the capability to identify areas where leaking munitions may have been stored or transported.

**Project:** Interim Vehicle Mounted Mine Detector (IVMMD)—Bosnia

**Country/Mfr:** South Africa/Dorbyl or United Kingdom/Alvis & Austria/Schiebel

**Description:** Although the FCT of the two foreign systems will not be complete until FY 1997, the Army intends to buy of several IVMMD systems to meet an urgent requirement for contingency operations.



**Project:** **Lightweight Chemical/Biological Protective Garment—Desert Storm**

**Country/Mfr:** United Kingdom/J. Compton Sons and Webb, Ltd.

**Description:** These chemical defense suits provided infantry Marines self-protection against potential chemical and/or biological warfare attacks.

**Project:** **NBC Reconnaissance Equipment—MMI Mass Spectrometer—Bosnia/Desert Storm**

**Country/Mfr:** Germany/Bruker-Franzen GmbH

**Description:** The MMI Mass Spectrometer is the primary detection and analysis equipment in the NBC Reconnaissance Vehicle. During the ground phase of the Gulf War, the spectrometer provided assurance that chemical agents, if employed, would be detected. The equipment is providing U.S. forces in Bosnia with detection and analysis capabilities.

**Project:** **Portable Target Scoring System—Desert Storm**

**Country/Mfr:** United Kingdom/BDL Systems, Ltd.

**Description:** The Portable Target Scoring System was used for marksmanship training for infantry Marines in the field during Desert Storm and proved to be effective in maintaining their proficiency.

**Project:** **Self-Propelled Acoustic-Magnetic Minesweeper (SAM)—Desert Storm**

**Country/Mfr:** Sweden/Karlskronavarvet

**Description:** SAM gave U.S. forces the capability to conduct remote minesweeping in shallow water. SAMs were used during and after the Gulf War to clear enemy mines.

**Project:** **SPOT Satellite Digital Imagery—Bosnia/Desert Storm**

**Country/Mfr:** France/SPOT Image Corporation

**Description:** Currently used in Bosnia, SPOT Satellite Digital Imagery is downlinked directly to U.S. Forces via the Air Force's Eagle Vision portable ground station terminals (another FCT Project). SPOT images provide U.S. Air Force pilots with imagery allowing near real-time practice "flyovers" of Bosnia, as well as providing ground commanders with valuable intelligence data.

In Desert Storm, the SPOT satellite was re-oriented to concentrate its mapping capabilities on the Persian Gulf area. The images were processed through the Air Force Mission Support System and distributed to flying squadrons. In some cases, the SPOT photos were the only images allied pilots had prior to launching their missions.



**APPENDIX D**  
**EXAMPLES OF BENEFITS**  
**RESULTING FROM THE**  
**FCT PROGRAM**

## SELECTED FCT EQUIPMENT RESULTING IN IMPROVED OPERATIONAL CAPABILITIES

❑ **Automatic Chemical Agent Detector Alarm (ACADA).** Manufactured by Graseby Dynamics, United Kingdom, the GID-3 was selected as the winning candidate for the ACADA requirement in July 1996. This sensitive detector can be emplaced for remote detection and adds a nerve agent capability which the currently fielded M43A1 detector does not possess.

❑ **BOL Chaff System.** Manufactured by Celsius Tech of Sweden (dispenser) and Chemring Ltd. (chaff) of the United Kingdom, this system increases the amount of chaff carried in the LAU-7 launching racks fitted on the Navy's F-14 Tomcat aircraft. The BOL Chaff System significantly improves protection against radio frequency missile threats and users have stated that it is arguably one of the best survivability enhancements in the F-14's history.

❑ **Digital Flight Control System.** Manufactured by GE Marconi of the United Kingdom, this system has solved the Navy's number one flight safety issue for the F-14 aircraft.

❑ **DURANDAL Weapon System.** Manufactured by Matra of France, this system (designated BLU80/B) provides the Air Force its primary ordnance for cratering enemy airfields. The Air Force used DURANDAL during Operation Desert Storm.

❑ **Focal Plane Array.** Manufactured by SOFRADIR of France, the focal plane array qualified for the Army's second generation forward looking infrared imaging systems and for DoD wide use in various infrared imaging systems. These imaging systems benefit the warfighter by increasing the range of target detection and image fidelity.

❑ **Giant Infrared Decoy System.** Manufactured by Buck Werke of Germany, the Giant Infrared Decoy System is a stepped decoy for ship defense against heat seeking missiles. This system benefits the warfighter by reducing the probability of an infrared missile hitting a U.S. vessel.

❑ **Ranger Anti-Armor, Anti-Personnel Weapon System (RAAWS).** Manufactured by BOFORS AB of Sweden, RAAWS is a versatile, portable, and lethal shoulder launched weapon system that fires a large suite of ammunition. RAAWS is in use by the U.S. Army 75th Ranger Regiment, U.S. Navy SEALs, and other U.S. forces.

❑ **Night Attack Avionics.** Participation of GEC Avionics (UK) in the Navy's REALNIGHT Developmental Program resulted in procurements of forward-looking infrared (FLIR) thermal imaging components and Cats Eyes advanced night-vision goggles. These

components enhance U.S. night targeting capabilities for Navy, Marine Corps, and Air Force attack aircraft.

**EXAMPLES OF ESTIMATED RDT&E BENEFITS**

Two of the important benefits of the FCT Program are that it saves money and time. Money is saved by reducing acquisition costs associated with new start development through the use of nondevelopmental items. Time is saved by reducing the gap between identifying a requirement and putting the needed equipment in the hands of America's servicemen and servicewomen.

<b>FCT Project</b>	<b>Country</b>	<b>FCT Investment</b>	<b>Estimated RDT&amp;E Savings/Benefits</b>	<b>Estimated Development Time Savings</b>
Automatic Chemical Agent Detector Alarm	UK	\$4.6 million	\$34.1 million (Army)	4 years
Advanced Dielectric Measurement Equipment	France	\$2.2 million	\$5.9 million (Air Force)	4 years
Airtronic Light Oil Burner	Sweden	\$0.1 million	\$11.4 million (Marine Corps)	4-8 years
Anti-Magnetic Mine Actuating Device	Israel	\$1.4 million	\$6.8 million (Marine Corps)	4 years
EHF Traveling Wave Tube	Germany	\$4.3 million	\$53.1 million lifecycle costs (Navy)	Not available
Focal Plane Arrays	France	\$1.8 million	\$5.1 million (Army)	2 years
HAVE NAP Stand-off Weapon	Israel	\$14 million	\$232.3 million (Air Force)	6 years
HAWK Launcher Modification Kit	Belgium	\$0.9 million	\$2.2 million (Army)	4 years
HAWK Loader-Transporter Mod Kits	Germany	\$1.6 million	\$4.6 million (Army)	4 years
Heavy Assault Bridge-Leguan	Germany	\$15.4 million	\$17.2 million (Army)	5 years
HEI Ammunition for AC 130 Gunship	Sweden	\$1.7 million	\$45.6 million (Air Force)	Not available
Hellfire Missile Warhead	Sweden	\$1.8 million	\$13.3 million (Navy)	4-6 years
Infrared Imaging System	Israel	\$0.7 million	\$18.2 million (Navy)	Not available
Less Than 3kW Generator Set	Canada	\$0.5 million	\$2 million (Army)	2 years
MCM-1 Tactical Displays	UK	\$3.7 million	\$20.6 million (Navy)	6 years
Muzzle Velocity System	Israel	\$1.2 million	\$8.7 million (Army)	4 years
Remote-Controlled Minesweeper	Sweden	\$1.0 million	\$17.1 million (Navy)	5-7 years
RTM-322 Engine	UK/France	\$6.9 million	\$64.5 million (Navy, Army)	Not available

**Foreign Comparative Testing Program FY 1996**

SH-2F/G Aircraft ASW Acoustic Processor	Canada	\$0.8 million	\$18.2 million (Navy)	7 years
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**Table 3. Examples of Estimated RDT&E Benefits** *Amounts are in constant FY 1996 dollars.*

## EXAMPLES OF INDUSTRIAL TEAMING

**Airtronic Light Oil Burner (ALOB).** The ALOB is the heat source for the Tray Ration Heating Systems (TRHS). Babington Enterprises Inc. of McLean, VA produces the TRHS. Electrolux Luxembourg, a subsidiary of Electrolux Sweden, is licensed to manufacture and assemble the burner and is providing services to Babington.

**BOL Chaff Dispenser.** The Swedish and United Kingdom manufacturers of the BOL dispenser and BOL chaff, Celsius Tech and Chemring respectively, are teamed with TRACOR in San Ramon, CA.

**E-2C Multifunction Display Control Unit.** Marconi of Canada teamed with the U.S. E-2 aircraft manufacturer Grumman Corporation of Bethpage, NY, on the CMA 882 Avionics Management System Program.

**EHF Traveling Wave Tubes.** As a result of the successful FCT testing of its product in 1988, Siemens of Germany teamed with the Raytheon Corporation of Lexington, MA, on a Navy EHF submarine communications program.

**Electronic Combat Integrated Pylon System (ECIPS).** Per Udsen, the Danish manufacturer of ECIPS, is teamed with Northrop Corporation of Rolling Meadows, IL, and Lockheed Corporation of Fort Worth, TX.

**Forward Area Degaussing Range.** Alliant, a U.S. company, will provide the acoustic portion for the UK Forward Area Combined Degaussing and Acoustic Range.

**HAVE NAP Stand Off Weapon.** The HAVE NAP FCT stimulated a teaming relationship between the Israeli manufacturer, Rafael, and Martin Marietta of Orlando, FL.

**Heavy Assault Bridge, Leguan.** In 1994, the Army selected the German MAN GHH bridging system for Engineering and Manufacturing Development (EMD). MAN teamed with General Dynamics Land Systems of Warren, MI.

**Lightweight Antitank Weapon (LAW) M72A5.** Talley Defense, Mesa, AZ leads the consortium that includes Raufoss as an original equipment manufacturer, along with TRACOR, Austin, TX to produce 5,700 M72A5s for the Navy.

**Powered Multifuel Burner.** International Thermal Research, Inc., British Columbia, Canada, teamed with Tech Research Group, Providence, Rhode Island to submit their candidate for evaluation in meeting this Army and Marine Corps requirement.



**Spray Formed Alloy 625 Piping.** Babcock & Wilcox operates Sweden's AB Sandvik Steel designed metal spray forming plant in Baberton, Ohio.

**EXAMPLES OF U.S. PRODUCTION RESULTING  
FROM THE FCT PROGRAM**

An additional benefit of the FCT Program is that it sometime results in the production of a foreign item by a U.S. business as the result of teaming or other business relationships. Other nations recognize the utility of such practices and the strengthening of the two-way street. For the United States the result means more jobs and better local economies.

<b>Item</b>	<b>Foreign Mfr./Country</b>	<b>U.S. Production</b>	<b>Location</b>
60/81mm Mortar Training Ammunition	SOLTAM/SALGAD, Israel	POCAL	Moscow, PA
105mm Lightweight Howitzer	Royal Ordnance, United Kingdom	Rock Island Arsenal Watervliet Arsenal	Rock Island, IL Watervliet, NY
120mm Tampella Mortar and Ammunition	IMI, Israel	Martin Marrietta Valentec Radford Army Ammo Plant Brockway Standard Loral Corporation United Ammunition Container ARMTEC	Milan, TN Mt. Arlington, NJ Radford, VA Homerville, GA Scranton, PA Milan, TN Coachilla, CA
Chemical Agent Monitor	Graseby, United Kingdom	ETG, Inc.	Towson, MD
Chemical Defense Equipment Air Crew Suits	Blucher, Germany	Hoechst-Celanese Corporation	Charlotte, NC
Combat Support Boat	Fairey Allday, United Kingdom	Advanced Technology	Charleston, SC
Digital Flight Control	GEC Marconi, United Kingdom	Northrup Grumman	Bethpage, NY
Eagle Vision	Matra CAP Systems, France	DATRON TRANSCO Inc. ERIM	Simi Valley, CA Ann Arbor, MI
HAVE NAP	Israel Military Industries	Martin Marrietta	Orlando, FL
HiPPAG Power Supply	Ultra Electronics, United Kingdom	Simmonds Precision Motion Control	Cedar Knolls, NJ
Improved Chemical Agent Monitor	Graseby, United Kingdom	Intellitec	Deland, FL
2kW Generator Set	Mechron, Inc., Canada	Dewey Electronics	Morristown, NJ
M72A3 Light Anti-Tank Weapon	Raufoss, Norway	Talley Defense TRACOR	Mesa, AZ San Ramon, CA
Munitions Ejector Release Units	Alkan, Germany	EDO Corporation	Salt Lake City, UT
Muzzle Velocity System	Reshef, Israel	Technical System, Inc.	Grand Rapids, MI
SANATOR Decontamination Units	Karl Hoie, Norway	Engineer Air, Inc. (EAI)	St. Louis, MO
Small Unit Support Vehicle	Haagland-Soner, Sweden	United Defense Corporation	San Jose, CA
Spray Formed Alloy 625	AB Sandvik Steel, Sweden	Babcock & Wilcox	Baberton, OH

Piping

**Table 4. Examples of U.S. Production Resulting From the FCT Program**



**EXAMPLE LOCATIONS OF U.S. PRODUCTION  
RESULTING FROM THE FCT PROGRAM**



