

Foreign Comparative Testing (FCT) Program – FY 2004
Summaries of New Start Projects
(sponsoring organization as indicated)

20MM Replacement Round – Germany, Switzerland – Air Force. This project will evaluate 20mm ammunition developed by Diehl Munitionssysteme of Germany and Oerlikon of Switzerland to replace current 20mm combat rounds which limit mission effectiveness and expose both pilot and aircraft to unnecessary risk. Although the current PGU-28B meets requirements for employment ranges and target damage, it is currently suspended due to in-barrel detonations that caused aircraft damage and could have resulted in pilot death and aircraft loss.

40mm High Explosive Dual Purpose (HEDP) Improvement – Germany, Norway, Switzerland – Marine Corps (joint with USSOCOM). This project will integrate and evaluate an improved propulsion propellant "after armor" effect technology and a standardized fuze interface into a 40mm HEDP cartridge for use in both the MK19 Grenade Machine Gun and MK 47 Advanced Lightweight Grenade Launcher. NAMMO of Norway developed the warhead and standardized fuze interface, Nico-Pyrotechnik of Germany developed the propulsion system, and Nitrochemie AG of Switzerland developed the propellant for the cartridge to be evaluated.

Advanced Family of Interfaces for Chem Bio Clothing - Japan , Switzerland – USSOCOM. With the emergence of chemical/biological (CB) protective material technologies a need arises for enhanced methods of sealing CB garment interfaces. The vulnerabilities remaining despite new barrier materials are at the interfaces with the wrist, ankles, zippers, and the neck of CB garments, as demonstrated in recent vapor and aerosol testing. This project will evaluate new types of CB closures and interfaces developed by YKK Universal Fasteners of Japan and RiRi SA of Switzerland.

Biocular Image Control Unit for M1A1 Main Battle Tank – United Kingdom – Marine Corps. This project will evaluate the Biocular Image Control Unit (BICU) developed by Brimar, as part of the Marine Corps' M1A1 Firepower Enhancement Program. The BICU directly supports the tank crew's situational awareness by enabling the 2nd generation Forward Look Infrared (FLIR) imagery to be displayed in the Gunner's Primary Sight monocular display and also the biocular display. The BICU will significantly reduce gunner's fatigue. A successful FCT will enable the crewman to utilize the best features of direct view optics and 2nd generation FLIR imagery and at the same time acquire and engage targets.

Celluloid Mortar Increment Containers – Austria – Army. This project will evaluate and qualify second sources for nitrocellulose-based belted-fiber Mortar Increment Containers (MIC) for use with 60mm, 81mm and 120mm mortars. Qualification of the celluloid MICs developed by KAGO and Kaufman & Gottwald GmbH, both of Austria, will significantly reduce container production costs and will improve the durability of propulsion charge systems for semi- and auto-loading capabilities required for the Army's Future Combat System.

Deployable GM Cellular Network – Sweden – USSOCOM (joint with Army). This project will evaluate a commercially available transportable cellular network developed by Ericsson which is capable of supporting up to 5,000 users, that can be deployed worldwide (stand-alone) in support of mission requirements in austere environments. If testing is successful, the Swedish equipment will satisfy critical requirements of the Special Operations Forces Tactical Assured Connectivity System and the Joint Threat Warning System.

Deployable Multi-Purpose Moving Target System – Germany – Marine Corps. This project will evaluate a deployable moving pop-up automated marking and targeting system developed by Thiessen Training Systems GmbH for range performance, target lifting life, hit indication, and other critical reliability performance parameters. A successful FCT will enable Marines to train as they fight and enhance proficiency with anti-armor engagement tactics.

Gamma Titanium Sheets – Austria – Army. This project will evaluate gamma-titanium sheets developed by Plansee as potential replacement for current structural components used on Army helicopter manifolds and exhaust firewalls. The potential benefits of γ -TiAl are being recognized throughout the aerospace community. This substitution, for example, could increase Vertical Rate-of-Climb performance for Comanche aircraft.

Guidance Components for Missiles – United Kingdom, Canada, Israel, Sweden, Germany, France – Air Force. This project will evaluate the performance of missile guidance components developed by Radstone Technology of the United Kingdom, DY4/Force Computers of Canada, Aitech Defense of Israel, Saab Ericsson Space of Sweden, SBS (OR) Technologies of Germany, and Thales Computers of France. Improvements to basic guidance and control (G&C) technology and miniaturization of G&C components have potential to enhance the performance of U.S. non-strategic missile systems. Advanced components have been developed, are being used by foreign suppliers, and are candidates for easy integration into U.S. programs.

JSLIST Alternative Footwear Solution – Canada – Marine Corps. This project will evaluate a one-size-fits-all, small packaged chemical-biological protective boot developed by Acton International, Inc. to meet urgent requirements of the Joint Service Lightweight Integrated Suit Technology (JSLIST) program. A successful FCT will enable improved operational suitability for the warfighter, meet urgent needs, and result in at least 25 percent production cost savings.

JSLIST Block II Glove Upgrade – Canada – Marine Corps. This project will evaluate nuclear, biological, chemical (NBC) protective gloves manufactured by Acton International, Inc. to meet the requirements for a “JB2GU” glove, a component of the Joint Service Lightweight Integrated Suit Technology (JSLIST) ensemble for Army, Marine Corps, Navy and Air Force military personnel. The JB2BGU will be worn as part of the NBC protective ensemble and allow the warfighter to perform a full range of missions in NBC environments for extended periods by increasing tactility, dexterity, and durability beyond that found in the currently fielded butyl glove.

Large Scale Display System - Japan, Republic of Korea – Army. This project will evaluate very high resolution Flat Screen Displays developed by NEC/Mitsubishi of Japan and Samsung of the Republic of Korea for potential application in Army battlefield C2 requirements. Successful evaluation and fielding will allow the commander and staff to simultaneously view the Command Operational Picture, employ collaborative tools, and directly monitor various feeds from sensors or news services to rapidly gain situational awareness/understanding.

Lightweight Smoke Generator – Poland – Army. This project will evaluate a camouflage smoke generator developed by PZL Rzeszow that is significantly lighter than the U.S. Army's M56 system, currently under development. A key aspect of the Polish system is that it uses a combination of fog oil and infrared obscuring particles in one solution to provide visual/IR obscuration. This is in contrast to the M56 system, which uses additional components to separately disseminate fog oil and graphite. If the project is successful, significant weight reduction could be achieved and the Polish system could be incorporated into the Army's M56 production program, the Robotic Obscuration production program and the Future Combat System Obscuration development program.

Lithium-Ion Battery Cells – Republic of Korea, United Kingdom – Army. This project will evaluate the potential for Li-Ion battery cells developed by SKC of the Republic of Korea and AGM Batteries, Ltd. of the United Kingdom to satisfy Army portable electrical power requirements for a high energy density, high cell potential fuel source. The candidates may provide greater energy than present Li-Ion cell-based batteries and have the potential to reduce the logistics burden and enhance cost effectiveness through increased mission times (increases in power), greater shelf life, increases in power, and greater recharging capability.

Low Probability of Intercept Communications Intelligence Direction Finding – Israel – USSOCOM. Special Forces require a capability to quickly and reliably detect, sideband, spread spectrum/broadband, and other types of low probability of intercept communication signals from potential adversaries. This project will evaluate commercially available equipment developed by Elta Electronics, Ltd. of Israel that will detect these signals and provide threat warning to meet the requirements of the Joint Threat Warning System.

MEMS Inertial Measurement Units (IMU) – United Kingdom – Air Force. This FCT will evaluate the BAE Systems Micro Electro-Mechanical IMU (SiIMU01/02) which is reported to be a significant size, weight, and cost advantage over technologies currently employed in U.S. precision weapons.

Mine Countermeasures Small Unmanned Underwater Vehicle – Finland – Navy. This project will evaluate the capabilities of a small unmanned underwater vehicle, developed by Hafmynd of Finland, in mine countermeasures operations in the very shallow water zone (10 to 40 feet depth). This type of small underwater vehicles can be used to search coastal areas and identify hazards to naval operations in preparation for amphibious assault, force protections and harbor security operations.

MK48 (7.62mm LWMG) Semi-rigid Ammunition Container – Belgium – USSOCOM. This project will evaluate an FN Herstal semi-rigid ammunition container for the MK48 Lightweight Machine Gun, an organic weapon for U.S. Special Forces Teams. The container increases the reliability of the weapon by protecting the ammunition while operating in harsh environments such as surf zones. The container also provides for a better balanced weapon due to its mounting under the centerline of the weapon, providing greater operational suitability while patrolling.

Mobile Acoustic Support System - Canada – Navy. This project will evaluate a mobile ground-based system developed by General Dynamics Canada to meet a Navy requirement for post flight analysis of sonobuoy (underwater microphone) acoustic data recorded on Maritime Patrol Reconnaissance Aircraft conducting anti-submarine warfare missions.

Mortar Propellant – Switzerland – Army. This project will evaluate a high-performance Extruded-Impregnated (EI) propellant for long-range mortar systems developed by Rheinmetall/Nitrochemie Wimmis AG. Qualification of EI propellant will support the Army's Future Combat System requirements for increased range, will eliminate use of a hazardous/toxic stabilizer, reduce blast overpressure, increase rate of fire, decrease gun tube wear, and increase propellant shelf life.

Mounted Cooperative Target Identification System – United Kingdom – Marine Corps. This project will evaluate foreign production systems capable of fulfilling the requirement for the Marine Corps Mounted Cooperative Target Identification System (MCTIS) providing a positive encrypted identification of friend or unknown, bore sighted through the Gunner's Primary Sight on Marine Corps M1A1 Tanks, Light Armored Vehicles, and Advanced Amphibious Assault Vehicles. A successful FCT will allow the Marine Corps to acquire, train and fight with a positive identification capability of friends in the joint/coalition environment.

Naval Active Intercept and Collision Avoidance – Australia – Navy. This project will evaluate a system developed by Sonartech to support the submarine force's number one priority: collision avoidance and situational awareness. The Australian system detects and localizes emissions from active sources such as sonar, sonabuys, and active homing torpedoes using sensors already installed on US submarines. System functionality will be tested against the requirements for the AN/WLY-1 currently applicable to SSN688, SSN21, and SSN774 class submarines.

Pitch Adapting Composite Marine Propeller – Germany – Navy. This project will evaluate commercial Contur-series propellers developed by AIR Fertigung Technologies GmbH to improve submarine stealth. The propeller blades are designed to flex in a controlled manner under certain operating conditions which causes a pitch modification that is claimed to improve vehicle stealth, speed, and propulsion efficiency. In addition, the pitch modification reduces cavitation damage, marine growth fouling, and permits in-water blade replacement. This advanced performance is enabled by the use of blades constructed from carbon fibers, instead of the traditional metals.

Radarsat II Commercial High Resolution SAR – Canada – Air Force. This project will evaluate the ability of the Canadian Radarsat II, developed by MacDonald-Dettwiler, to provide all-weather imaging capability at 3 meter resolution for support of target detection, ocean surveillance, homeland defense, moving target indicators, and disaster response, as an upgrade when integrated with the Air Force's Eagle Vision Deployable Satellite Imagery Receiving and Processing Station. The Canadian Radarsat II satellite is the first commercially available high resolution synthetic aperture radar imaging capability.

Regenerative Drive System – Australia – Army. This project will evaluate the capability of a hydraulic hybrid technology developed by Permo-Drive Technologies to recycle wasted power during deceleration of large vehicles, such as the Army's Family of Medium Tactical Vehicles. The Australian technology, which is easily retrofitted to most military truck platforms, captures braking energy, stores it in the form of hydraulic pressure, and releases it to enhance dash capability and fuel economy while improving braking performance and brake life.

Self-Destruct Safety Fuze for Rocket Artillery Submunitions – Israel – Marine Corps. This FCT will evaluate rocket artillery submunition fuzes developed by Israel Military Industries for reliability and for shipboard safety requirements. Marine Corps submunitions are no longer allowed onboard Navy vessels unless documented that they will not arm or have the potential to initiate when subjected to environments that result in inadvertent expulsion. A successful FCT will result in a reduction in the hazard to crews aboard Navy vessels in the event of accidental expulsion due to ship or munitions damage.

SOF Combat Rifle – Belgium , Germany – USSOCOM. This project will evaluate advanced 5.56mm rifles developed by FN Herstal of Belgium and Heckler and Koch GmbH of Germany to meet requirements for a highly reliable and modular combat rifle for Special Forces as a replacement for the aging M4A1 carbine. A successful evaluation will result in the rifles being produced in FN Herstal's U.S. plant.

Traveling Wave Tube Amplifier – Israel, Germany, France – USSOCOM. This project will evaluate alternative traveling wave tube (TWT) amplifiers developed by ELTA Electronics, Inc. of Israel, Dornier Satellitensystems GmbH of Germany, and Thomson Tubes Electroniques (Thales) of France for use within the Joint Threat Warning System and Deployable Multi-Channels SATCOM (Satellite Communications) Systems. The use of satellite communications is critical to Special Forces and current Tri-Band Satellite terminals use vacuum tube technology tube amplifiers.

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Summaries of Continuing Projects

Army Continuing Projects

40mm Dud Reducing M430A1E1 HEDP Cartridge – Singapore, Switzerland. This project is evaluating dud-reducing ammunition developed by Chartered Ammunition Pte, Ltd. of Singapore and Dixi Microtechniques SA of Switzerland for effectiveness, safety and feasibility of integration into the Mk 19-40mm round as a suitable fuze to reduce unexploded ordnance on the battlefield and training ranges. If successful, the project will greatly enhance both the operational effectiveness and safety of U.S. Army ground forces, and the safety of civilian non-combatants as well.

105mm Preformed Fragments – Republic of South Africa. This project is evaluating the potential increased lethality and range of the conventional 105mm Field Artillery ammunition, developed by Denel-Naschem, over the current U.S. ammunition. If successful, the project will greatly enhance the lethality of artillery supporting U.S. Army light forces.

155mm Ammunition – Republic of South Africa. This project is evaluating the potential increased range of the family of 155mm Field Artillery projectiles, developed by Denel-Naschem, over current U.S. ammunition. If successful, the project will greatly increase the fire support provided to U.S. Army ground forces.

Ballistic Armor for Helicopters – Australia, Canada, United Kingdom. This project is evaluating lightweight ballistic armor, developed for law enforcement use by Craig International Ballistics of Australia, ACERAM Technologies of Canada, and Meggitt of the United Kingdom. If successful, the project will not only provide increased ballistic protection for helicopters, but also greatly reduce the overall weight of aircraft, thereby improving operational performance.

Fuel Cells for Dismounted Soldier Systems – Canada, Germany, United Kingdom (joint with U.S. Special Operations Command). This project is evaluating electrochemical fuel cells developed by Ballard Power Systems and Hydrogenics, both of Canada; NoVars and Smart Fuel Cells, both of Germany; and Intelligent Energy, Ltd. of the United Kingdom to meet U.S. Army requirements for longer lasting, lighter weight portable power sources. Improved power sources are critical for all components of the Future Force.

Self-Destruct Fuze for Multiple Launch Rocket System (MLRS) – Israel. This project is evaluating the performance, safety, and feasibility of a self-destruct fuze developed by Israel Military Industries. Variants of the fuze are fielded with Israeli armed forces. The fuze will be integrated into the submunitions of the MLRS system for testing to ensure that the rocket submunitions have a dud rate of less than 1% (a key performance parameter). In addition to the Army's current requirement, the Air Force and Navy have expressed interest in self-destruct technology for other submunitions.

Silverized Kevlar – Canada. This project is evaluating Silverized Kevlar developed by Silverleaf Materials, Ltd., for use on the RAH-66 Comanche Helicopter. This material could enhance the performance characteristics of the structure with regard to conductive ground plane, electro-magnetic interference shielding, and static discharge. It could also achieve overall helicopter weight savings by eliminating the need for some layers of conductive materials.

Small Bundle Resupply System – Canada, Republic of Korea, Netherlands. This project is evaluating compact guidance and control units developed by two of the following three competing vendors: MMist of Canada; Koable of the Republic of Korea; and Fokker Space of the Netherlands, as alternatives to the Guided Parafoil Aerial Delivery System – Extra Light. If successful, the project would provide extremely precise high altitude delivery of small bundles and airborne troops for missions such as re-supply for military operations in urban terrain, delivery of small robots and sensors, counter terror operations, and humanitarian support missions.

Navy Continuing Projects

Digital Flight Control System (DFCS) for EA-6B – United Kingdom. This project is evaluating digital technology developed by BAE Systems for the Eurofighter to replace the increasingly obsolete automatic (analog) flight control system in the Navy's EA-6B "Prowler" aircraft. The project follows successful integration of the BAE DFCS into the Navy's F-14 "Tomcat" aircraft. The system holds promise to prevent losses of DoD's only standoff jammer aircraft caused by spurious readings from the current analog control system

High-Temperature Protective Coating for Gas Turbine Engines – Canada, Russian Federation. This project is evaluating the benefit to the operational life of gas-turbine engine hot section components from a protective coating developed by MDS-PRAD, a joint venture company between Ural Aviation Works of Russia (PRAD) and MDS Aerospace of Canada. The protective coating reduces hot-gas corrosion, oxidation and thermal fatigue. Potential applications include: AV-8B, F/A-18E/F, Joint Strike Fighter, H-53, V-22, SH-60, C-130, E-2, P-3, and gas turbine powered naval surface combatants. This effort is a follow-on to the successful coating process certification for gas turbine compressor blades for MH-53 helicopter engines.

Improved Specific Emitter Identification System – United Kingdom. This project is evaluating and comparing alternatives developed by QinetiQ of the United Kingdom to electronic component cards currently used by the U.S. for passive identification and fingerprinting of emitters in naval applications.

Replacement Structures for Aircraft – Belgium, Poland. This project is certifying and qualifying PZL-Swidnik of Lublin, Poland, as an approved source for the manufacture of aluminum honeycomb panels and sub-structures to support in-service, but out-of-production, aircraft. Hexcel of Belgium will provide honeycomb sub-cores to PZL-Swidnik for the project. Replacement of airframe sections is a continuing sustainment issue. This item is a major unit requirement for all aircraft and is a recurring procurement under military component inventory control. The immediate objective is to provide a cost-effective solution to the warfighter for the replacement of flight control surfaces and sub-structures for the F-14, which is no longer in production and for which parts are no longer available from the original manufacturer. Certification of an alternative source can be used by a variety of U.S. aircraft.

Resilient Abrasive-Resistant Skirt for LCAC (Landing Craft-Air Cushion) – Italy, Sweden, United Kingdom. This project is evaluating candidate materials developed by Reeves S.p.a of Italy, Trelleborg of Sweden, and Northern Rubber, Ltd. of the United Kingdom to determine if they can provide a 50 percent improvement in the LCAC skirt's resistance to abrasion without a weight or cost penalty.

Underwater Communications & Tracking System for Submarines – Australia. This project is evaluating the suitability of the Nautronix/Maripro underwater digital communication system for real-time data exchange of positional information between submarines participating in open ocean exercises. The "HAIL" system is a low-data-rate digital spread spectrum communications system for submarines using installed acoustic transmitter/receivers. The system has been demonstrated previously in joint U.S.-Australian submarine exercises with great success.

Marine Corps Continuing Projects

Deployable Instrumentation for MAGTF (Marine Air Ground Task Force) Training – Sweden, Switzerland. This project is evaluating mobile Range Instrumentation Systems developed by Saab Training Systems of Sweden and RUAG of Switzerland to meet Marine Corps requirements to integrate current training devices which provide deployable force-on-force training for the Marine Air Ground Task Force. The evaluation will demonstrate the candidates' abilities to provide track reporting, engagement adjudication of simulated direct and indirect fire including battlefield audio and visual cues, and recording of all movement and engagement criteria for use in exercise after-action reviews.

Eye-safe Laser Rangefinder for M1A1 Main Battle Tank – Germany, United Kingdom. This project is evaluating eye-safe lasers developed by Zeiss of Germany and Thales (formerly AVIMO) of the United Kingdom, for range, beam divergence, output energy, shot life, receiver field of view, sustained rate of ranging, and other parameters used to locate distant targets for the M1A1 Firepower Enhancement Program. The eye-safe laser is expected to increase the range performance of current tank gun fire by 2000 meters.

Floating Smoke Pot Replacement – Germany. This project is evaluating a Floating Smoke Pot manufactured by Diehl Munitionssysteme (formerly Comet Pyrotechnik) to replace the current K867 floating smoke pot for use in training and combat, on land and in water. The current floating smoke pot produces a smoke that possesses carcinogenic properties and a fuze that has experienced reliability problems. The German item adds infrared smoke emission to screen troops in low-light situations against night-vision devices.

Special Effects Small Arms Marking System – Canada. (SESAMS) – Canada. This project is evaluating the safety and integration suitability of Simunition's 5.56mm linked low-velocity training munitions for the M249 Squad Automatic Weapon. SESAMS is a user-installed weapons modification kit that allows the individual Marine to fire low-velocity marking ammunition at short range while precluding the weapon from firing live ammunition.

Air Force Continuing Projects

Missile Reserve Battery Replacement – Japan, France. This project is evaluating battery cells developed by Japan Storage Battery, Ltd. (Nippondenchi) and Saft Alcatel of France for use in missile/booster environments. With the decline of military missile development and downsizing of strategic forces, several U.S. battery manufacturers for these applications have discontinued production, leaving Eagle Picher as the only qualified U.S. source of batteries for missile/booster applications. The intent is for Eagle Picher to assemble the batteries with cells from candidate sources incorporating the newer technologies.

Rayon for Heatshield and Motor Nozzles – United Kingdom, Austria, Germany, France. This project is evaluating high-quality rayon from Acordis of the United Kingdom, Lenzing Technik of Austria, Acordis of Germany, and Snecma Moteurs of France to meet Air Force requirements for use in high-temperature applications, such as heat shields and rocket motor nozzles. There are no longer any domestic suppliers of aerospace-grade rayon for rocket nozzles and reentry heat shield thermal protection, and dwindling stockpiles must be replaced for future systems.

Self-Regulating Anti-G Ensemble – Germany/Switzerland. This project is evaluating an advanced technology liquid-filled g-suit manufactured by the Swiss-German joint venture, Autoflug Libelle GmbH. This appears to be a major breakthrough over current “g protection.” Gravity-induced loss of consciousness plagues pilots at levels above 6g, and current equipment limits crews from achieving and maintaining sustained high-g maneuvers without significant risk and fatigue. Currently, Air Force fighter aircrews use a 1940s-technology pneumatic anti-g suit that is often the limiting factor in employing aircraft to their full operational capability.

U.S. Special Operations Command Continuing Projects

40mm Enhanced Grenade Launcher for M4 Carbine – United Kingdom, Germany. This project is evaluating grenade launchers from Istech of the United Kingdom and Heckler and Koch of Germany to determine if either can meet requirements for a more accurate and reliable weapon for Special Forces. If the FCT is successful, the launcher would replace the current M203 40mm grenade launcher, which is over 30 years old and becoming logistically unsupportable.

Global Cellular Phone System Optimization – United Kingdom, Canada, Denmark, Sweden. This project is evaluating commercially available mobile cellular phone systems from various companies to determine if they provide increased range (using fewer signal repeaters), improved data throughput, reduced probability of signal detection or intercept, and improved security, to meet Special Forces requirements.

MAAWS (Multi-Role Anti-Armor Anti-Personnel Weapon System) Infrared Illumination Round – Sweden. This project is evaluating infrared illumination ammunition developed by Saab Bofors Dynamics for the 84mm Carl Gustaf recoilless rifle. The round has a reduced-sensitivity fuze that may meet new U.S. safety standards. This new round incorporates an infrared/near-infrared candle visible only with night-vision devices in place of a white-light candle visible to the naked eye.

Man-Portable SATCOM (Satellite Communications) System – Sweden This project is evaluating small, lightweight satellite dishes manufactured by SweDish, that can provide one-person operations in a turnkey satellite communications solution. Two sizes of small dishes promise to provide secure communications (live video/audio streaming, broadband transmission and automated setup) without sacrificing the identity or location of the user.

Ultra Light Aero Diesel Engine – United Kingdom, Germany. This project is evaluating advanced diesel engines in the 100 horsepower range developed by A-Tech Group, Wilksch Airmotive and UAV Engines all of the United Kingdom and Wankel Rotary and Thielart Aircraft Engines, both of Germany for possible use on various Special Forces wind-supported air-delivery platforms.