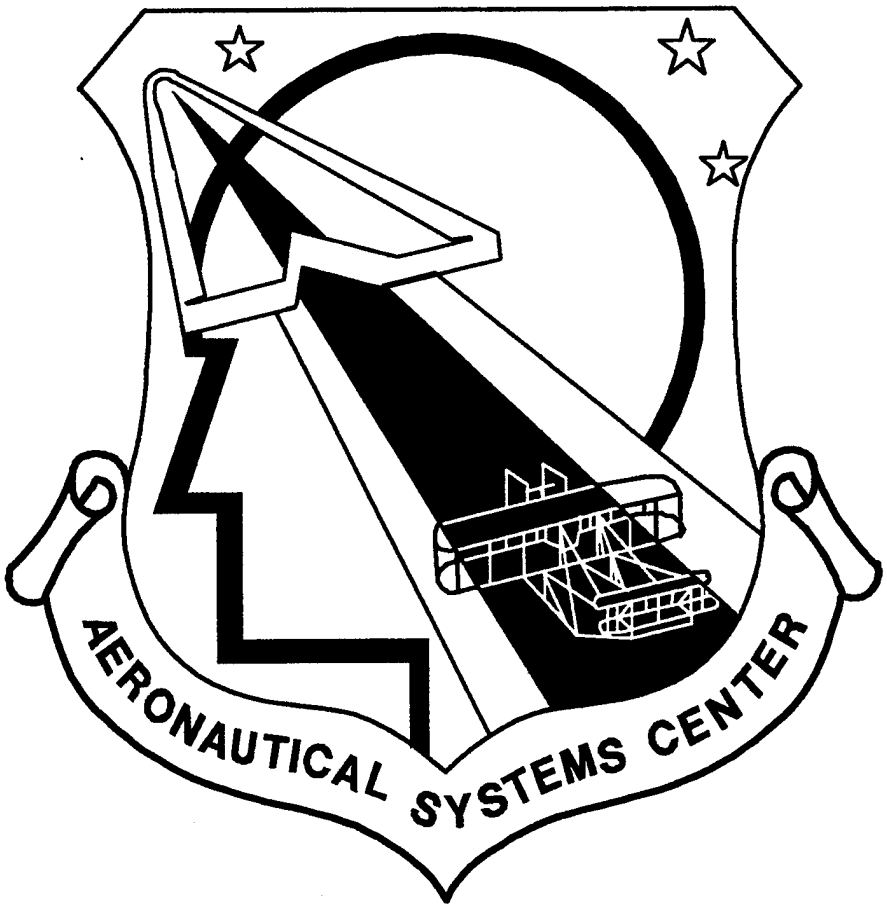
FY96

LONG RANGE ACQUISITION ESTIMATES



DISTRIBUTED BY: SMALL BUSINESS OFFICE
ASC/BC, WRIGHT-PATTERSON AFB OH
45433-7201

FORWARD

Enclosed are Aeronautical Systems Center's FY96 Long Range Acquisition Estimates for systems, subsystems, research and development, and operational support programs at Wright-Patterson AFB, OH and Eglin AFB, FL. Additional forecasts applicable to Eglin AFB requirements can be obtained from the Small Business Office, Air Force Development Test Center, Eglin AFB, FL.

The estimates are for planning purposes only and are not to be construed as a commitment by the Air Force to purchase the items/services described herein. The estimates are based on the best information available at the time of publication and are subject to revision and/or cancellation at any time. Points of contact for each acquisition are provided.

The ASC Long Range Acquisition Estimates can be accessed through the ASC Pre-Award Information Exchange System (PIXS) via Telnet or wide area network (DDN) 129.48.120.143. Access can also be gained through computer modem by calling 513-476-7217. To obtain additional information about the system, please contact ASC/CYX at 513-255-7073. For problems accessing PIXS, please call 513-255-2739.

The ASC Long Range Acquisition Estimates, as well as estimates from other Air Force activities, can also be accessed through the computerized Air Force Small Business Bulletin Board (AFSB3) operated by the General Electric Company's GEnie service. A nominal charge to subscribe to the service is assessed monthly. For further information in the U.S. or Canada on the GEnie service, please call 1-800-638-9636. If you wish to sign up by computer, set your communication software for half duplex (local echo) at 300, 1200 or 2400 baud. Dial toll free 1-800-638-8369. Upon connection, enter HHH. At the U# prompt enter AFSB3, then press RETURN.

INDEX

AERONAUTICAL SYSTEMS CENTER

BUYING ACTIVITY: ASC/LAAV

TITLE: C-21A Replacement Aircraft Program

PROGRAM MANAGER: Robert I. Marx, ASC/LAAV, (513) 255-7300

ESTIMATED DOLLAR VALUE: $20.8M (for 2 aircraft including $4.6 million trade-in)

PROGRAM DESCRIPTION: The C-21A replacement program is designed to acquire up to four new commercially available current production business type jet aircraft to replace existing C-21A (Lear 35 business jets) aircraft in the National Guard Bureau's (NGB) inventory of four. In addition, subject to OSD and GSA approval, the existing C-21A's will be traded in to help offset the cost of replacement aircraft. Current inadequacies associated with the C-21A's for the NGB mission include range limitations, inadequate take off and landing performance capability, avionics, and aircraft systems limitations such as lack of single point refueling capability, externally serviceable lavatory, etc. Improved capabilities in these areas are essential given the importance of the missions the aircraft currently support. These missions include: cost-effective rapid deployment capability to assist states and territories in reconstructing command, control, and communications; medical evacuation support; and support of high-level dignitary travel both in the Continental United States (CONUS) and Outside the Continental United States (OCONUS). The aircraft will be operated and maintained by the 201st Airlift Squadron of the D.C. Air National Guard (ANG) originating from Andrews AFB, MD.

QUANTITY: TBD--2 with option for 2

ESTIMATED RFP RELEASE DATE: December 1995

ESTIMATED CONTRACT AWARD DATE: May 1996

CONTRACT TYPE AND DURATION: FFP

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LAAV

TITLE: VC-X (C32-A)/C-137B/C Replacement Aircraft

PROGRAM MANAGER: Robert I. Marx, ASC/LAAV, (513) 255-7300

ESTIMATED DOLLAR VALUE: $958.0M

PROGRAM DESCRIPTION: The VC-X program will procure a fleet of FAA certified, long-range, wide-body passenger transports with an executive interior and worldwide secure/non-secure voice and data communications capability. These aircraft will replace seven C-137s operated by the 89AW at Andrews AFB. The VC-X will be used to provide worldwide transportation to senior government officials, such as the Vice-President, Secretary of State, Secretary of Defense, and Congressional Delegations. The aircraft will initially be leased with options to buy. They will eventually be purchased.

QUANTITY: 6

ESTIMATED RFP RELEASE DATE: 15 August 1995

ESTIMATED CONTACT AWARD DATE: 31 December 1995

CONTRACT TYPE AND DURATION: FFP

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LBA

TITLE: C-130 Developmental System Office

PROGRAM MANAGER: Lt Col Kevin Rankin, ASC/LBA, (513) 255-6371

ESTIMATED DOLLAR VALUE: $1.3B

PROGRAM DESCRIPTION: The C-130 aircraft is a sole source acquisition to Lockheed Aeronautical Systems Corporation, Marietta, GA. This includes the current C-130H models and the new version C-130J.

QUANTITY: 18 Aircraft (8 C-130Hs and 10 C-130Js - estimated)

ESTIMATED RFP RELEASE DATE: N/A

ESTIMATED CONTRACT AWARD DATE: TBD

CONTRACT TYPE AND DURATION: FFP/Duration is TBD

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Sole Source

BUYING ACTIVITY: ASC/LDA

TITLE: Air Force Automatic Test Systems R&D Program (A Broad Based Environment for Test [ABBET])

PROGRAM MANAGER: Mr David Dawson, ASC/LDAA, (513) 255-6612

ESTIMATED DOLLAR VALUE: $200K

PROGRAM DESCRIPTION:

OBJECTIVE: Survey commercial Automatic Test Systems market to discover existing commercial tools and standards with military application that will lower the cost of automatic test.

TECHNICAL APPROACH: Open competition for product description with awards to two or three sources who will develop test program sets, evaluate results for software/hardware independence, transportability of software, and rehost capability.

QUANTITY: Two Test Program Sets with documentation

ESTIMATED RFP RELEASE DATE: November 1995

ESTIMATED CONTRACT AWARD DATE: March 1996

CONTRACT TYPE AND DURATION: Cost plus fixed fee (CPFF) contracts for approximately one year

SIC CODE: 8731

TYPE OF COMPETITION ANTICIPATED: This action will be a Program Research and Development Announcement (PRDA) with a possibility of two to three awards.

BUYING ACTIVITY: ASC/LN

TITLE: AN/ALE-47 Countermeasures Dispenser System (CMDS) - Lots IV-VII

PROGRAM MANAGER: Lawrence L. Long, ASC/LNW, (513) 255-3148 ext 3694

ESTIMATED DOLLAR VALUE: Approx. $120M (Total for all four production lots)

PROGRAM DESCRIPTION: The AN/ALE-47(V) Countermeasures Dispensing Set (CMDS) is an integrated, threat-adaptive, reprogrammable, computer-controlled system capable of dispensing expendable countermeasures decoys (flares, chaff, and others) to enhance aircraft survivability against threat weapon systems. It is a form, fit, enhanced function replacement for the AN/ALE-40 and also replaces the AN/ALE-39 and M-130 dispensers. The system is comprised of five line replaceable unit (LRU) types:

1. Switch Assembly, SA-2671/ALE-47(V)
2. Switch, Electronics Sequencing (sequencer), SA-2669/ALE-47(V)
3. Programmer, Electronic Command Signals (programmer), CD-45/ALE-47(V)
4. Control - Display Unit, Dispensing Set (CDU), C-12170/ALE-47(V)
5. Dispenser, Countermeasures Chaff-Flare (dispenser), D-49/ ALE-47(V)

The dispensers are unique to the service/aircraft platform with the remainder of the LRUs being common across all services and aircraft platforms. Some fully integrated systems do not require a CDU. A Test Set Group, Countermeasures Dispensing Set (OQ-476/ALE-47(V)) was developed and will be procured as organizational level support equipment under this effort for use by the Air Force. The system is currently deployed with a two level maintenance concept in the Air Force and Army and a three level maintenance concept in the Navy. An organic depot capability, for both the hardware and software, has been established at Warner-Robins Air Logistics Center (WR-ALC).

QUANTITY: TBD - Up to 500 shipsets of varying configurations per production option.

ESTIMATED RFP RELEASE DATE: September 1995, pending resolution of Small Business Set Aside Appeal

ESTIMATED CONTRACT AWARD DATE: March 1996

CONTRACT TYPE AND DURATION: FFP, Period of Performance 30 mos for production ramp up and Lot IV production; 12 mos each for subsequent options on Lots V-VI.

SIC CODE: 3728

TYPE OF COMPETITION ANTICIPATED: Full and Open (SPO preferred) or Small Business Set Aside (SBA recommended). To be resolved in appeal to SECAF, date TBD.

BUYING ACTIVITY: ASC/LN

TITLE: Advanced Strategic & Tactical Expendables (ASTE)

PROGRAM MANAGER: Jim Miller, ASC/LNWA, (513) 255-6004 x3652

ESTIMATED DOLLAR VALUE: $16.7M for EMD

PROGRAM DESCRIPTION: The ASTE Program is responsible to develop advanced IR expendable decoy countermeasures (CM) to provide combat, mobility and special operations aircraft increased survivability against the modern IR missile threat. TheASTE Program is a joint Air Force and Navy development effort in which the Air Force is lead. These new IR decoys will provide increased effectiveness against IR missiles having embedded counter-countermeasures (CCM) while maintaining or supplementing current capabilities against non-CCM equipped missiles.

QUANTITY: TBD

ESTIMATED RFP RELEASE DATE: 9 June 1995

ESTIMATED CONTRACT AWARD DATE: 1 December 1995

CONTRACT TYPE AND DURATION: CPAF

SIC CODE:8711

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LN

TITLE: Joint Service Electronic Combat Systems Tester (JSECST)

PROGRAM MANAGER: AF: Chuck Wheelock, ASC/LNT, (513) 255-2665 ext 3800
NAVY: DaveSutherland, PMA-260, (703) 604-3344 ext 7333

ESTIMATED DOLLAR VALUE: $25M

PROGRAM DESCRIPTION: Increasingly, EC systems that pass BIT are failing to perform operationally. Attempts to correct this through changes to BIT are extremely limited because of hardware design. In addition, BIT does not normally address antenna system testing. Current testers that have the capability to measure operational performance of EC systems have at least one of the following shortcomings: (1) too large for rapid deployment; (2) difficult to interpret by the maintenance technician; (3) out of production and becoming insupportable because they use obsolete parts; (4) insufficient in quantity to meet requirements; (5) too costly to produce; (6) and/or requires free space radiation which jeopardizes operational security.

Proposed System: To develop, test, and field a flight line end-to-end (ETE) electronic combat (EC) system test set that is capable of verifying EC systems status and assist in providing EC system malfunction diagnostics for the Air Force and the Navy. The JSECST will replace the Navy USM 406C/D and USM 482 and fill a void in current Air Force end-to-end EC testing capability. Milestone II DAC briefing to occur late August 1995 for entry into EMD.

QUANTITY: 387

ESTIMATED RFP RELEASE DATE: September 1995

ESTIMATED CONTRACT AWARD DATE: NLT 2nd Qtr FY96

CONTRACT TYPE AND DURATION: CPAF/30 - 36 months

SIC CODE: 3812

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LU

TITLE: MC-130H Combat Talon II (CTII), AN/AP 170 Muti-Mode Radar (MMR) Organic Depot-Level Test and Repair Capability

PROGRAM MANAGER: Capt Lisa Carney, ASC/LURP, (513) 255-0329

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: Develop organic depot-level test and repair capability for the MC-130H, CTII, MMR to be located at Warner Robins Air Logistics Center

QUANTITY: One test and repair set to include hardware, software and associated data

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: December 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price/36 months

SIC CODE: 3699

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LU

TITLE: MC-130H Combat Talon II Radome Verification System (RAVS)

PROGRAM MANAGER: Dane Warf, ASC/LUML, (513) 255-7930

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: The Air Force intends to procure a RAVS for electrical test of the Combat Talon II (CT II) nose radome. The Air Force plans on procuring the entire CT II RAVS effort and facility as a turnkey operation. This effort includes an operationally ready anechoic chamber configured as a compact antenna/radome test range, parent enclosure, compact range reflector, synthesized transmitter, source feeds, positioning system, receiver system, instrument control panel, range boresight/alignment kit, software, and ancillary equipment to establish an organic depot for CTII nose radome electrical testing.

QUANTITY: One

ESTIMATED RFP RELEASE DATE: August 1995

ESTIMATED CONTRACT AWARD DATE: January 1996

CONTRACT TYPE AND DURATION: Firmed Fixed Price/18 months

SIC CODE: 3829

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LU

TITLE: 25MM Ammunition Containers

PROGRAM MANAGER: Capt Richard Baker, ASC/LUUM, (513) 255-4152

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: Fabricate and deliver 832 25MM ammunition containers in accordance with AC-130U statement of work and drawings.

QUANTITY: 832

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price/18 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Small Disadvantaged Business or Small Business Set-Aside

BUYING ACTIVITY: ASC/LYC

TITLE: Joint Helmet Mounted Cueing System (JHMCS)

PROGRAM MANAGER: Lt Col Steve Kuprel, ASC/LYC, (513) 255-5416 ext 3887

ESTIMATED DOLLAR VALUE: R&D $75M; Production $500M

PROGRAM DESCRIPTION: The Air Force and Navy will be procuring the JHMCS to acquire an ejection safe and effective cueing and designating system for employment of high off-boresight weapons on multiple platforms (F-15, F/A-18, F-16, F-14, F-22, AV 8B). The JHMCS will maximize use of common components within the constraints of different avionics architectures.

QUANTITY: Est 2300 Units

ESTIMATED RFP RELEASE DATE: May 1996

ESTIMATED CONTRACT AWARD DATE: October 1996

CONTRACT TYPE AND DURATION: EMD - 4 Years; Production Through 2010

SIC CODE: 3728

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/LY

TITLE: T-38 Avionics Upgrade Program

PROGRAM MANAGER: Kathy Cliett, ASC/LYD, (513) 255-2900 Ext 3864

ESTIMATED DOLLAR VALUE: $900M

PROGRAM DESCRIPTION: The objective of the T-38 Avionics Upgrade Program (AUP) is to provide a timely and cost effective modernization of the Avionics System and Aircrew Training Devices (ATD). The upgrade is necessary in order to comply with Government mandates, improve reliability and maintainability and facilitate use of the aircraft in the Bomber Fighter track of Specialized Undergraduate Pilot Training Program, designed to train advanced avionics and cockpit management skills. The AUP will result in three (3) separate contracts being awarded to a single contractor who will have Total System Performance Responsibility (TSPR) for the entire effort. The T-38 AUP is for the EMD and procurement of Upgraded Avionics Suites and corresponding new ATDs consisting of Operational Flight Trainers and Unit Training Devices and subsequent Contractor Logistics Support (CLS). The effort includes CLS for the current simulators (T50/51) until they are replaced. The technical approach is replacement of almost the whole avionics suite with Non Developmental Items (NDI) or modified NDI. The risk is the integration and software development.

QUANTITY: TBD 425-665 aircraft modifications; 14-25 ATDs

ESTIMATED RFP RELEASE DATE: September 1995

ESTIMATED CONTRACT AWARD DATE: March 1996

CONTRACT TYPE AND DURATION: EMD (basic contract award): CPAF 30 months
with Production Options: 3 yrs FPIF; 3 yrs NTEs
Avionics Support Contract: 3 yrs. FFP; 3 yrs NTEs; 4 yrs TBN
T50/51/ATD Maintenance Contract: 3 yrs. FPAF; 3 yrs NTEs; 4 yrs TBN

SIC CODE: 3728

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/RAKBS

TITLE: Air Force Technical Applications Center Subsurface Depot Logistics Support

PROGRAM MANAGER: Capt Kathryn Lewis, AFTAC/LG, (407) 494-2512 (Patrick AFB, FL)

ESTIMATED DOLLAR VALUE: $8.5M

PROGRAM DESCRIPTION: Perform depot level logistics services in support of the subsurface portion of the US Atomic Energy Detection System

OBJECTIVE: Maintain operability of current sites and eventually Comprehensive Test Ban Treaty system

TECHNICAL APPROACH: Parts and equipment replenishment and distribution, equipment maintenance, system engineering support and data maintenance

QUANTITY: Support 17 Seismic Sites and 6 Hydroacoustic Sites

ESTIMATED RFP RELEASE DATE: October 1995

ESTIMATED CONTRACT AWARD DATE: March 1996

CONTRACT TYPE AND DURATION: FFP with some cost reimbursement CLINs; One year period of performance with four one-year options

SIC CODE: 3829

TYPE OF COMPETITION ANTICIPATED: Small Business Set-Aside

BUYING ACTIVITY: ASC/RAKBS

TITLE: Comprehensive Test Ban Treaty International Seismic Array Installation

PROGRAM MANAGER: Mr. Bruce Varnum, AFTAC/TT, (407) 494-7985 (Patrick AFB FL)

ESTIMATED DOLLAR VALUE: $62.5M

PROGRAM DESCRIPTION: Installation of Seismic Arrays in 13 Different Countries

OBJECTIVE: Comprehensive Test Ban Treaty Monitoring

TECHNICAL APPROACH: Define and install specific site configuration from a baseline prototype design. Provide operator and maintenance training. Provide support for one year after installation.

QUANTITY: 20 Array Installations

ESTIMATED RFP RELEASE DATE: September 1995

ESTIMATED CONTRACT AWARD DATE: February 1996

CONTRACT TYPE AND DURATION: IDIQ/5 Years

SIC CODE: 3829

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YC

TITLE: C-17 Production Lot VIII and Beyond

PROGRAM MANAGER: Teresa Marshall, ASC/YC (PBO), (513) 255-6917

ESTIMATED DOLLAR VALUE: $20B

PROGRAM DESCRIPTION: Procurement of the remainder of the C-17 Globemaster III aircraft production program (P-33 through P-?) Quantities will be determined at the joint C-17/NDAA Milestone IIIB Defense Acquisition Board scheduled to occur in November 1995.

QUANTITY: Not less than 8 and not more than 122 aircraft

ESTIMATED RFP RELEASE DATE: August 1995

ESTIMATED CONTRACT AWARD DATE: January 1996

CONTRACT TYPE AND DURATION: Predominantly FFP
Duration: TBD

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive environment established by for the coming joint C-17/NDAA Milestone IIIB Defense Acquisition Board.

BUYING ACTIVITY: ASC/YW

TITLE: C-130H2 Aircrew Training System (ATS)

PROGRAM MANAGER: Captain Wayne M. Descheneau, ASC/YWMD, (513) 255-7288, ext 447

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: The C-130H2 Aircrew Training System (ATS) involves the acquisition of aircrew training devices(ATDs), Contractor Logistics Support (CLS), and training to satisfy C-130H2 aircrew training needs for the Air Force Reserve Force (AFRES). An option is included for a C-130H3 ATD for the active duty Air Combat Command (ACC). The ATDs will consist of a Weapon System Trainer (WST) and Satellite Navigation Station (SNS) trainer. The WST will provide aircrew training for the pilot, copilot, navigator, and flight engineer. The SNS will provide stand alone training for the navigator. Support resources include complete CLS, instructor support, data required for operation and maintenance of the devices and recompetition of the support contract, spares, support equipment, and a Training System Support Center (TSSC). The ATDs will be high physical and functional fidelity replications of the cockpits for the C-130H2 and C-130H3 aircraft. The WSTs will provide an accurate simulation of individual systems and fully integrated, correlated instrument displays and indicators. The simulation will duplicate all conditions normally encountered during aircraft operations to support efficient and comprehensive training of the currently configured C-130H2/H3 aircraft and all future modifications.

QUANTITY: (1) Complete ATS (H2) with an option to buy a second ATS (H3)

ESTIMATED RFP RELEASE DATE: Released 8 June 1995

CONTRACT TYPE AND DURATION: Firm-Fixed Price and Time and Materials; duration of basic contract is 16 months; options include performance to 30 September 2000.

SIC CODE: 3728

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YWMA

TITLE: C-141 Aircrew Training System (ATS)

PROGRAM MANAGER: Major Margaret Sampson, ASC/YWMA, (513) 255-7288 x544.

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: The acquisition will provide continued operation, maintenance and support of the entire C-141 ATS ground-based training system via annual options for fiscal years 96-01. The program will also include a major upgrading of three ATS sites' equipment and courseware with the All Weather Flight Control System modification. Also acquired will be an update to the cockpit procedures trainer's computational system; installation of the control heads for the HAVE QUICK II modification; options for relocations of the ATS to new sites; upgrading the ATS' visual system databases, station keeping equipment, and radar to permit training of aerial refueling up to the pre-contact position; and annual options for developing additional "certified" airfield models.

QUANTITY: Annual options for OM&S FYs 96-01

RFP RELEASE DATE: 18 August 1995

ESTIMATED CONTRACT AWARD DATE: 13 February 1996

CONTRACT TYPE AND DURATION: Firm-Fixed-Price; FY96-01

SIC CODE: 3728

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YWME

TITLE: Air Mobility Command (AMC) Visual Upgrade Effort (VUE)

PROGRAM MANAGER: Captain Neil Robinson, ASC/YWME, (513) 255-9298 X323

ESTIMATED DOLLAR VALUE: $66.2M

PROGRAM DESCRIPTION: The AMC VUE Program has been established to reduce visual system deficiencies in AMC's current aircrew training devices (ATD) capability. The systems acquired will be comprised of non-developmental item (NDI) components to the maximum extent practical. The AMC VUE program will improve the Air Force's AMC ground based flight training capability by upgrading AMC's ATD's visual simulation system fidelity and capability. This will permit AMC to transfer training from the aircraft to the simulator thereby reducing aircraft wear and tear, reducing aircraft operations and maintainability (O&M) costs, and saving aircraft for revenue generating sorties.

QUANTITY: Minimum Quantity- 1; Maximum Quantity- 25

ESTIMATED RFP RELEASE DATE: 27 September 1995

ESTIMATED CONTRACT AWARD DATE: 08 April 1996

CONTRACT TYPE & DURATION: Firm Fixed Price, Indefinite Delivery, Indefinite Quantity (IDIQ)

SIC CODE: 3728

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/VXC

TITLE: Egyptian Air Combat Maneuvering Instrumentation (ACMI) System, Follow-on Operations, and Maintenance (O&M) Contract (F08626-95-R-0362)

PROGRAM MANAGER: William H. Stone

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: Follow-on Operations and Maintenance of the Control and Computation Subsystem (CCS) and one Display and Debriefing Subsystem (DDS) located at Cairo West Air Base and a second DDS located at Beni Suef Air Base. Two additional options wil be included to add the Additional Egyptian Display and Debriefing Systems (AEDDS) at Zocer and Amoun Air Bases.

QUANTITY: 1 Job

ESTIMATED RFP RELEASE DATE: Nov 95 (Draft RFP Aug 95)

ESTIMATED CONTRACT AWARD DATE: 1 March 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price, 2-yr Basic/2 1-yr options

SIC CODE: 8711

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/VXC

TITLE: Decimomannu Air Combat Maneuvering Instrumentation (ACMI) Upgrade System (F08626-95-R-0225)

PROGRAM MANAGER: William H. Stone

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: The DACMI Upgrade program will upgrade the existing Control and Computation Subsystem (CCS) and Display and Debriefing Subsystem (DDS) of the current DACMI System, integrate these upgrades with the remainder of the system and increase the range capability form 8 high-activity aircraft to 36 high-activity aircraft.

QUANTITY: 1 Job

ESTIMATED RFP RELEASE DATE: Late September 1995 (DRFP released 7 July 1995)

ESTIMATED CONTRACT AWARD DATE: 31 January 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price, 14 months

SIC CODE: 3663

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/VXGK

TITLE: Translated Global Positioning System (GPS) Range System (TGRS)

PROGRAM MANAGER: Ms. Tanya W. Lambert, (904) 882-8601

ESTIMATED DOLLAR VALUE: $9M R&D; $41M Production

PROGRAM DESCRIPTION: The TGRS program is comprised of a DGT that is carried on the host vehicle, and a GTP that is located on the range. TGRS will provide encrypted TSPI for high dynamic participants for test and training missions.

QUANTITY: 1500 ea Digital GPS Translators; 25 ea GPS Translator Processors

ESTIMATED RFP RELEASE DATE: 1 September 1995

ESTIMATED CONTRACT AWARD DATE: 1 December 1995

CONTRACT TYPE AND DURATION: Cost Plus Award Fee (2 year R&D); Fixed Price Incentive Firm Targets (3 years production)

SIC CODE: 3812

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YGK

TITLE: AFM-130 AUR Containers

PROGRAM MANAGER: Ms. Margaret Villagran, (904) 882-2020 x2087

ESTIMATED DOLLAR VALUE: $450K

PROGRAM DESCRIPTION: All-up Round (AUR) container for the AGM-130 air-to-surface missile.

QUANTITY: 142 each

ESTIMATED RFP RELEASE DATE: 1 September 1995

ESTIMATED CONTRACT AWARD DATE: 1 January 1996

CONTRACT TYPE AND DURATION: Firm-Fixed Price; 1 year

SIC CODE: 3769

TYPE OF COMPETITION ANTICIPATED: Full and Open (IFB)

BUYING ACTIVITY: ASC/YHK

TITLE: Miniature Air Launched Decoy (MALD)

PROGRAM MANAGER: Ms. Joan Sanders, (904) 882-4808 x2170

ESTIMATED DOLLAR VALUE: $42M

PROGRAM DESCRIPTION: The MALD program is a joint ARPA/AF program which will incorporate the advanced concept technology Demonstration (ACTD) acquisition strategy. The ACTD allows for accelerated development. The program is composed of three phases: Phase 1 is an 18 month effort designed to complete the small engine testing; Phase 2 is a 3 year effort to design, develop, and test 24 full-up systems, which will include an engine, airframe, and an RF payload; Phase 3 is a transition phase, moving program responsibility from ARPA to the AF. An LRIP decision is expected by FY99.

QUANTITY: TBD

ESTIMATED RFP RELEASE DATE: 1 February 1996

ESTIMATED CONTRACT AWARD DATE: 1 August 1996

CONTRACT TYPE AND DURATION: TBD

SIC CODE: 3761

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YUK

TITLE: Preemptive Destruction (Silent Hard Kill) (SHARK) Lethal SEAD

PROGRAM MANAGER: Ms. Joan Sanders, (904) 882-4808 x2170

ESTIMATED DOLLAR VALUE: $500K (for each contract)

PROGRAM DESCRIPTION: The SHARK program is a demonstration program to prove the capability to locate and destroy non-emitting, imprecisely located mobile SAM systems and then to assess the damage achieved. This preemptive destruction mission is intended to compliment the reactive suppression mission. It is anticipated that between 2 to 3 contracts will be awarded to compare alternative approaches to solving this problem.

QUANTITY: UNK

ESTIMATED RFP RELEASE DATE: 1 October 1995

ESTIMATED CONTRACT AWARD DATE: 1 January 1996

CONTRACT TYPE AND DURATION: TBD

SIC CODE: 3761

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YUK

TITLE: Concept Development for Real Aperture Radar (RAR) Application to JDAM

PROGRAM MANAGER: Ms. Betty Old, ASC/YUP, (904) 882-4261 x3238

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: The ORCA program is a concept exploration effort to develop and demonstrate real aperture radar (RAR) seeker technology for precision guidance of direct attack weapons. The goal is to demonstrate that a RAR guided weapon can precisely strike a realistic high value fixed target through an end-to-end simulation and test program. A technical assessment of the guidance capabilities in the direct attack role with specific application to the JDAM munitions will be performed. To support the technical assessment, the ORCA program must provide for concept sensor-to-weapon-to-aircraft integration outputs. The program will also demonstrate that this technology is affordable, producible, and lends itself to a wide array of employment opportunities.

QUANTITY: 1 Job

ESTIMATED RFP RELEASE DATE: 7 September 1995

ESTIMATED CONTRACT AWARD DATE: 1 December 1995

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 32 months

SIC CODE: 8711

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/YV

TITLE: Joint-Air-To-Surface Standoff Weapon (JASSM)

PROGRAM MANAGER: Lt Col Chuck Fellows, (904) 882-8002 x3206

ESTIMATED DOLLAR VALUE: TBD

PROGRAM DESCRIPTION: JASSM is a potential Air Force/Navy acquisition program envisioned to provide a low-cost precision-strike standoff weapon system with a range greater than 100NM compatible with Air Force, Navy, and Marine bomber and fighter aircraft. The JASSM program will use a highly streamlined approach for a weapon system which could meet a short term pre-emd program which will consist of design, manufacturing, test and competitive demonstration (two contractors) for downselect for the emd option. The pre-emd and emd phases will be defined by the offerors to meet a required assets available (RAA) date in FY01. Firms interested in this program must demonstrate the capability of meeting the following salient characteristics as a minimum: low cost, precision accuracy, and standoff range. In addition, the weapon's standoff capability must be outside of area defenses enabling delivery platforms to employ the weapons beyond the range of current and projected surface-to-air systems and strike planned targets. The precision weapon concept must be capable of placing both fixed and relocatable targets at risk and should perform reliably in threat environments of the year 2010. The baseline system must be compatible with a wide range of bomber and fighter aircraft, with initial emphasis on F16, B52, F/A18. Mission planning will use current and projected mission planning architectures and mapping, charting and geodesy support. Autonomous operations during mid-course and terminal flight phases are preferred. Performance in adverse weather without degradation is desired, and multiple launch and leave capability is required. The base line system will employ a unitary blast fragmentation/penetrating warhead with future growth potential to submunition variant. An objective average unit procurement price of $600K (in FY95 dollars) has been established as an objective.

QUANTITY: TBD

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: July 1996

CONTRACT TYPE AND DURATION: TBD

SIC CODE: 3761

TYPE OF COMPETITION ANTICIPATED: Full And Open

BUYING ACTIVITY: ASC/YA

TITLE: Advanced Medium Range Air-to-Air Missile (AMRAAM)

PROGRAM MANAGER: Ms Linda Highlander, ASC/YAA, (904) 882-3484 ext 570

ESTIMATED DOLLAR VALUE: $300M (U.S. only; FMS unkown at this time)

PROGRAM DESCRIPTION:

OBJECTIVE: Award of Lot 11 Annual Production Lot Buy

TECHNICAL APPROACH: Continue acquiring from on-going missile production lines

QUANTITY: 460 U.S. missiles (FMS unknown at this time)

ESTIMATED RFP RELEASE DATE: September 1996

ESTIMATED CONTRACT AWARD DATE: January 1997

CONTRACT TYPE AND DURATION: Firm Fixed Price for 3 years

SIC CODE: 3761

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Affordable Adaptive Radar

PROGRAM MANAGER: Dan A. Turner, WL/AARM-2, (513) 255-6071

ESTIMATED DOLLAR VALUE: $1.1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The Affordable Adaptive Radar project addresses radar affordability issues and works toward hardening airborne radar against jamming and clutter environments through investigation and development of adaptive processing techniques. Deficiencies exist in the ability of tactical airborne radars to counter conventional and low observable threats in barrage noise jamming and ground clutter environments. Current limitations to solutions for existing radars focus on hardware replacement costs, and available processor availability. In addition, the cost of these radar systems has grown as a percentage of the total weapon system costs. This radar project develops promising processing techniques for current and future airborne radar systems. As a result of past work in adaptive radar processing and current 6.2 Adaptive Radar Architecture contracts, it has been shown that a number of solutions for barrage noise and ground clutter environments are possible. Additional interference sources are terrain scattered interference from noise jammers and radome multipath reflections.

Adaptive processing techniques reduce the radar system's Life Cycle Cost by reducing the production, operations, and maintenance costs. Potential cost savings could be made through signal channel matching by employing adaptive processing techniques rather than by a hardware balancing process.

TECHNICAL APPROACH: The techniques developed under this TIP will be investigated by balancing adaptive processing techniques for both affordability and interference cancellation. This effort will utilize multiple contracts for initial trades, analyses, and demonstrations; for university support in algorithm development/evaluation; and for in-house functions (such as parametric trades and computer maintenance and support) to perform this effort.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 1st and 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 2nd and 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF PRDA-or-BAA, 60 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Radar Tools and Simulation Common Environment

PROGRAM MANAGER: Harold Noffke, WL/AARM-2, (513) 255-6071

ESTIMATED DOLLAR VALUE: $2.4M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this project is to to develop a unified support environment for the airborne radar community, which will significantly reduce the cost and time required to develop and use complex airborne radar simulations, designs, and models by modern software techniques, tools, and languages. Due to general software engineering inexperience among radar engineers, a focused, centrally coordinated effort is proposed developing common tools for sharing information. The environment will be constructed from quality re-use components and frameworks (such as J-MASS and KHOROS); and will provide the payoff of reliable rapid prototyping for current and future airborne radar systems.

The unified support environment developed under this TIP will provide means of reliable and rapid prototyping for current and future airborne radar systems.

TECHNICAL APPROACH: The focus will be on simulation and analysis technology for radar domains of interest to Air Force S&T community, building from Wright Laboratory expertise. Focus will include foliage penetration and maneuvering synthetic aperture radar; and will span electromagnetic environment and radar system issues. Initial concentration will be on full object-oriented programming, reusable simulation and analysis components, and development and delivery frameworks. Yearly airborne radar simulation/analysis technology workshops will result in government-academia-industry working groups and steering committees to plan development efforts. Other software engineering domains (such as semantic nets, rule-based programming, and formal verification) will also be explored. Aspects of radar design automation and automated symbolic modeling may be pursued in later efforts. This effort will utilize multiple contracts for initial trades, analyses, and demonstrations; for university support in algorithm development/evaluation; and for in-house functions (such as parametric trades and computer maintenance and support) to perform this effort.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 1st and 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 2nd and 4th Qtr FY96

CONTRACT TYPE AND DURATION: FPLE-or-CPFF; PRDA-or-BAA, 60 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Night Vision Countermeasures

PROGRAM MANAGER: Stephen J. Wirick, WL/AAWW-3, (513) 255-4174

ESTIMATED DOLLAR VALUE: $460K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to explore and determine the extent of the night vision threats to US aircraft and develop countermeasure techniques to defeat them. Increased use of our nighttime capability provokes a similar response from adversaries to also acquire a nighttime/night vision capability. Night vision devices are readily available for purchase by any military force or terrorist groups. Future USAF air combat and support aircraft may engage adversaries utilizing such night vision equipment in future conflicts. The need exists for effective and affordable countermeasures to prevent this growing technology from gaining the upper hand against the Air Force's night fighting capability. This effort will utilize information already known about the night vision devices from existing reports and lab tests. This effort should provide a better understanding of what the threat will be in the future. Countermeasure approaches, concepts, or techniques will then be found to defeat the threat, thus allowing the USAF to continue operating whenever and wherever needed.

TECHNICAL APPROACH: The approach for this effort is to first identify the night vision equipment and what is known about its capabilities and vulnerabilities. The contractor will determine how effective the equipment is when used in combination with, or as an adjunct to, a threat system. With laboratory approval, the contractor will then acquire some of the low-cost typical night vision equipment items. Laboratory bench top analysis and evaluation will be conducted with the equipment. These test in conjunction with a projection of future or advanced night vision equipment will be used to determine possible countermeasure concepts. Breadboard benchtop countermeasures will then be tested against the equipment. This will be accomplished at the contractor's facilities. These countermeasures could include expendables, onboard jammers, combinations, or other special techniques yet to be determined. The contractor will make recommendations for the most feasible and practical approach to neutralize the equipment. This will be a contractual effort, conducted over a 2-year period. A Program Research and Development Announcement (PRDA) approach will be used. Contract award 4Q96; Review threat nature and capability 1Q97; Acquire hardware 2Q97; Hardware and counter-measure testing completed 2Q98; Countermeasure recommendation 3Q98; Final report 4Q98.

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: 2nd Qtr FY96
ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 24 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Coherent Angle/Velocity/Range (A/V/R) Countermeasure Techniques

PROGRAM MANAGER: Eugene F. Mayleben, WL/AAWW-2, (513) 255-6504

ESTIMATED DOLLAR VALUE: $500K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective is to identify, develop and optimize coherent radar electronic countermeasures (ECM) techniques that best exploit the unique capabilities of new digital technology including Digital RF Memory (DRFM) and Direct Digital Synthesis (DDS). This technology appears to offer outstanding potential against modern coherent threats but the best ways to match its powers against their strengths still need to be determined. For example, a modern pulse doppler phased array target tracking radar (TTR) can simultaneously track many aircraft while engaging up to six targets with several semi-active missiles. Optimum approaches for dealing with the complex waveforms and various modes of these radars must be selected. This program will increase aircraft survivability by developing effective, efficient ECM techniques against advanced radar-directed threats.

TECHNICAL APPROACH: This program consists of four major tasks: 1) Identify/design best potential ECM techniques against important, modern coherent threats including search radars, pulsed doppler phased array target tracking radars (TTR's), missile seekers and illuminators. Identify areas where new techniques are required. 2) Develop concepts for implementing selected a/v/r ECM techniques that attack all phases (search, acquisition, track, and missile intercept) of the intercept process and that are most suitable for DRFM/DDS implementation. The Advanced Monolithic DRFM (AMDRFM) and Digital Single Sideband Modulator (DSSM) under development by Wright Laboratory are of special interest. Technical issues include the unique advantages/disadvantages of digital technology, angle techniques such as angle false targets and cross polarization, warning receiver interface requirements, DRFM spurious frequency levels and time to react to radar mode changes. Any additional development that is required should be highlighted. 3) Perform trade-off studies to estimate effectiveness as a function of hardware complexity and cost. Identify additional technique testing that is required. 4) Recommend three different system approaches that provide different levels of effectiveness at significantly different costs. Major Milestones: Review of Task 1 Techniques and Task 2 Implementation Concepts in 4QFY96, completion of technical effort in 2QFY98 and delivery of Final Report in 3QFY98.

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: 3rd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 20 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Coherent Digital Exciter Technique Effectiveness Evaluation

PROGRAM MANAGER: Capt Heinrich K. Rieping Jr, WL/AAWW-2, (513) 255-4933

ESTIMATED DOLLAR VALUE: $300K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to demonstrate the ability of a channelized architecture to effectively counter multiple simultaneous coherent threats. The program will evaluate the effectiveness of the channelized, coherent digital exciter architecture hardware against various coherent threats when controlled by the Northrop Grumman technique generator ASIC (TGA) breadboard. The coherent exciter architecture utilizes multiple Advanced Monolithic Digital Radio Frequency Memory (AMDRFM) channels to create separate, optimized countermeasures (CM) against simultaneous threats. There are several benefits the user can gain by tailoring the CM for each particular threat. One benefit is that precise, strategic jamming can be accomplished for each threat that is encountered. Another benefit is that beaconing of aircraft location can be minimized when simultaneous threats are countered with independent CM techniques. This architecture promises increased survivability due to more effective CM techniques and graceful system degradation in a low-cost, low-volume, highly reliable electronic countermeasures (ECM) system. The end product of this effort will be a final report that will address the effectiveness of the exciter architecture as well as recommend improvements that need to be made to the overall architecture design.

TECHNICAL APPROACH: This project consists of three major tasks. First, identify a testing environment which includes a representative mixture of multiple, simultaneous coherent and non-coherent threat signals. The threat environment must be capable of multiple threat engagement scenarios. Second, conduct the ECM testing in a threat representative environment. The tests shall include multiple runs in various configurations of the electronic threat environment to gain statistical analysis of the measures of effectiveness (MOE). Third, document the test data and results. The recording of the test data and results should include digital recording of data, video recording of displays, audio recording of test comments. A report shall be prepared which describes all aspects of the testing. Milestones: identify test environment by the end of 1QFY97, develop a test plan by the end of 2QFY97, complete testing by the end of 4QFY97, and deliver the final report by the end of 2QFY98.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 2nd Qtr FY96
ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96
FINAL REPORT SUBMITTED: 2nd Qtr FY98

CONTRACT TYPE AND DURATION: CPFF, 18 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Pulse Quality Investigation

PROGRAM MANAGER: Eugene J. Sikora, WL/AAWW-1, (513) 255-4322

ESTIMATED DOLLAR VALUE: $360K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The primary objective of this program is to evaluate the concept of Pulse Quality as a valid Measure of Effectiveness (MOE) for pulse-type noise signals and/or false target ECM signals. A secondary objective will be to apply pulse quality to current systems and attempt to optimize their performance. Pulse Quality is defined as a quantitative measure of the spectral, time-series, and statistical analysis of pulse-noise ECM signals. Drawing upon previous noise quality work which investigated an MOE for Continuous Wave (CW) barrage noise, the next logical progression is to investigate pulse noise and other pulse-like CM signals. The evolving technologies of Digital RF Memories (DRFM), Digital Single Sideband Modulators (DSSM), and others, necessitate the formation of some standard, accepted MOE. The benefit of applying pulse quality to these emerging pulse and noise-like signals early in their development will permit these new ECM techniques to be optimized in terms of their performance prior to incorporation into operational systems. Laboratory measurements of these technologies by the Pulse Quality hardware and software developed in Phase II of the program will result in documented optimized performance characteristics.

TECHNICAL APPROACH: This program will consist of two phases. Phase I will review the previous noise quality work, as well as preliminary pulse quality analysis being performed during FY95. While current noise quality work entails the use of the first order probability density function (pdf), this approach is not valid for the pulse-like signals to be investigated under this effort. Accordingly, Phase I will investigate use of the second order pdf as a valid descriptor for pulse quality. As a result of Phase I, an analysis of pulse quality will have been performed, and a documented plan for implementing pulse quality measurements in both hardware and software will be presented. Phase II will entail the major portion of the program and includes developing the necessary software and hardware interfaces to existing Air Force noise quality breadboards, performing initial pulse quality measurements on laboratory sources, and documenting the results in a final report.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 2nd Qtr FY96
ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96
PHASE I COMPLETE: 4th Qtr FY97
PHASE II COMPLETE: 4th Qtr FY98
FINAL REPORT: 1st Qtr FY99

CONTRACT TYPE AND DURATION: CPFF, 24 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Jamming Against Modern Communications Systems (JAM-CS)

PROGRAM MANAGER: Roger E. Romie, WL/AAWW-2, (513) 255-4933

ESTIMATED DOLLAR VALUE: $300K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop countermeasure theory and algorithms effective against future communication systems. The goal in the development of countermeasure algorithms is to limit co-channel interference and be spectrally efficient to work within a crowded communications environment. This effort will result in efficient jamming techniques for improved effectiveness and timeliness in support of Electronic Combat systems. The major benefit of this effort will be in the development of off-the-shelf models of modern communications systems and effective jamming solutions. Reliable, accurate and readily available computer models of communications systems and countermeasures options would then be used for a fast jamming response to potential mixes of systems used militarily. The communications systems models will be used in in-house research to maintain a quick response to user needs. A CRDA could be set up at the end of this effort to maintain the models.

TECHNICAL APPROACH: During this research effort, countermeasure algorithms will be developed through the study of modern communications formats and usage. The emphasis of this effort will be on countermeasures technique development using simulation as a tool. Several models of digital communications systems and ECM jamming/countermeasure approaches will be developed resulting in a systems library. This effort will consist of three major tasks. The first task is to identify and study a representative mix of modern communications signals and systems. The second task is to conduct modeling and simulation of the communications systems to develop countermeasure approaches/algorithms. One of the several commercially available communications simulation packages will be used to conduct the effort. High fidelity commercial communications systems simulation software exists (i.e. COMDISCO's Signal Processing Workstation) to host a detailed systems analysis. Measures of Effectiveness will be developed to evaluate the impact of the countermeasures. Several simulation runs will be conducted to test and evaluate different approaches. The final task is to document the findings and deliver the resulting models and simulations data. A final report will be prepared to document the simulations and models. Milestones are: development of communications systems list 1Q FY97; model completion of all systems 3Q FY97; demonstration of computer models 4Q FY97; and installation in-house 2Q FY 98.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 3rd Qtr FY96
ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96
TECHNICAL EFFORT COMPLETE DATE: 2nd Qtr FY98
FINAL REPORT DATE: 3rd Qtr FY98
CONTRACT TYPE AND DURATION: CPFF, 25 months
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Narrow Band Digital Microwave Receiver Investigation

PROGRAM MANAGER: James B.Y. Tsui, WL/AAWP-1, (513) 255-6133

ESTIMATED DOLLAR VALUE: $320K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to design and breadboard a laboratory narrow band microwave digitizing system, collect digitized data, use the digitized data to develop and evaluate signal processing concepts and algorithms, and apply these concepts to wide band electronic warfare receivers. Due to the advancement in digital hardware, the development of digital receivers is becoming a reality; however, investigations into different processing concepts and tradeoffs of hardware and software approaches are required in order to fully utilize this technology. The hardware investigation will include fabrication and evaluation of components and subsystem design. The software investigation includes development and evaluation of algorithms for signal processing and simulation of hardware designs.

TECHNICAL APPROACH: It is anticipated that two contractors will be used in this effort. Currently, existing task order contracts will be used to contract with Mitre Corporation for the development and evaluation of hardware, and with Ohio University for the development and evaluation of processing concepts. The program will concentrate on narrow band digitizing and processing and will use the Global Positioning System as a test, development, and evaluation environment. The contractors will use previous contractual and in-house efforts in both digital hardware and software as starting points for their investigations. The contractors will work closely with Air Force in-house personnel to: 1) refine and test previous concepts and designs, 2) define new areas of investigation, 3) test, evaluate, and compare the new concepts with those previously defined, and 4) extend these concepts to wide band electronic warfare receivers. Major milestones include: preliminary design review (3Q96), design review (1Q97), hardware evaluation (3Q98), and software evaluation (4Q99).

QUANTITY: N/A

DIGITIZER DEVELOPMENT: Mitre Corporation

SOFTWARE DEVELOPMENT: Ohio University

ESTIMATED PR RELEASE DATE: Use ESC BOA and AFOSR BOA, 1Q96

ESTIMATED CONTRACT AWARD: 2nd Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 48 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Receiver and Processing Concepts Evaluation (RAPCEval)

PROGRAM MANAGER: Nicholas Pequignot, WL/AAWP-1, (513) 255-7855

ESTIMATED DOLLAR VALUE: $500K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to provide analytical and research support of the WL/AAW in-house research efforts. The research that will be performed includes general topics in signal extraction, signal processing, pattern matching, and sensor calibration, and specifically includes Threat Location Algorithms, Exploitability of Digital Phase Sampling Receivers, Application of Random Agile Deinterleaving Technology, and the Application of Parallel Computing Techniques. All of these topics are relevent to upgrading current operational electronic warfare systems and for the next generation system.

TECHNICAL APPROACH: This is a follow-on effort to the highly sucessful RF Receiver and Processing Concepts Evaluation program and is modeled after that program. The personnel who will be performing the analysis tasks will be Robins AFB personnel who are in an approved graduate training program with Mercer University, and the research staff of Mercer Engineering Research Center (MERC) and Mercer University. To affirm that the research topics are both academically acceptable and represent an Air Force problem, the contractor established a Program Research Standards Committee that meets at least quarterly. This committee consists of representatives from MERC, Mercer University, Warner Robins Air Logistic Center (WRALC), and Wright Laboratory (WL) at Wright Patterson Air Force Base. To satisfy security requirements, Mercer University established a special master of science program that required the faculty advisors and students have valid security clearances thus allowing the students to perform classified research and write classified theses. The major milestone are quarterly reviews of research topics, publication of each research topic upon completion, and a summary final report in the 4QFY00.

QUANTITY: N/A

ESTIMATED PR RELEASE DATE: Use Robins AFB BOA, 1st Qtr FY96

ESTIMATED CONTRACT AWARD: 2nd Qtr FY96

CONTRACT TYPE AND DURATION: Cost No Fee, 60 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Dynamic Range Enhancement Program

PROGRAM MANAGER: David L. Sharpin WL/AAWP-1, (513) 255-7858

ESTIMATED DOLLAR VALUE: $650K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of the Dynamic Range Enhancement Program is to extend the dynamic range of the digital receiver prototype that is being developed under the Millennium Technology Reinvestment Program. Millennium is funded by the TRP and is managed by Wright Laboratory. The single dominant limiting factor for the single signal dynamic range in the digital receiver is the effective number of bits of the analog-to-digital converter (ADC). This program will modify an existing ADC under development at TRW Inc to add 1 effective bit which will in-turn add 6 dB to the available dynamic range. The program approach is to work within an existing ARPA contract to TRW which is funded by ARPA's Microelectronics Technology Office. This program has an unfunded option to extend the number of effective bits. Air Force PE 62204F funding in conjunction with non-Air Force 6.2 funding will be applied to the ARPA contract to fund the option.

TECHNICAL APPROACH: In this effort, the contractor will modify an existing 8-bit ADC to incorporate a wider front-end folding circuit. In order to maintain the existing sample rate, several approaches will be explored such as, 1) lower impedance in the input analog spreader, 2) parallel analog spreading circuits, and 3) transistor capacitance reduction. Architectural changes such as increasing the number of pipeline folding circuits and doubling the number of interpolation resistors and comparators will be explored. A final design approach will be selected and used in the design, fabrication, and test of the new enhanced dynamic range ADC. The task descriptions are as follows: 1) perform process and material optimization experiments to improve device performance, 2) perform electrical design and layout modifications to the 8-bit ADC, 3) fabricate IC masks, 4) perform HBT wafer fabrication (total number of wafers and die TBD), 5) perform wafer probing, 6) "package" die on test pallet, 7) perform at speed testing of packaged ADC. The major milestones of this program are: Preliminary Design Review: 2Q96, Critical Design Review: 4Q96, and Hardware Delivery: 2Q97.

QUANTITY: N/A

ESTIMATED PR RELEASE DATE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD: 1st Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 18 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Radar Warning Receiver (RWR) Algorithm Development

PROGRAM MANAGER: Nicholas Pequignot, WL/AAWP-1, (513) 255-7855

ESTIMATED DOLLAR VALUE: $910K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop and test new Electronic Warfare (EW) concepts and algorithms based upon the results from in-house and previous contractual programs. The contractor will adapt and implement these algorithms and concepts in a software simulation to develop specifications for developing future and modifying current EW threat warning systems. The simulation will be a mechanism for evaluating new concepts applicable to EW processing systems. The simulation tools created as part of this program will be used to analytically develop and implement these algorithms in threat warning systems.

TECHNICAL APPROACH: Current operational systems have highly integrated Deinterleaving, identification (ID), and signal analysis software. This program will investigate new and innovative processing techniques that utilize correlation, new independent signal type declaration software, probability analysis in ID generation, pattern recognition, unintentional modulation on pulse, frequency modulation on pulse, artificial intelligence, and innovative signal tracking algorithms. The program will develop and test new algorithms that implement simulations of correlation, threat ID, threat location, aircraft flight path, inertial navigation, GPS, frequency and time Doppler, control concepts, and receiver types. These simulations will build upon, modify and enhance the tools developed in the 6.3 RAD/ID program. These developments will be coded in a high order language for demonstration. The major milestones of the program are: Software Modeling Development (3Q97), CDR (1Q98), Software Model Validation (1Q99), Final Report (3Q99).

QUANTITY: N/A

ESTIMATED PR RELEASE DATE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 30 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Advanced Multispectral Passive Decoy

PROGRAM MANAGER: David M. Lin, WL/AAWP-2, (513) 255-9272

ESTIMATED DOLLAR VALUE: $610K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop cost effective multispectral passive decoy technology to protect low observable, current and future, aircraft against advanced multispectral threats. The technical issues include IR and RF signature trade-off, Doppler signature matching, cost effectiveness, and ALE-47 dispenser compatibility. The end-product of this effort will be an advanced technology baseline available for further development at a product center (i.e. System Program Office). Chaff is the only decoy which has been deployed on almost all military aircraft. Chaff is passive because it doesn't emit radiation energy, but reflects and scatters the radar radiation. It is very low cost, but has only limited capability against advanced Doppler threats. Active decoys have a much better capability to protect the airplane, but the cost is thousands fold higher. In the post-cold war era, with shrinking defense budgets, affordability becomes a large issue in future military procurements. The effective low cost decoy becomes an imminent need for future conflicts. With our advantage in low observable technology, the passive approach with or without limited microwave electronic circuits is very attractive for an effective low cost decoy development. As computation technology grows rapidly around the world, the development of threats with integrated sensors in different spectra will be accelerated. New decoy developments should include multispectral capability.

TECHNICAL APPROACH: The program will be under PRDA solicitation for innovative passive and multispectral concepts. There will be two phases in the program. The first phase will include the concept development, IR/RF and Doppler signature trade-off study, effectiveness study by EW simulation, and aerodynamic design and analysis. The second phase will include a decoy breadboard and lab or field test and demonstration. The major milestones of the program are: End of Phase I - CDR (1Q97), End of Phase II (1Q98), Final Report (2Q99).

QUANTITY: N/A

ESTIMATED PR RELEASE DATE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 27 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Multi-Spectral Focal Plane

PROGRAM MANAGER: Jack H. Parker, Jr., WL/AAWP-2, (513) 255-9272

ESTIMATED DOLLAR VALUE: $100K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to investigate suitable options for optical front-ends and detector focal planes for combined laser/missile warning applications. The problem of reduced real estate on tactical aircraft platforms is an area of continued concern for operational commands. While the combining of laser and missile warning functions is a logical path, many technological hurdles exist which currently prohibit its implementation. Laser detection requires high speed detector focal planes in the visible to near infrared spectrum, whereas integrating focal planes in the mid and far infrared spectrum are needed for missile detection architectures. The end product of this effort will be formal hardware recommendations for integrated laser and missile warning light collection and detection functions. This document would provide developers and planners with the knowledge to proceed with system development, as well as, the technology path requirements for current technology deficiencies.

TECHNICAL APPROACH: The approach for this effort is to investigate broad spectral range optics for receiver front-ends. These investigations would include known and emerging detector materials and focal plane technologies. Considerations are to be given to performance, cost, and manufacturability. Investigate known and emerging focal plane technologies as to their suitability for high speed laser warning, as well as, integrating infrared missile signature detection. Investigations will include broadband detector materials, as well as, hybrids. The major milestones of the program are: CDR (3Q96), Final Report: (1Q97)

QUANTITY: N/A

ESTIMATED PR RELEASE DATE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD: 2nd Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 12 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Polarization-Agile MMIC/MPM Transmitter

PROGRAM MANAGER: Gerald T. Bullmaster, WL/AAWD-1, (513) 255-6648

ESTIMATED DOLLAR VALUE: $1.2M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of the polarization-agile microwave power module (MPM) transmitter development is to enhance aircraft survivability by reducing jammer power loss due to polarization mismatch with threat radar systems. Polarization mismatch in an electronic warfare (EW), electronic attack (EA) engagement is detrimental. If a jamming system has fixed circular polarization, the result will be a loss of no more than half of the effective radiated power against any linearly polarized threat. However, if the jammer antenna and the threat antenna are orthogonally polarized (e.g., one right-hand circular and the other left-hand circular), then this loss approaches infinity and renders the jamming ineffective. Some sophisticated threat systems now employ polarizations that can be varied in real-time, thus making it impossible to adequately configure a fixed jammer polarization prior to a mission. The goal of this effort is to design, develop, and demonstrate a broadband, adaptive polarization-agile jammer transmitter module to overcome this polarization mismatch problem. The potential benefits offered by MPM technology include low cost, high efficiency, high reliability, modularity, and a high output power-to-volume ratio. The polarization-agile MPM concept holds promise in a variety of new or existing transmitter implementations, including towed decoys, self-protection and support jamming pods, and internally carried jamming systems.

TECHNICAL APPROACH: The proposed method of maximizing the crucial jamming-to-signal (J/S) ratio is to adaptively match the polarization of the jammer to that of the threat. This will be demonstrated via a transmitter employing polarization-agile MPM technology in the 4 - 17 GHz region. The feasibility of MPM transmitter technology has recently been formally demonstrated under the ARPA Vacuum Electronics Initiative. Subject TIP program would demonstrate the integration of MPM transmitter technology with a new monolithic microwave integrated circuit (MMIC) polarimeter implementation. Previous approaches used a single transmitter tube followed by a large passive polarization control network. This network required the use of bulky broadband ferrite phase shifters and waveguide to handle the high radio frequency (RF) power generated by the transmitter. The approach for this effort is to use a low-power, solid state MMIC polarimeter placed before two distributed MPMs with a common power supply. The benefit of this implementation is the greatly reduced volume (approximately 40-fold) and cost of the MMIC polarimeter compared to the high power polarimeter. The complete transmitting module, consisting of polarimeter, two MPMs, power supply, and antenna will be designed to have a form factor that will allow it to be used in a stand-alone configuration or as an element of an electronically-scanned array. It will also have the potential to generate polarization countermeasures techniques. The integrated transmitter will be designed, developed, fabricated and tested in an instrumented anechoic chamber (2Q FY98). A final report will be generated documenting the design and performance (4Q FY98).

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 3rd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 23 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Electronic Warfare Techniques Analysis/RF Countermeasures Investigation Program

PROGRAM MANAGER: Mr Carl J. Klein, WL/AAWA-1, (513) 255-2164

ESTIMATED DOLLAR VALUE: $14.9M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective is to conduct advanced electronic warfare RF techniques research analysis/investigations to develop a technology base which effectively increases the USAF capability to conduct countermeasures and information warfare against new or postulated threats. This effort will exploit those technologies having application to electronic warfare and information warfare deficiencies, and to perform experiments to verify and validate electronic and information warfare concepts and critical designs and to enhance the transition of this technology. It shall continue a unified program of research, concept development, technique analysis, design, and experimentation to determine and validate potential mission effectiveness. The continuing flow of effectiveness data supporting new and modified techniques will provide a quantitative basis for planning development programs.

TECHNICAL APPROACH: This effort will be conducted on a task order basis. The task areas are: Threat Data Consolidation/Impact Analysis; C2 Countermeasures; Radar Countermeasures; Missile Guidance Countermeasures; Unique Third World Threat Countermeasures; Information Warfare; Electronic Warfare System Integration; Electronic Warfare Science and Technology Assessment; Electronic Warfare Analog/Digital Simulation; Electronic Warfare Defensive Suite Analysis; and Special Projects. Milestones: Final reports are required at the completion of each task. Annual reviews will be held FY97, FY98, FY99, FY00, FY01; completion FY02.

This acquisition will be other than full and open competition. A university set-aside is anticipated with multiple awards.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CR/term, 64 months

FINAL REPORT: 64 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Credit Card Avionics

PROGRAM MANAGER: Al Scarpelli, WL/AAAT-2, (513) 255-4594

ESTIMATED DOLLAR VALUE: $729K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective is to determine the feasibility of applying Personal Computer Memory Card International Association (PCMCIA) technology to avionics in order to lower life cycle costs through reduced weight, power, size, and spares maintenance (storage and repair cost). Future military spending will target the upgrade of aging aircraft since these legacy systems must remain in the inventory for many years to come. These upgrades will focus on increased functionality for new and improved mission capability, but must also be accomplished to replace aging parts, reduce Operations and Maintenance (O&M) costs, increase reliability, etc. DoD Secretary Perry's June 94 directive promotes the use of Commercial-Off-The-Shelf (COTS) products as a solution to reduce military costs. The benefits to be reaped from the commercial electronics market must be capitalized on, but military application of COTS is not straight-forward. The challenge is to provide a framework such that the rapidly evolving commercial technology can be applied more easily, affordably, and timely. One of the most exciting COTS technologies is the PCMCIA electronics originally developed for laptop computers and currently migrating to desktop systems. These credit card-sized products include processors, memory, hard drives, and specialty cards (e.g., modem, network adapter, Global Positioning System). This technology is naturally lower in power, weight, size, and cost given its target application. The payoff is affordable avionics in a flexible, open architecture for airborne and ground based applications. Preliminary estimates indicate a 7:1 reduction in cost, 6:1 reduction in power, 5:1 reduction in weight, and a 15:1 reduction in volume per module versus a comparable SEM-E implementation. This technology has multiple applications for fighter avionics, portable military workstations, and in hand-held units for flight-line maintenance and communications.

TECHNICAL APPROACH: Characterize system-level avionics requirements and interfaces. Identify PCMCIA benefits and deficiencies with respect to those avionics requirements and interfaces. Design and build two prototypes, one using off-the-shelf PCMCIA cards as is, and the second in a MIL-like form factor. Evaluate through characterization of metrics and demonstration to show concept feasibility. Determine retrofit strategies for application of PCMCIA technology to avionics and identify potential platforms. This program will address issues pertinent to the militarization of PCMCIA, including packaging, reliability, fault tolerance, commercial standards, logistics, time to market (product upgrades, replacements, vendor vanish), and life cycle cost. Program products include requirements documents, two prototypes with software, transition study, and final report. Key milestones include System Requirements Review 4QFY96, PCMCIA Study 1QFY97, Prototype A 2QFY97, Prototype B 4QFY97, Evaluation 2QFY98, Transition Study, 3QFY98, Final Report 4QFY98.

QUANTITY: N/A
ESTIMATED PRDA RELEASE DATE: 1 November 1995
ESTIMATED CONTRACT AWARD DATE: 1 May 1996
CONTRACT TYPE AND DURATION: CPFF, 28 months
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Affordable COTS for Aging Aircraft

PROGRAM MANAGER: Juan Carbonell WL/DOL-A/AAAS, (513) 255-4709

ESTIMATED DOLLAR VALUE: $1.364M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Air Force System Program Offices and Air Logistics Centers will require guidance as to how to implement SECDEF William Perry's June 94 Directive requiring the Services to use Best Commercial Practices in the design and development of retrofitted and future military systems. This effort will provide the needed guidance as to the extent that commercial off-the-shelf (COTS) electronics can be cost-effectively used on currently-fielded aircraft and will resolve a large number of system issues regarding the use of COTS. This program will determine: a life cycle comparison between cost drivers associated with current military avionics practices and Best Commercial Practices, the environmental adequacy of COTS circuitry, packaging, connectors, backplanes, etc. in meeting fielded aircraft requirements, modifications required to permit COTS hardware to interface with existing avionics subsystems and to provide adequate built-in-test and data security of data networking, the determination of whether throwaway electronic boards are feasible, the impact of COTS hardware obsolescence and whether software can be re-used, repair and support strategies for both hardware and software and the impact of new packaging technologies on the use of COTS.

TECHNICAL APPROACH: This effort will analyze COTS issues for targeted, currently fielded aircraft, select projected low-cost solutions, build selected hardware modules, conduct environmental stress testing on the selected modules, perform relevant integrated hardware and software demonstrations for targeted applications and provide validated information to the SPOs and ALCs. An In-House COTS survey is already underway to identify the issues and opportunities from which a detailed, coherent program will be planned. More than one contractual effort is planned for multiple-year starts. The Weapon System Prime Contractor and the associated SPO for a given aircraft will be involved in each program to ensure that real-world problems are being addressed and that the remaining product is useable for transition. The CALCE Electronic Packaging Research Center at the University of Maryland will be used for final environmental testing to reduce program costs and to ensure maximum dissemination of the results will be made known to the US military electronics Industry. MILESTONES: Select targeted demonstrations, 3Q97; Develop selected modules, 4Q97-3Q99; Environmental stress testing, 3Q98-3Q99; Integrated product demonstrations, 3Q98-4Q01.

QUANTITY: N/A

PRDA RELEASE DATE: 15 March 1996
ESTIMATED CONTRACT AWARD DATES: 1 September 1996, 1 September 1997

CONTRACT TYPE AND DURATION: Multiple CPFF

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: UV Comm Breadboard

PROGRAM MANAGER: Gary D. Wilkins, WL/AAAI-2, (513) 255-3455

ESTIMATED DOLLAR VALUE: $769K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop a solar-blind ultraviolet (SBUV) communications system for aerial refueling which will be undetectable 1.5 kilometers from the refueling platform. Non-line-of-sight optical communications will provide an enormous contribution to the safety of aerial refueling during radio frequency (RF) comm-out periods as well as other potential covert flight scenarios which must be flown without RF radiation.. END PRODUCT OR PAYOFF: This effort will develop a system engineering design and build a LPI/LPD voice and data communications system which will prove the feasibility of using SBUV communications for covert aerial operations. In addition to the hardware, a technical report documenting the design and tests will be delivered.

TECHNICAL APPROACH: Previous in-house experiments and contract projects have proven the feasibility of using the natural atmospheric scattering of solar-blind ultraviolet radiation for non-line-of-sight communications over a limited range. Based on the success of these experiments, a system engineering program will be implemented to meet the objectives of this effort. Aerial refueling operational concepts will be reviewed and two brassboard SBUV communications systems will be designed, built, flight tested, and demonstrated. The Communications system will utilize a small, lightweight, energy efficient, quadrupled frequency NdYag laser and low data rate pulse position modulation to achieve LPI/LPD communications. for the Aerial Refueling SBUV Communications System Program. Milestones for program are: Start 2Q 95, Hardware Critical Design Review 1Q 96, Hardware Completion 3Q-97, Demonstration 4Q-98.

QUANTITY: N/A

RFP RELEASE DATE: None (Phase II SBIR acquired from ASC)

ESTIMATED CONTRACT AWARD DATE: 3 April 1995

CONTRACT TYPE AND DURATION: CPFF, 40 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Theater-Wide Reference Information Management (TRIM)

PROGRAM MANAGER: S. Berning, WL/AAAI-3, (513) 255-2305

ESTIMATED DOLLAR VALUE: $700K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to develop the necessary reference systems technology, analytical techniques, and simulation modules to enable maximum use of both on-and off-board resources for enhanced reconnaissance, targeting, weapon delivery, and situational awareness. Current and future military operational concepts emphasize the use of multi-platform operations and the sharing of resources within the theater of operations. Before these concepts are operationally feasible, many technical issues must be resolved, including issues related to the processing and sharing of reference systems information (position, velocity, attitude, flexure, and time). This includes information regarding the ownship, other friendlies, terrain, threats, enemy operations, and targets collected using radar, electro-optic, and electronic intelligence (ELINT). Technology developed under this program will enhance the operational effectiveness of multi-platform concepts, will provide many more users access to data from expensive assets, and will help extend the operationally beneficial life of certain aging airframes.

TECHNICAL APPROACH: This effort will develop the reference systems technologies needed to support the theater-wide sharing of information resources and will evaluate those technologies using analysis and a series of increasingly complex nonreal-time simulations. Mission scenarios will be identified for which multi-platform operations could play a key role, such as deep interdiction or deep counterair. Selection of information sources and users will be based upon those scenarios and could include: F-15Es, E-3A (AWACS), overhead assets, reconnaissance aircraft, E-8 (JSTARS) aircraft, UAVs, deployed ground sensors, and associated weapons. Technical issues to be addressed include determination of: (1) sources and users of reference systems data in the theater of operations; (2) requirements on the information itself, such as time tags and measures of merit; (3) the reference systems parameters required to support the fusion algorithms for the levels of data fusion determined by each source and each user; and (4) a consistent and accurate approach to mutual registration of data from multiple sources, taking into account the existing reference frame(s) and geographic datums being used by both the sources and the users of the data. Phase 1 will culminate in a nonreal-time, single workstation demonstration of developed technologies for sharing and fusing reference systems information. Phase 2 will conclude with a nonreal-time, multiple workstation, theater-wide simulation of all reference systems data sharing and fusion. MILESTONES: Phase 1: Technology Demonstration 3Q FY97; Phase 2: Multiple Workstation Nonreal-time Demonstration 3Q FY98. Final Report 4Q FY98.

QUANTITY: N/A
ESTIMATED PRDA RELEASE DATE: 10 February 1996
ESTIMATED CONTRACT AWARD DATE: 20 July 1996
CONTRACT TYPE AND DURATION: CPFF, Phase 1: 12 months; Phase 2: 12 months
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Global Positioning System (GPS) Processor

PROGRAM MANAGER: Dana Howell, WL/AAAI-1, (513) 255-2766

ESTIMATED DOLLAR VALUE: $700K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to develop a low cost GPS pre-processing technique to address *navigation warfare* issues. Navigation warfare is a new term being used to describe the control and exploitation of high accuracy navigation aids such as GPS. GPS will be used extensively in the battlefield to aid in positioning troops, guide precision weapons, and provide precise airborne navigation, along with an almost limitless number of other applications. The goal of this effort is to develop system engineering design approaches that implement the technique which can be easily inserted into existing and future GPS receivers without changes to the GPS signal structure. These approaches must be applicable to a wide range of current and future GPS receiver applications and technologies. END PRODUCT OR PAYOFF: This effort will develop a system engineering design and build hardware and software for a GPS pre-processing technique that can be easily retrofitted into existing and future GPS receivers at minimal cost.

TECHNICAL APPROACH: Previous in-house experiments have proven the feasibility of a GPS pre-processing technique that addresses navigation warfare issues. Based on the success of these in-house experiments, a three phase system engineering program will be implemented to meet the objectives of the effort. Phase I will be a study phase to review operational concepts, review existing and future GPS receiver technologies and develop preliminary design approaches that emphasize low cost. Phase II will design and develop hardware and software based on Phase I results and integrate the technique into at least one existing GPS receiver. Phase III will demonstrate the concept in a laboratory and/or ground test environment.

MILESTONES: Month/Year
Start 1st Qtr-FY96
System Requirements and Concept of Operations 2nd Qtr-FY96
Phase I Preliminary Design Approaches 3rd Qtr-FY96
Phase II Hardware and Software Integration 2nd Qtr-FY97
Phase III Demonstration 3rd Qtr-FY97
Final Report 4th Qtr-FY97

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 15 July 1995
ESTIMATED CONTRACT AWARD DATE: 15 October 1995

CONTRACT TYPE AND DURATION: CPFF, 21 months
SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Expert Communications Link Manager (ECLM)

PROGRAM MANAGER: John R. Woods, WL/AAAI-1, (513) 255-2697

ESTIMATED DOLLAR VALUE: $912K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this project is to develop an expert system, using a commercial off-the-shelf (COTS) voice recognition system as input, to demonstrate the feasibility of a system that would aid the pilot by automatically controlling aircraft communications. With the steady increase in new flight deck avionic equipment and the decreasing size of flight crews, today's aircraft flight decks are becoming increasingly difficult to manage. While accomplishing other mission tasks, pilots must simultaneously tune radios by hand while remaining situationally aware of their surroundings. Voice Recognition Systems have been successfully used to operate radios in flight deck simulators and test aircraft. An ECLM would free the pilot from selecting a particular radio or tuning it to a frequency to communicate with the control tower, wingman, or a command center, thereby maximizing mission effectiveness. END PRODUCT OR PAYOFF: This effort will use COTS equipment to develop a flyable breadboard for laboratory flight simulation and flight test evaluation. This system will reduce pilot workload when using radios and keep the pilot's eyes out of the flight deck and on the target. The hardware and software can be implemented in modules as part of an integrated modular avionics system.

TECHNICAL APPROACH: Previous Wright Laboratory in-house experiments have demonstrated the feasibility of using voice commands to control flight deck functions. The ECLM effort will build on findings obtained from these previous experiments. Three major tasks will be accomplished during this effort: 1) Design and development of the ECLM breadboard and expert system; 2) System integration and test; and 3) Laboratory flight simulation. Pilot input and feedback will be used throughout to improve the use and feel of the system.

MILESTONES: Month/Year
System Requirements and ConOp 1st Qtr-FY96
Design of Breadboard 3rd Qtr-FY96
Code Expert System 4th Qtr-FY96
Construct and Lab Test 1st Qtr-FY97
Flight Simulator 3rd Qtr-FY97
Flight Test 1st Qtr-FY98

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: 15 August 1995
ESTIMATED CONTRACT AWARD DATE: 1 November 1995

CONTRACT TYPE: CPFF, 39 months
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Integration Standards and Performance Metrics for Next Generation Avionics Fusion Architectures

PROGRAM MANAGER: Victor Clark, WL/AAAS-3, (513) 255-6974

ESTIMATED DOLLAR VALUE: $1.3M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to define detailed interfaces and both design and operational Measures of Performance (MOPs) and Measures of Effectiveness (MOEs) for an avionics fusion architecture. The Avionics Directorate Information Fusion (IF) Integrated Product Team (IPT) is currently defining an open avionics fusion architecture based on modular object-oriented design principles. The result of this work will be an architectural standard which defines the different functional areas, the underlying components/ techniques for each functional area, and the high level interfaces between each component. This effort will define the detailed interfaces and evaluation metrics for this architecture. This detailed architecture interface standard will be based, whenever possible, on industry approved interface specifications to facilitate community acceptance. Once the detailed interfaces are defined, metrics will be established to determine the suitability of different fusion techniques. These MOPs/MOEs will provide qualitative and quantitative measures which will not only define performance requirements between fusion levels, but also provide formal techniques to assess the effectiveness of the overall system. This formalism will result in an efficient top-down design in which the requirement for each fusion level is clearly defined. An important aspect of these performance measures is to become standards so that all information fusion systems are evaluated using the same set of metrics.

TECHNICAL APPROACH: A combination of detailed design and computer simulation will be used in the performance of the technical effort. The technical effort consists of two main tasks: a detailed interface definition between each avionics fusion architecture component, and the development of design and operational MOPs/MOEs for evaluating the effectiveness of the fusion architecture. For both tasks, existing interface standards and MOEs/MOPs metrics should be examined to determine the best existing techniques. Once completed, detailed interfaces and fusion metrics will be developed and integrated into the fusion architecture which was developed by the Information Fusion IPT. The overall architecture, interfaces and performance metrics will be documented in the final report and be analyzed and evaluated through computer simulation. MILESTONES: Assessment of current interface standards and performance metrics 1Q96, development of detailed architecture interfaces and performance metrics 1Q97, assessment of simulation results 3Q97.

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: 15 May 1995
ESTIMATED CONTRACT AWARD DATE: October/November 1995
CONTRACT TYPE AND DURATION: CPFF, 26 months

SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Incremental Upgrade of Legacy Systems (IULS)

PROGRAM MANAGER: Marc J. Pitarys, WL/AAAF-3, (513) 255-6548; Dale Van Cleave, WL/AAAT-2, (513) 255-7708

ESTIMATED DOLLAR VALUE: $5.51M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to research, develop and demonstrate hardware and software technology that enables fielded weapon systems to be upgraded incrementally.

TECHNICAL APPROACH: The approach involves developing and demonstrating a system capable of executing legacy and upgraded/new avionics software. The open, modular, and expandable system will allow avionics to be upgraded in affordable increments. A hardware computer architecture will be developed and demonstrated that executes legacy and upgraded software in the same processor. A software architecture will be developed and demonstrated that allows existing legacy software to be reused without modification and Ada software to coexist with legacy software. The technical approach emphasizes the application of commercial open systems, standards, and technology. Anticipated program milestones include defining the hardware/software computer architecture in 4Q FY96; identifying candidate hardware/software approaches that support affordable incremental avionics upgrades in 2Q FY97; adapting commercial operating system technology to support incremental avionics upgrades in 3Q FY98; and conducting a demonstration with a significant avionics application in 3Q FY99. The IULS management approach involves an integrated product team composed of engineers and scientists from two WL/AAA organizations.

QUANTITY: N/A

ESTIMATED PROPOSAL RELEASE DATE: May 1996

ESTIMATED CONTRACT AWARD DATES (dual award): August 1996

CONTRACT TYPE AND DURATION: CPFF, 38 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Binary Translator For Avionics Systems (BTAS)

PROGRAM MANAGER: Charles B. Hicks, WL/AAAF, (513) 255-6548

ESTIMATED DOLLAR VALUE: $1.6M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to develop the capability of cost effective migration from an older avionics embedded computer architecture to a newer avionics computer architecture by the translation of the architecture specific object code from one system to the other. The concept of non real-time binary to binary translation has been proven in the commercial world and has been used by virtually all of the major computer manufacturers. The transition of this non real-time commercial concept to real-time hard deadline scheduling avionics computers has not been proven. Basic research on this technology is presently underway at the University of Oregon (UO) and Carnegie Mellon University (CMU) under ARPA sponsorship and Wright Laboratory guidance. The BTAS program will continue this research into the real-time avionics domain. The cost to redevelop or re-engineer, validate and verify new avionics software is tremendous This technology will result in major cost savings in situations where a full redesign and rewrite of the avionics software can be avoided.

TECHNICAL APPROACH: Phase 1 of this project will address three items; the UO/CMU research results versus the methods used in the commercial translation systems and the applicability of these translation systems for real-time avionics embedded systems. Several candidate end-users will be contacted to determine their anticipated needs/requirements concerning the use of a binary translator. The major problem of verification and validation of these enhanced avionics computers will also be examined. Phase 2 will focus on the development of a prototype system based on the recommendations received in Phase 1. This system would be demonstrated to potential customers. Phase 3 would be the actual transition of this system to an end user. This would include the full validation, verification and flight testing of the new system. Anticipated milestones include the completion of the ARPA initiated basic research in 3Q96; identifying candidate users who could make use of the technology in 4Q96; the development of a set of customer requirements for the translator based on the identified users in 1Q97; the completion of a translator system design based on customer feedback in 4Q97; the development of a prototype system designed to meet or exceed the customer requirements and a demonstration of the system in 4Q98; and the final customer supported flight test to prove the technology in 4Q99.

QUANTITY: N/A

ESTIMATED PROPOSAL RELEASE DATE: October 1995 (Delivery Order)

ESTIMATED CONTRACT AWARD DATE: March 1996 (Delivery Order)

CONTRACT TYPE AND DURATION: CPFF, 36 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: High Speed Circuits for Radar and EW

PROGRAM MANAGER: R. Bobb, WL/ELDE, (513) 255-3802

ESTIMATED DOLLAR VALUE: $4.5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Advances in high speed semiconductor technologies have made it possible to move the digital interface closer to the sensor/antenna and, thereby, reduce the number of, or completely eliminate, the analog downconversion stages. These analog functions are bulky, costly and require considerable recalibration as they drift over temperature. Emerging technologies from such programs as the ARPA GaAs/InP pilot line programs and other III-V and SiGe efforts are making it possible to more easily capture the incoming signal into the robust and more temperature independent digital domain. The objectives of this effort are to further develop and optimize a high speed digital process(es); develop building block circuits; and demonstrate the feasibility and benefits of moving the digital interface closer to the sensor in an advanced digital receiver, such as would be found in radar and/or EW applications.

TECHNICAL APPROACH: The approach includes the design, fabrication, test, and demonstration of high speed digital building blocks to fill the processing gap between the RF input signal and lower speed digital ICs being addressed by commercial silicon technology. Potential demonstration circuits include analog-to-digital converters (ADCs), SRAMS and/or various digital signal processing (DSP) functions such as filtering (i.e., FIR, IIR, decimation, etc.) or transform circuits (ie., FFT, DFT, Hilbert, etc.). During the first task, building block circuits, using the appropriate emerging technologies (HBTS, HFETs, CHFETS, etc.), shall be defined and designed for a candidate application (2Q97). In Task 2 the building blocks shall be fabricated, tested and fully characterized (3Q98). In the final task a comprehensive comparison shall be made between the existing application configuration and the advanced configuration utilizing the building block circuits fabricated in task 2. This detailed analysis shall quantify the improvements which are achievable as the digital interface is moved closer to the sensor/antenna (1Q99).

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: September 1995

ESTIMATED CONTRACT AWARD DATE: March 1996

CONTRACT TYPE AND DURATION: Multiple, CPFF, 40 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Hardware Design Language

PROGRAM MANAGER: Dr. John Hines, WL/ELED, (513) 255-4448

ESTIMATED DOLLAR VALUE: $12.5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this proposed effort is to make Hardware Design Language technology more effective for Air Force applications as directed in OUSDRE PDM on HDL. The effort will be focused toward the VHSIC Hardware Description Language (VHDL) (Federal Information Processing Standard 172-1) for digital circuit design. Activity in Analog and Microwave Hardware Description Languages will begin and follow a similar course when warranted. Problems to be solved under this TIP are: identifying and creating design environments that support low cost component, board, and subsystem re-engineering of legacy systems caused by obsolescence; finding a means to validate HDL software implementations to preclude errors in AF system designs; resolving uncertainties about the merits of proposed extensions and additional capabilities for VHDL; and providing easy access, low cost, and effective education and guidance materials to System Program Offices and Air Logistics Centers for implementing AF Acquisition Policy 92M-017.

TECHNICAL APPROACH: Solutions to all of the above problems will be sought through a continuing Broad Area Announcement (BAA). Diverse and creative solutions will be sought via these solicitations. Within-scope modifications to existing contracts may be utilized for some tasks that are impractical for full and open competition. All products developed by this research will be demonstrated and transitioned to the user community either directly or through commercial vendors. System Program Offices (SPOs) and Air Logistics Centers (ALCs) will be consulted throughout the process for their requirements and expertise; especially in the area of legacy system obsolescence and upgrades. Demonstrations that are applicable to real systems' problems and SPO and ALC needs will be the preferred route. Milestones include: training material (2Q97), validation suite (4Q97), re-engineering tool demonstrations (4Q98, 4Q99, 4Q00), and re-engineering design environment demonstrations (4Q99, 4Q00, 4Q01).

QUANTITY: N/A

ESTIMATED BAA RELEASE DATE: July 1995 and yearly thereafter

ESTIMATED CONTRACTS AWARD DATES: Continuing

CONTRACT TYPES AND DURATIONS: 1-3 yr CPFF and cost reimbursable

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open plus contract models

BUYING ACTIVITY: WL/PK

TITLE: Development, Exploitation, and Transition for of CAD Tools Avionic Equipment

PROGRAM MANAGER: Darrell Barker, WL/ELED, (513) 255-8639

ESTIMATED DOLLAR VALUE: $1.35M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this proposed effort is to develop, exploit and transition: 1) a reuse library of design components of interest to the AF; 2) automatic layout generators for the basic functions that are used to create digital signal processing and control circuits; and 3) production-quality computer aided design (CAD) tools from high payoff research-quality design tools. The lack of a reuse library is the primary contributor to lengthy equipment design cycle times and poor design choices. The component reuse library will consist of VHDL simulation models of the appropriate views required for quickly designing and virtual prototyping avionics equipment. The library will be in the public domain and will describe commercial-off-the-shelf components, existing application specific components, and component building-block circuits of key interest to the Air Force. Automatic layout generators offer the best solution to keeping up with very rapidly advancing IC processes. Generators and their associated simulation models and test benches will be developed for standard building-block functions such as registers, adders, and multipliers. When set up correctly, the generators will automatically interface with a new integrated circuit (IC) manufacturing process in days instead of months. The generators and reuse library will be usable by commercial CAD tools and WL R&D tools. The production-quality tools are expected to provide further significant reductions in design time of new and retrofit AF avionics equipment as well as reductions in design errors. All of these CAD products will be demonstrated by WL and transitioned to the user community and will support WL/EL 6.3 programs.

TECHNICAL APPROACH: Research quality tools from universities, such as the ones funded under ARPA's RASSP program and WL's Multicomponent Synthesis program, will have their quality enhanced via: improved user interfaces and documentation, integration into design environments used by WL and the Air Logistics Centers (ALCs), interfaces to additional IC and multichip module manufacturing processes, interfaces to field programmable gate arrays and field programmable interconnect devices, and additional testing to insure industrial strength. A survey of any component reuse models already in the public domain will be performed to avoid duplication. Silicon compiler technology will be used to create the automatic layout generators. The technology files for the generators will initially be targeted to IC processes used by WL and the ALCs. The developments will be done primarily by students and their supervising professors on a task-order basis through a university microelectronics design research consortia.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: July 1995
ESTIMATED CONTRACT AWARD DATE: November 1995
CONTRACT TYPE AND DURATION: 3-Yr CPFF/Task-Order Contract
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: High Speed Packaging & Interconnect

PROGRAM MANAGER: Alan Tewksbury, WL/ELEP, (513) 255-4557

ESTIMATED DOLLAR VALUE: $900K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Emerging technologies from such programs as the ARPA GaAs/InP pilot line programs and other Ill-V and SiGe efforts are making it possible to more easily capture the incoming signal into the robust and more temperature independent digital domain. The high performance system/subsystem advantages of these technologies are minimized if the circuits are packaged in single chip packages. The speed advantage of these circuits can be preserved if these circuits are packaged in multichip modules (MCMs). The objectives of this effort are to demonstrate the benefits of packaging these high performance circuits in MCMs suitable for an advanced digital receiver, such as would be found in radar and/or EW applications.

TECHNICAL APPROACH: The approach includes the design, fabrication, test, and demonstration of MCM interconnect capabilities necessary to support advanced digital receivers. The Special Purpose Processor Development Group of the Mayo Foundation is a recognized leader in the area of high speed packaging and in particular MCMs. This group is currently being funded in this area by ARPA via a task contract which is being monitored by the Navy. As circuits become available from existing and future Air Force contracts, tasks will be added to the ARPA contract to package these circuits in MCMs and demonstrate the performance, size, weight and power advantages achievable with state-of-the-art MCMs. Roughly 1-2 tasks will be added per year.

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: N/A

ESTIMATED CONTRACT AWARD DATE: Tasks As Needed

CONTRACT TYPE AND DURATION: MIPR to N66001-94-C-0051

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: S-Band Power Transistor

PROGRAM MANAGER: John King, WL/ELMD, (513) 255-7659

ESTIMATED DOLLAR VALUE: $1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this 36 month effort is to develop an S-band power transistor to meet specific RF power and efficiency requirements and thereby demonstrate feasibility for radar transmitter tube replacement by reliable, modular, solid state RF components. This program seeks to develop a microwave transistor with 150 watts peak saturated output power in a 10% instantaneous bandwidth centered at 3 GHz. The device power added efficiency target is 50% with gain of 7 dB. This effort is directed at a ground mobile air defense phased array radar system, however, the resulting technology is applicable to other military and commercial radar and communications systems. Radar system requirements for reliability and maintainability will be enhanced by replacing tube transmitters with modular solid state transmitters.

TECHNICAL APPROACH: This program is intended to exploit and refine recent semiconductor material and transistor design and processing advances. The scope of this program involves investigation of advanced semiconductor materials, transistor device design, cell combining, thermal design and device packaging, and final transistor evaluation. Reliability and cost effective maintainability of next generation surveillance radar systems require modular solid state transmitter designs. Today, Air Force ground mobile radar surveillance systems use klystron transmitters of limited reliability and expensive maintenance costs. This program will develop high power, high efficiency transistors for eventual use in kilowatt level solid state modules for radar transmitters. Milestones include: Transistor cell design (2Q97); Material and processing developments (4Q97); Power device feasibility demonstrated (2Q98); Packaging development (2Q99); Final transistor fabrication and testing (4Q99). Multiple program awards are anticipated.

QUANTITY: N/A

ESTIMATED BAA RELEASE DATE: 1 February 1996

ESTIMATED CONTRACT AWARD DATE: 15 August 1996

CONTRACT TYPE AND DURATION: CPFF, 36 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: High Density GaAs Devices and Multi-Chip Assemblies for Radar and Communications Applications

PROGRAM MANAGER: Mark Calcatera, WL/ELMT, (513) 255-7679

ESTIMATED DOLLAR VALUE: $1.6M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The demand for higher density electronics in advanced phased array radar and communication systems has lead to the development of planar and conformal array configurations. These arrays require the development of high density modules in which all of the module electronics must be confined within a one-half wavelength square area. The extreme circuit and power density necessitated by this approach places a burden on microelectronic technology to provide reliable high performance semiconductor devices and modules which operate under high temperature environments. The objective of this program is to develop advanced GaAs device and multi-chip assembly (MCA) technology which provides the circuit density, power density and reliability necessary for advanced radar and communication array configurations. The goal is to provide a five times improvement in both the circuit and power density, while maintaining high reliability (100 FIT) up to baseplate temperatures of 350° C.

TECHNICAL APPROACH: This multi-task multiple award program will develop advanced GaAs device and MCA technology in the following areas: Task 1) Microwave Stacked MCAs for Phased Array Antennas -- The objective of this task is the development and application of flip-chip and stacked-chip technology to demonstrate the feasibility of a very high density multi-chip module technology. Sub-module performance will be maximized through integration of optimal device structures for circuit functions. The task will demonstrate the feasibility of three-dimensional interconnection and integration of power and low-noise devices; Task 2) High Temperature GaAs Power Amplifier -- This task will develop GaAs based MMIC devices that demonstrate stable operation at temperatures up to 350° C. An all refractory metal, isolated process utilizing a wide-bandgap buffer laser will be developed as a baseline. Methods to improve heat sinking using diamond coating and alternative substrate materials will also be investigated; Task 3) Microwave HBT Reliability Evaluation -- This task will develop reliable power AlGaAs/GaAs HBTs for operation under high current density high power density operation. The effort should identify failure mechanisms under high current density operation, incorporate process improvements, and evaluate the reliability of baseline and improved devices. The effort will consist of integrated In-House and Contract efforts with the possibility of multiple awards. Milestones include: Initial reliability evaluation (2Q97); Demonstrate high reliability HBTs (1Q98); Demonstrate high temperature processes/devices (1Q99); Demonstrate stacked microwave module operation (3Q99).

QUANTITY: N/A
ESTIMATED BAA/TASK ASSIGNMENT/IN-HOUSE RELEASE DATE: 1 February 1996
ESTIMATED CONTRACT AWARD DATE: 15 August 1996
CONTRACT TYPE AND DURATION: In-House and CPFF, 36 months
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Mixed Mode Radar Multi Chip Assemblies

PROGRAM MANAGER: Chris Lesniak, WL/ELMC, (513) 255-4513

ESTIMATED DOLLAR VALUE: $2.45M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this 4-year program is to study and develop radar multi-chip assemblies (MCAs) that use direct digital synthesis (DDS) techniques for waveform generation. In particular, the program will determine the feasibility of implementing X-band active array transmit/receive (T/R) MCAs that use DDS to generate the transmit and local oscillator signals. The resulting technology will allow implementing active arrays without the use of complex exciters based upon phase locked loops. Furthermore, the distribution of the signal generation function to each T/R MCA will improve the reliability of future system designs by continuing to eliminate single point failures and enhancing graceful degradation of active array radar systems.

TECHNICAL APPROACH: The program is intended to support advanced system configurations that would use digital beamforming along with the DDS. However this program will focus on the development of the DDS based MCA. The initial exploratory development phase, lasting 30 months, will investigate the concept, determine MCA designs, and component requirements. The program will use existing and develop new mixed mode integrated circuits for the preferred MCA configuration. This phase will be completed with fabrication of a proof-of-concept MCA. During the second, advanced development, 18 month phase the MCA design will be improved/iterated, a 10-15 DDS based module will be produced, individual MCAs characterized, coherent and scanning operation demonstrated via array tests, and spectral purity experiments conducted. Milestones include: Configuration study (2Q97); Component development (2Q98); Proof-of-concept MCA (1Q99); MCA design iteration (3Q99); MCA fabrication (2Q00); Characterization (4Q00).

QUANTITY: N/A

ESTIMATED BAA RELEASE DATE: 30 January 1996

ESTIMATED CONTRACT AWARD DATE: 15 August 1996

CONTRACT TYPE AND DURATION: CPFF, 48 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Ultraviolet Detectors on Alternate Substrates

PROGRAM MANAGER: Gary A. Smith, WL/ELEP, (513) 476-4160

ESTIMATED DOLLAR VALUE: $750K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The Ultraviolet Detectors on Alternate Substrates program will develop the technology, and baseline, for higher sensitivity ultraviolet detection employing GaN/AlGaN PC (photoconductive) and PV (photovoltaic) detectors grown on non-conventional (non-sapphire) substrates. To date nearly all GaN/AlGaN devices have been grown on lattice-mismatched buffer layers on sapphire. A more closely lattice-matched substrate (and suitable buffers) should lead to improved detector performance by reducing defect formation and propagation in the active layers. This technology is also directly applicable to the development of higher efficiency GaN/AlGaN LEDs and future blue lasers which have both military and commercial applications.

TECHNICAL APPROACH: In order for this program to be successful, high quality epitaxial GaN/AlGaN material will have to be grown and processed on high-quality, non-conventional substrates. The tasks to be performed are: (1) substrate selection and characterization, (2) growth and characterization of GaN/AlGaN epitaxial films on selected substrate (may include buffer layers), (3) controlled doping of films, both n- and p-type, (4) detector processing, and (5) detector testing and evaluation for future improvements.

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 1 February 1996

ESTIMATED CONTRACT AWARD DATE: 1 June 1996

CONTRACT TYPE AND DURATION: CPFF, 30 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Ultraviolet Solid State Laser

PROGRAM MANAGER: Virginia A. McMillan, WL/ELOS, (513) 255-3547

ESTIMATED DOLLAR VALUE: $950K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The ultraviolet lasers currently available are either very large gas lasers or solid state lasers that involve multiple nonlinear frequency shifting steps. Such lasers are impractical for many applications because of either their size, weight, and cooling requirements or their low output power or efficiency. Needs exist for smaller more lightweight lasers with higher power output for a variety of applications, both military and commercial. Possible applications include covert, short range laser communications, laser radar, combustion diagnostics, and lithography. This program will develop a solid state laser operating in the wavelength region below 400 nm which will address the needs of one or more of these applications.

TECHNICAL APPROACH: This program will investigate new or improved methods of converting laser output to shorter wavelengths, with emphasis on the conversion scheme rather than on new conversion materials or prime laser sources. For laser communications, one major consideration is the atmospheric transmission of the laser wavelength, 270 nm having been found to give the best performance. A few watts at repetition rates of several hundred Hz are desired. Other major considerations are size and power consumption, where it is desirable for the laser to be less than 1/3 cubic foot in volume and operate on less than 60 watts of input power. Laser radar would be a potential application if a tunable laser could be built which had a UV output transmitted by the atmosphere and was also "eye-safe." For combustion diagnostics, discrete wavelengths corresponding to those absorbed by combustion products are desired. Examples include 205 nm, 391.4 nm, and 427.8 nm. A few watts at repetition rates on the order of 10 to 20 Hz and pulsewidths of less than 10 ns are desired. Tunability over a 10 nm range around a given wavelength of interest is also important for this application. For lithography, a 10-watt laser with output in the 193 to 248 nm range is of interest. The major concerns are laser reliability and cost, both initial and recurrent. For all applications, a conversion efficiency from prime laser output to UV output of 30% is desirable, along with the potential for scaling to higher output powers and efficiencies and smaller packages. Milestones: Investigate methods of frequency conversion (4Q97); Demonstrate UV output at 1-watt level (4Q98). This effort will be a multi-source solicitation with a potential for multiple awards.

QUANTITY: N/A

ESTIMATED BAA RELEASE DATE: 1 July 1995
ESTIMATED CONTRACT AWARD DATE: 15 January 1996

CONTRACT TYPE AND DURATION: CPFF, 32 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Nozzle Flow Control (NFC)

PROGRAM MANAGER: D. Bowers, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $7.8M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Mature for application critical technology elements of innovative integrated exhaust nozzles and airframes which are less complex (30% fewer nozzle parts) yet still provide critical mission needs for survivable penetration, within visual range combat and affordable stealth. For advanced tactical aircraft, the combination of high performance, high survivability, and low cost are mutually exclusive with current technology exhaust nozzle concepts. Elimination of all moving geometry drastically reduces gaps and seals, reduces parts and complexity, allows shared load bearing with a highly integrated airframe structure, reduces RCS/IR returns and permits highly tailored aft end integrations. The challenges are to maintain satisfactory nozzle performance across the flight envelope, provide for thrust vectoring for aircraft agility, allow for load sharing of hot nozzle structure with the cold aircraft structure, and accommodate engine removal. Nozzle performance will be maintained with the refinement of fluidics for nozzle throat area control and for thrust vectoring. The payoff will be advanced fighter aircraft which can penetrate and survive hostile environments with reduced acquisition cost, observables, weight and improved maintainability. The large scale proof of concept validation of the low cost fully integrated aircraft aftend/exhaust nozzle will provide mature transitionable technology.

TECHNICAL APPROACH: Design and fabricate critical hardware for a follow-on engine ground test. Milestones include development of innovative reduced complexity thrust vectoring nozzle concepts (4/97), validation of nozzle performance through wind tunnel tests (2/99), validation of reduced observabililty by large scale test and analysis (4/99) and fabrication of hardware for large scale ground demonstration (4/00). Highly integrated aircraft fuselage structures capable of interfacing with the hot nozzle components will be designed and verified with advanced elevated temperature composite structures. Airframe prime contractor, with engine subcontractor, will ensure applicability to next generation tactical/strategic systems.

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: 1 September 1995

ESTIMATED CONTRACT AWARD DATE: 1 January 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 42 months

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYTING ACTIVITY: WL/PK

TITLE: Extended Range Demo

PROGRAM MANAGER: Dennis E. Weiland, WL/FIIA, (513) 255-6795

ESTIMATED DOLLAR VALUE: $14.0M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Demonstrate the full envelope performance improvements that can be achieved by fully integrating an advanced propulsion system into an aircraft flight control system. Recent flight test programs (F-16 MATV, HARV & X-31) have demonstrated the merits of using pitch/yaw thrust vectoring for enhanced fighter maneuverability. Recent studies have shown that significant range improvements (7-15%) can be achieved by reducing aircraft trim drag using thrust vectoring and optimized engine controls. This additional control power will also allow for the reduction and/or removal of other aircraft control surfaces to achieve further reductions in signature, weight and drag. The overall program goal is to validate the total coupling of the propulsion system to the airframe resulting in a synergistic system of maximum performance capabilities. PAYOFF: The total integration of the airframe/propulsion system will provide the enabling technologies for the next generation aircraft at lower cost, size, and weight. Current fleet aircraft equipped with digital electronic engine controls will benefit from these performance optimization technologies.

TECHNICAL APPROACH: This program will utilize the F-15 ACTIVE testbed aircraft (AF# 71-290) and build upon the joint investments ($30M) of the combined USAF/NASA/Contractor team. This is an AF lead program with NASA serving as the RTO. Working within a NASA Dryden task contract, the AF will initiate a FY96 new start task to develop a more advanced flight control/computer architecture that can fully integrate the propulsion/thrust vectoring control system into the aircraft flight control system. The flight test program will be accomplished in 3 phases. Phase 0 will measure the range improvement that can be achieved on an F-15E by using variable nozzle expansion ratio (A9/A8) and vectoring for trim. Phase 1 examines all envelope thrust vectoring benefits in such areas as takeoff/landing, combat maneuvers, loaded rolls, and air-to-ground weapon delivery/asymmetric stores handling qualities. Phase 2 will demonstrate a full envelope (takeoff - M=2 - landing) evaluation of a reduced tail/no rudder fighter configuration. The goal is to demonstrate that an F-15 with no rudders & 1/2 tail removed has improved performance with handling qualities equal to or better than a conventional F-15.

ACQUISITION INFORMATION:

ESTIMATED CONTRACT AWARD: 30 October 95 Initiate Task Order under NASA contract

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF; 36 month task effort

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/PK

TITLE: Pneumatic Vortex Control (PVC)

PROGRAM MANAGER: Dr. Lawrence A. Walchli, WL/FIIA, (513) 255-5205

ESTIMATED DOLLAR VALUE: $21.7M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Develop, integrate, and flight demonstrate a suite of pneumatic vortex control (PVC) technologies for application to future high performance aircraft. Forebody pneumatic vortex control will be used to enhance aircraft maneuverability at intermediate and high angles of attack by generating additional yawing moment with forces produced by the precise manipulation of the aerodynamic flow field surrounding the aircraft forebody. The concept will include this control effector integrated into the digital flight control system on the F-16XL ship #l and flight tested over a substantial portion of the subsonic performance envelope of that aircraft. This effort will provide information on the landing performance of a high speed civil transport class of aircraft. Advanced PVC concepts being pursued are pulsed forebody blowing and various wing vortex control concepts aimed at providing additional lift and rolling moment at low to moderate angles of attack. These concepts will also be flight-tested on an appropriate testbed, with design work beginning in late FY98.

TECHNICAL APPROACH: Wind tunnel tests will be conducted to characterize the aerodynamics of the forebody vortex control system installed on the F-16XL aircraft. Fully-integrated control laws will be developed to make PVC transparent to the pilot. The pneumatic system will be designed, built and installed on the F-16XL and flight testing will commence in FY97. The advanced concepts being pursued will be supported by extensive Computational Fluid Dynamics (CFD) analysis. Low and high speed static wind tunnel tests will document the aerodynamic effects of pulsed forebody blowing as well as wing control devices. Dynamic testing will identify all stability and control issues prior to flight testing the technology suite. Flight testing on an appropriate vehicle will begin in FY00.

ACQUISITION INFORMATION:

ESTIMATED CONTRACT AWARD:

Forebody PVC : 1 October 1995
Advanced PVC Concepts : 1 July 1998

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF and 36 months (both)

BUYING ACTIVITY: WL/PK

TITLE: Over the Shoulder Shot Technology (OSST)

PROGRAM MANAGER: WL/FIIA, Maj John Kusnierek, (513) 255-6795

ESTIMATED DOLLAR VALUE: $4M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: This program focuses on known deficiencies in US combat capabilities. The objective of the Over the Shoulder Shot Technology (OSST) Program is to support integration of stand-alone technologies into a demonstration for evaluation of combat and technical aspects of a weapon system having the characteristics of an agile aircraft, an agile missile, and rapid missile employment features. This is in direct support of the Close-in Air Combat Superiority (CIACS) concept to take air-to-air combat technology into a new era of lethality, speed, and flexibility. OSST will provide analysis, simulation, and basic technology work to support CIACS. Specific tasks include missile launch at 90 deg Angle of Attack (AOA), pilot vehicle interface for reduced timeline missile employment, and system level trade study.

TECHNICAL APPROACH: High value results will be achieved by leveraging existing technology programs to focus on a specific application. This program focuses on three key areas in the Within Visual Range combat arena. First an analysis and demonstration of the technologies required for launching air-to-air missiles with the aircraft flying at up to 90 deg AOA will be completed. Second, an analysis of the current pilot vehicle interface for employing air-to-air missiles will be accomplished and a new concept developed with the objective of reducing the timelines by 50%. Third, system level trade studies of technology will developed and concepts tested in high fidelity manned simulations. OSST will build on experience gained on the highly successful Multi-Axis Thrust Vectoring, Look & Shoot, VISTA SABRE II, and Advanced Fighter Technology Integration Programs.

ACQUISITION INFORMATION:

ESTIMATED RELEASE DATE: October 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF Task order, 24 months

BUYING ACTIVITY: WL/PK

TITLE: Hypersonic Missile Inlet Integration

PROGRAM MANAGER: Keith Numbers, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $2.8M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Current design practice for high speed inlets is limited to a few configurations with complex variable geometry and costly thermal protection schemes. Missile inlets must be less complex to provide an affordable weapon while retaining high efficiency, low drag integration with the external shape, and light weight. Limitations of current technology are the lack of design data for low cost missile applications. Advanced inlet design will include a more complete knowledge of the inlet air quality requirements for supersonic combustion ramjets and the allowable compromises for operation over a wide speed range with minimum variable geometry. Related work is the NASP database, although the large size of the single stage to orbit system allowed extensive variable geometry to optimize operation at each flight condition. NASP propulsion systems also operated to higher speeds than a military hypersonic weapon. This program will provide solutions to the problem of efficient integration of the inlet with the configuration so the inlet efficiency is high, external drag is minimized, complexity, weight and cost is minimized, and aerodynamic heating is maintained at low levels. The payoff will be a low cost, air launched weapon with fast reaction, high accuracy, and excellent survivability.

TECHNICAL APPROACH: A cooperative effort or multiple award will be sought to include a wide variety of innovative concepts from industry. Inlet concepts will be incorporated into integrated missile configurations for detailed flowfield analysis using advanced computational fluid dynamic methods. Sufficient time and resources for this task are critical, as the concepts will not have empirical design bases. Structural weight will be estimated using engineering tools and anticipated materials requirements. Promising concepts will be identified by estimated potential to reduce weight and cost when integrated into the missile airframe. A selection of a single contractor will be made for continuation of the effort into the wind tunnel experiment task. The aerodynamic performance will be verified by subscale wind tunnel tests using advanced diagnostic instrumentation to map the internal and external flow. Analysis and test results will be consolidated into a subscale design database for transition to airframe development and possible demonstration on a flight technology vehicle.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: November 1995

ESTIMATED CONTRACT AWARD DATE: June 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 50 months

BUYING ACTIVITY: WL/PK

TITLE: Hypersonic Configuration Definition Studies

PROGRAM MANAGER: Harry Karasopoulos, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $2.95M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The general problem to be addressed is the lack of military air vehicle configuration descriptions which fulfill the requirements for affordability, integration with propulsion systems and weapons, and operability within the existing infrastructure with a minimum of modification. Limitations of current technology are uncertainty in the prediction of aerodynamic heating for complex shapes, which in turn contributes to uncertainty in the materials properties required, the structural concept, the weight and the cost. Increased understanding of the benefits of novel integration of the controls, propulsion system, and weapons is needed to optimize flight performance, such as speed, range, and maneuverability. Related work is the database generated under the NASP program and the high speed missile configuration studies under PE 62201F and PE 63311F. Coordination will be maintained with NASA and the Dual Fuel Airbreathing Hypersonic Vehicle study. This program will document the baseline performance and physical characteristics of hypersonic weapons and aircraft for typical military missions. Specific missile configurations will be developed to explore novel integration of the major vehicle components. An experimental database will be developed using hypersonic wind tunnels, establishing a benchmark for design prediction evaluation for all vehicles in the configuration class. The payoff will be a clear understanding of the capabilities of hypersonic weapons and the military advantage they provide.

TECHNICAL APPROACH: A performance requirements task will establish the military operations which benefit most from the fast reaction, long range, and survivability attributes of hypersonic weapons. A series of configurations for aircraft and missiles will be developed using analysis methods and the existing design database. Aerodynamic characteristics, heating distributions, dimensions and weights will be generated. Military applications with near term focus will be selected for continued exploration using computational fluid dynamics tools and high speed wind tunnels. For manned configurations, the compromises of acceptable take-off and landing characteristics must be balanced with hypersonic cruise efficiency. A wind tunnel program will establish the principal aerodynamic and aerothermodynamic properties of the selected near term configuration. Major milestones will be the selection of military missions in FY97, the evaluation of the proposed aircraft/weapon designs in FY99, and the completion of the wind tunnel program in FY01.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: December 1995

ESTIMATED CONTRACT AWARD DATE: August 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 60 months

BUYING ACTIVITY: WL/PK

TITLE: Radiatively Driven Wind Tunnel

PROGRAM MANAGER: George Seibert, WL/FIMD, (513) 255-2139

ESTIMATED DOLLAR VALUE: $12M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: At present, all wind tunnels are deficient in representing hypersonic flight. The operation of propulsion systems and the validation of thermal protection systems can only be approximated. Flight tests to measure basic system operation are prohibitively expensive. New developments in microwave, laser, and plasma technologies offer solutions to the problems of insufficient energy in existing wind tunnels. This program will investigate the feasibility of the radiatively driven wind tunnel concept. The technique proposed, if successful, would provide a test gas most nearly duplicating actual hypersonic test conditions for flight through air at high altitudes. A research program has been identified to carry the technology forward to allow for the scientific evaluation of the concept. A significant objective will be the identification and then development of a plan to resolve the critical technical issues that must be addressed.

TECHNICAL APPROACH: A series of studies have been performed to establish the theoretical feasibility of the radiative energy addition concept. A multidisciplinary team from the Air Force, NASA, Navy, and industry critiqued and helped to prioritize the research objectives under three non-inclusive categories; Ultra-High Pressure Plenum and Nozzle, Energy Coupling into High Pressure Air, and Wind Tunnel System studies. In each category, first, second, and third priority items have been identified. A cadre of experts will attach specific technical issues relative to their technical expertise. After completion of the feasibility and design study, a decision will be made whether to build a pilot facility.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: August 1995

ESTIMATED CONTRACT AWARD DATE: January 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 60 months

BUYING ACTIVITY: WL/PK

TITLE: Airframe/TAV Structures

PROGRAM MANAGER: Harold C. Croop, WL/FIBEA, (513) 255-5864

ESTIMATED DOLLAR VALUE: $22.2M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: HyTech Airframe/Transatmospheric Vehicles (TAV) Structures involves the development and demonstration of structures technologies for far term reusable hypersonic vehicles as well as nearer term TAV and hypersonic missiles. Emphasis is placed on the development of durable and operable structural concepts for systems exposed to severe thermal, mechanical and acoustic environments arising from their hypersonic speeds. The payoffs of this development are performance and affordability enhancing concepts for hypersonic airframe fuselage, wing and nozzle structures as well as nose, leading edge and control surface structures.

TECHNICAL APPROACH: Airframe/TAV structures technologies will emphasize as end products the design, analysis, fabrication and testing, at the feasibility demonstration level, of actively cooled structural concepts, hot structures, thermal protection systems (TPS), fuel tank concepts, and integrated airframe/sensor window concepts. State-of-the-art thermal/structural analysis and optimization tools will be employed to study concept approaches. Improved thermal/structural analysis and optimization tools will also be developed to more accurately account for the complex loadings arising from combined thermal, mechanical and acoustic environments of hypersonic systems. Experimental evaluations will be conducted in a building block manner, beginning at the coupon/specimen level and progressing to design verification tests at the component level to verify fabrication and processing approaches and analytical predictions. Improved high temperature structural test instrumentation and test techniques will also be developed to support concept validation.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: December 1995

ESTIMATED CONTRACT AWARD DATE: May 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 60 Months

BUYING ACTIVITY: WL/PK

TITLE: Flight Control Actuation for a Hypersonic Weapon System

PROGRAM MANAGER: WL/FIGS, Mr. David Homan, (513) 255-4104

ESTIMATED DOLLAR VALUE: $3.6M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Flight control actuation systems exist for Mach 3 to Mach 5 missiles, but the technology advancements to meet a Mach 6 to Mach 10 vehicle have not been investigated. Current missile systems incorporate fluidic flight control actuation where a bottled gas (usually compressed air) is used as the control fluid. Other large, transonic missiles have incorporated power-by-wire (PBW) systems, such as an electromechanical actuation system (EMAS) to perform the flight control actuation function. A need exists to examine the specific actuation requirements for a hypersonic weapon system (Mach 6 - 10) and to then develop an efficient, lightweight, affordable and capable flight control actuation system to meet those requirements. The overall objective is to design, develop, test and evaluate a "near" flightworthy, power-on-demand flight actuator which can meet performance. redundancy, environmental and reliability goals for a hypersonic weapon system. The flight control actuation system for a hypersonic weapon system can then be realized by integrating several of the actuators developed under this program with a hypersonic weapon system flight control computer. A phased acquisition program is suggested.

TECHNICAL APPROACH: *Definition, Design and Analysis* - The requirements for the hypersonic weapon system flight control actuator will be defined. The key requirements to be determined are: actuator performance (i.e. force output, frequency response, stiffness), packaging (i.e. available envelope, form, fit), environmental constraints (i.e. thermal, vibration), interface with other subsystems (i.e. flight control computer, secondary power, avionics), reliability (i.e. shelf life, fault tolerance), efficiency (i.e. power-on-demand), redundancy, and affordability (inexpensive and expendable). An actuation system (actuator and controller) capable to meet the necessary requirements will be designed. The design will be analyzed via computer aided design methods and an iterative process will continue until a feasible design is achieved for development. *Development and Integration Test* - A near flightworthy actuation system will be developed for test and evaluation. The development will include evaluation of manufacturing processes to maintain an inexpensive approach. Upon development completion, the actuation system will be tested to verify performance. An integrated flightworthy actuation system will be tested to evaluate flight control system and secondary power system integration issues, such as: efficiency, form, fit and function, and redundancy management.

ACQUISITION INFORMATION:

CONTRACT AWARD: 3rd QTR/FY96
DEFINITION COMPLETE: 2nd QTR/FY97
ACT'R DEV COMPLETE: 4th QTR/FY99
ACT'R TEST & EVAL: 1st QTR/FY00
SYSTEM INTEGRATION: 1st QTR/FY01
SYSTEM INTEGRATION TEST COMPLETE: 3rd QTR/FY01
SIC CODE: 8731

BUYING ACTIVITY: WL/PK

TITLE: Combat Flight Management

PROGRAM MANAGER: Andrew Probert, WL/FIGP-2, (513) 255-8280

ESTIMATED DOLLAR VALUE: $2.3M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: This effort will develop and demonstrate technologies that reduce aircrew workload and improve crew situation awareness. Aircrew workload reduction is necessary for the exploitation of off-board information for survivability and real-time targeting. Various real-time information to the cockpit (RTIC) programs are responding to users' stated needs for "timely and essential off-board information to allow mission adjustments in response to rapidly changing combat conditions." (MNS 315-92, Apr 94). The problem is that the new information, coming into the cockpit while the aircrew is already busy flying the mission as planned, creates extra workload for the crew to: 1) assess the information for relevance: 2) decide what to do about it: and, 3) re-plan if appropriate. The problem is generic to all types of combat aircraft, but is most acute for the high speed, low level, adverse weather, single seat, multirole, strike fighter. Off-board information display formats and automation to aid in in-flight mission re-planning and flight management is required. Inflight mission planning is listed in ACC's F-16 Fighter Configuration Plan (FICOP). To improve situation awareness at night, in adverse weather, or with the canopy covered to protect from blinding laser threats, a means to artificially synthesize the visual scene in real time and display it to the pilot in a helmet mounted display (HMD) is required. Stored digital terrain elevation data (DTED) can be used to render a synthetic terrain image in a helmet mounted display. This effort will integrate newly developing technologies in displays and controls, computer graphics, in-flight route and mission planning, and flight management to improve the aircrew's situation awareness and reduce workload.

TECHNICAL APPROACH: The Synthetic Terrain Image (STI) for Helmet Mounted Display technology developed in 6.2 will be matured and flight demonstrated using an existing government flight test platform. A contractor will be selected to develop and demonstrate a Combat Flight Management system incorporating in-flight mission planning and integrated flight control. In-flight mission planning concepts developed in the DARPA Pilot's Associate program, and adapted for the strike fighter mission role in the Mission Reconfigurable Cockpit (MRC) program (in Ada) will be matured and integrated with off-board information to provide in-flight mission flexibility. The pilot-vehicle interface for such a system will be developed and evaluated using piloted simulations. The Combat Flight Management system will be integrated with WL/AAWD's Enhanced Situation Awareness Insertion (ESAI) program for a flight demonstration of off-board information system operation and mission flexibility in threat avoidance and real-time targeting. Government facilities and on-site contracts will also be used for part-task simulations in the special operations transport mission role. Advanced pilot-vehicle interface (PVI) concepts for SOF platforms will be prepared and optimized in piloted simulations for operation in a laser threat environment. Concepts in automated flight control integration and pilot displays and control interfaces will be developed and demonstrated. Simulation evaluations will verify system effectiveness.

PAYOFF: Transition of the demonstrated crew workload reduction and situation awareness improvement concepts to Air Force fighters, bombers, and transports will enable them to operate

effectively in adverse weather and laser threat environments and to exploit RTIC, achieving the user's objectives to "better employ a reduced force structure, and serve as a force multiplier and enhancer for aerospace control, force application, and force enhancement roles."

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 1 January 1996

ESTIMATED CONTRACT AWARD DATE: 1 July 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 32 Months

BUYING ACTIVITY: WL/PK

TITLE: Advanced Configuration Design, Synthesis, And Performance
Task 1: Future Military Aircraft Configuration Development

PROGRAM MANAGER: Donald Stava WL/FIMA, (513) 255-5419
Task 1: Dudley Fields, WL/FIMA, (513) 255 -3613

ESTIMATED DOLLAR VALUE: $24M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Provide technical assessment and design evaluations for candidate air vehicle and component technologies. Aerodynamic configurations will be designed, performance capability assessed, as well as developing improved aerothermodynamic procedures and thermal loads assessments. Design and performance characteristics will also be generated and employed in trajectory and mission evaluations. Configuration designs will be developed using engineering codes Computational Fluid Dynamics (CFD), as well as wind tunnel and flight test experiments. Critical databases, design methodologies and configuration synthesis will be integrated with other in-house and contractor or government programs to develop conceptual and notional vehicle concepts to be used to evaluate aeromechanics technologies and cost effectiveness. TASK 1: Explore the aeromechanic technology drivers and technology transition capability requirements of future large scale aircraft. Global military missions including aircraft, tanks, reconnaissance and stand-off weapons platforms and commercial use cargo transport and airliner requirements share many features in common. Modularity, technology transition, commercial practices and affordability will be evaluated against technology potential and integration factors. Configurations having both military and commercial use will be developed and assessed. Follow-on technology will be identified, detailed, and scoped for budget requirements. Cost efficiencies for modularity and technology transition shall be assessed.

TECHNICAL APPROACH: Multiple task order/direct order contracts will be awarded. The performing organizations must provide, directly or with appropriate subcontract arrangements, the capability to provide air vehicle preliminary and detailed design and performance assessments. Concepts shall also be evaluated on the basis of trajectory and mission performance capabilities to define technology readiness and cost. Aerothermodynamic effects including Boundary Layer transition measurements and predictions shall also be accomplished. Wind tunnel models shall be designed and tested. Results of tests and CFD analysis shall also be used to evaluate performance and compared with experimental data. Existing experimental data and computational analysis results will be compared and used to develop correlation, design methodologies and system sensitivities. TASK 1: A cooperative program with NASA and airline industry will assess future requirements. Configurations and technologies meeting these requirements will be identified. Parametric conceptual design studies will be conducted to identify trade-offs, performance potential, affordability issues, and technology transition. Design companies will be utilized for initial design and technology assessments. Government (AF and NASA) inputs and airliner manufacturers and users will participate in requirements definition. Recommendations for future development efforts will be made.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 1 October 1995

ESTIMATED CONTRACT AWARD: 15 February 1995

SIC CODE: 8731

CONTRACT TYPE/DURATION: CPFF / 60 Months

BUYING ACTIVITY: WL/PK

TITLE: Advanced Fighter Weapons Integration Technology

PROGRAM MANAGER: Mark Pinney, WL/FTMA, (513) 255-2481

ESTIMATED DOLLAR VALUE: $1.1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To increase the combat range and payload of both existing and future fighter aircraft, while maintaining or increasing mission survivability, weapons must be carried in novel and innovative configurations. Existing external weapons carriage techniques account for as much as 30% of total vehicle drag with prohibitive increases in radar signature. Internal weapons carriage solves signature issues, but substantially increases aircraft size while limiting weapon payloads based weapons bay constraints. New innovative and novel ways of both internal and external weapons carriage will be crucial to the fighters of the next century. This effort will expand on the initial investigations conducted under the 6.3 FY92 Survivable Weapons Carriage (SWC) and 6.2 FY93 Cooperative Weapons Integration Technology (CWIT) programs which developed applicable weapons integration test data for low drag/low signature weapons carriage. It will provide the critical initial configuration guidance to transition this weapons integration technology to and quantify its impact when applied to actual systems during the Weapons Integration for Systems Applications program starting in FY98. The need addressed by this effort is both combat range extension and aircraft-weapon signature from the Air-to-Surface and Counterair TPIPTs.

TECHNICAL APPROACH: The major elements of this effort are a risk reduction analysis phase (beginning 3/96) to screen and prioritize the technology advances made under previous activities using QFD techniques, etc. This information will then be used to develop weapons integration concepts to be quantified during range-payload extension studies during the second phase (lst Qt/FY97 through 4th Qt/FY98). In the last phase (lst Qt/FY99 through 3rd Qt/FY99), the most promising of the integration concepts will be wind tunnel tested to validate the advertised improvements in aircraft performance.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 1 November 1995

ESTIMATED CONTRACT AWARD DATE: 1 February 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 42 months

BUYTING ACTIVITY: WL/PK

TITLE: Unconventional Store Integration and Separation Technology (USIST)

PROGRAM MANAGER: Rodney L. Clark, WL/FIMA, (513) 255-2481

ESTIMATED DOLLAR VALUE: $1.25M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Extend internal and external stores integration and separation technology by conducting analytical and experimental investigations to reduce the developmental risk and costs associated with unconventional carriage and/or separation of stores for current and future fighter/strike class aircraft. Stores carriage configurations include current and future weapons, fuel tanks, and pods (electronic warfare (EW), electro-optical (EO), reconnaissance (RECCE), etc.). The effects of unconventional aircraft external and internal (weapon bay) flow fields shall be investigated to isolate potential weapon carriage and separation impacts. These include issues such as separation through the flow fields of wings, canards and ASTOVL propulsion systems; and separation of small/compact weapons from deep or shallow weapons bays or external carriage positions, etc. In addition, the potentially damaging acoustic and temperature effects of ASTOVL propulsion flow fields on carried stores shall be assessed.

TECHNICAL APPROACH: Using the PRDA process, evaluate the current state of the art of external stores integration technology as represented by USAF and Navy aircraft including F-15E, F-16C, F-22, AV-8B (V/STOL), and F/A-18 fighter and attack aircraft. Identify analytical and experimental investigations to extend the capabilities of industry and government in the areas of aircraft performance, store separation prediction, and experimental test data needed to reduce the cost and development risk associated with future advanced aircraft while identifying potential improvements for current systems. Phase I technical reports and proposals for Phases II and III shall be delivered (3rd Qt/FY97). The Phase II/III contractor (4th Qt/FY97) shall design and fabricate a new and/or modified wind tunnel model incorporating the high impact flow field features identified in Phase I. The unique flow field impacts on weapon separation associated with advanced attack/fighter designs shall be evaluated using the best analytical methods available including advanced CFD weapon separation codes (4th Qt/FY98). The wind tunnel test program shall include store separation grid surveys and/or captive trajectory investigations (2nd Qt/FY98). Final technical report(s) and test data shall be delivered (4th Qt/FY98). Potential improvements for current systems might include F-15E modifications resulting from improved understanding of the fuselage flow field, including inlet spillage around the tightly integrated fuselage carried stores.

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: 31 January 1996

ESTIMATED PRDA AWARDS: July 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 39 months

BUYING ACTIVITY: WL/PK

TITLE: Advanced Compact Inlet Systems (ACIS) Supersonic Performance Validation

PROGRAM MANAGER: S. Gridley, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $3.1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Develop integrated inlet systems designed to be low cost, lightweight, and highly survivable. These innovative concepts will reduce inlet system cost for new aircraft while maintaining or increasing the aerodynamic and signature performance of the current state-of-the-art.

TECHNICAL APPROACH: The Advanced Compact Inlet Systems (ACIS) program is a national, cooperative program to include government and industry participants. Current studies under the ACIS program are focused on proving system impacts of fixed geometry, short offset diffuser, minimal boundary layer control inlet systems. Also included in the current program is limited subsonic and transonic wind tunnel testing and computational fluid dynamics simulation to determine inlet system aerodynamic performance. This follow-on testing program seeks to further develop candidate inlet concepts by expanding the scope of testing to include supersonic wind tunnel testing and radar cross section testing to demonstrate aerodynamic and signature performance. By the end of 1997, ACIS will provide developed integrated inlet systems to the Joint Advanced Strike Technology (JAST) weapons systems concepts as well as the Inlet Duct, Edges, Front Frame technology maturation activity.

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: 1 October 1995

ESTIMATED CONTRACT AWARD DATE: 1 May 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: Task Order, 36 months

BUYING ACTIVITY: WL/PK

TITLE: Aftbody/Nozzle Aeroacoustics Program (ANAP)

PROGRAM MANAGER: S. Walker, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $450K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Develop design criteria to avoid destructive twin jet screech and optimize the aftbody nozzle for reliability and maintainability. Improve the integrity of the analytical models currently in the Fluid Mechanics of Screech (FLUMES) noise analysis program. Acoustic levels as high as 160db have been measured in the nozzle/aftbody region of some closely-spaced, twin jet aircraft such as the F-15 and B-1B. External divergent nozzle flaps have been removed from both aircraft due to sonic fatigue of the divergent panels. At present, tone screech frequency prediction capabilities exist only for simple nozzle geometries. Screech tone sound pressure levels are currently impossible to calculate. The Fluid Mechanics of Screech (FLUMES) research initiative, conceived in 1992 by WL/FIMA, is using experimental, analytical and computational approaches to develop a screech tone frequency and amplitude design-stage prediction capability for arbitrary nozzle/aftbody configurations. This capability would allow an aircraft designer to estimate the screech tone dynamic loading that could accompany the operation of a particular aircraft configuration at certain flight conditions. If the dynamic loading could be estimated, the nozzle/aftbody design could be optimized resulting in a reduction in weight and cost.

TECHNICAL APPROACH: Current analytical models within the FLUMES code will be evaluated to accurately assess present capabilities. This evaluation shall include a sensitivity study to identify the critical parameters in the modeling of the screech process and identify modeling deficiencies that can be improved with future upgrades to the code. Various updates that will be considered are a nonlinear eigenmode-driven shear layer model which will allow the approximation of sound pressure level (SPL) versus frequency for a single 2D nozzle geometry at a particular operating condition. Finite-thickness shear layers, the incorporation of an advanced nozzle lip receptivity model, and a twin jet coupling model will also be incorporated. The overall graphics capability of the code will be improved to provide more user-specified plotting capability. A cooperative experimental program in conjunction with the UK will insure the flow physics of screech is understood and that the ANAP models are fully validated.

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: 1 September 1995

ESTIMATED CONTRACT AWARD DATE: 1 April 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: Task Order, 24 months

BUYING ACTIVITY: WL/PK

TITLE: Fluidic Injection Nozzle Technology (FLINT)

PROGRAM MANAGER: S. Walker, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $890K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Explore, develop, and mature fluidic candidate technologies for jet control. These innovative concepts will control the jet without moving parts. Jet control includes nozzle throat area reduction, thrust vectoring, increased mixing, and noise suppression. A low parts count translates into weight, cost, and signature improvements over today's baseline aircraft.

TECHNICAL APPROACH: The Fluidic Injection Nozzle Technology (FLINT) program will be a national, cooperative program to include government, industry, and university participants. Fluidic control concepts will be explored and developed using computational and experimental methods. Computational Fluid Dynamics (CFD) will be used as an important screening tool to identify promising concepts early in the design phase. Experimental facilities, including university laboratories, contractor jet facilities, and NASA wind tunnels, will be used to prove the performance of each concept. USAF/WL dollars will be used to leverage ongoing industry IRAD and AFOSR- supported basic research in three specific areas of fluidic injection technology: fluidic active control, fluidic area control, and fluidic thrust vectoring. Each of these technology initiative areas will require a university/government/industry team to insure the concept transitions from the laboratory to a user-specified application. Semi-annual FLINT review meetings will be held to increase the communication between the various 6.1, 6.2, and 6.3 communities involved in the program. By the end of 1997, FLINT will provide developed fluidic control concepts to the Advanced Fixed Area Nozzle (AFAN) 6.3 program which is advocating using fluidic area control and thrust vectoring concepts instead of moving parts in order to reduce weight and cost.

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: 1 September 1995

ESTIMATED CONTRACT AWARD DATE: 1 April 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: Task Order, 24 months

BUYING ACTIVITY: WL/PK

TITLE: Special Operations Forces (SOF) Transport Propulsion Integration Technology

PROGRAM MANAGERS: John Leugers, WL/FIMA, (513) 255-6207; Keith Numbers, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $1.15M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: AFSOC Mission Area Plans identify signature deficiencies for current transport aircraft. Next generation transports will require reduced observables across the threat spectrum to satisfy SOF mission requirements. However, there is no precedence for installation of efficient large fan propulsion units into advanced low observable air vehicles. Due to recent fighter/attack aircraft development efforts, technology readiness for some air induction components is considered medium to high, and promising technologies for exhaust nozzle components are beginning to evolve. This effort will determine propulsion sensitivities by integrating air induction components, fan propulsion units, and exhaust nozzle components into conceptual low observable transport configurations. High payoff technologies will be identified for inclusion in follow-on full scale development. Operability problems with fan propulsion units installed in low observable configurations will also be identified. Key factors considered are balanced low observables (IR, RF, acoustic), and propulsion system integration with powered high lift devices for STOL. SOF infil/exfil is expected to have the most demanding requirements, but technology derived from this effort will also be applicable to other medium size transport missions (tankers, gunships, airborne command and control, anti-submarine warfare, reconnaissance, etc.) This effort is coordinated with current air vehicle configuration development and advanced transport structures development.

TECHNICAL APPROACH: Trade studies of candidate propulsion components will be conducted via comparison of estimated system performance with these components integrated into a low observable airframe. Performance estimates will be obtained from empirical databases or advanced computational analyses. Promising candidates will be identified by air vehicle performance metrics including cruise range, STOL capability, detectability. Performance estimates and fan unit operability will be verified experimentally by standard subscale aero-propulsion wind tunnel test methods. Signature levels will also be verified by standard subscale RF range tests, IR measurements in conjunction with the wind tunnel tests, and exhaust nozzle acoustic chambers. Trade studies will be completed within the first year (Jun 97). Experimental databases for follow-on design and development will be available during the third year (Sep 98).

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: November 1995

ESTIMATED PRDA AWARD DATE: June 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 32 months

BUYING ACTIVITY: WL/PK

TITLE: Airbreathing Propulsion Integration for Missiles

PROGRAM MANAGER: Keith Numbers, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $2.2M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The HyTech Program (PE 62269) is focusing on development of ramjet and/or scramjet propulsion systems for missile applications, with final demonstration by flight test. However, successful flight demonstration of the propulsion system will not guarantee transition to a missile weapon system that is light weight, low cost, and responsive to requirements. This effort will support HyTech with high fidelity propulsion integration configurations that provide adequate aero-performance but also ensure minimized weight and cost for follow-on missile full scale development. Technologies to be developed and/or investigated include innovative inlet and nozzle aeromechanical configuration, materials and manufacturing, and structural integration of the propulsion components with the airframe. Missile operability issues related to the propulsion system will also be investigated: launch, inlet starting, airframe/booster integration, inlet stability during maneuver, engine out terminal glide. Current design practice for high speed inlets and nozzles is limited to a few configurations, with predictable integration schemes. This effort will leverage an expanded design space from the companion Innovative Scramjet Missile Inlets Program funded under HyTech.

TECHNICAL APPROACH: Adopt innovative design practices from advanced tactical aircraft for inlet and exhaust nozzle integration which have been shown to reduce weight, volume, and cost. System trade studies using estimates of performance will determine the possible magnitude of reductions over current missile design practice. Empirical databases and advanced computational analyses will provide the component level performance estimates. Weight and cost estimates will be determined from preliminary design analysis. Promising concepts will be further evaluated in a large scale airframe-propulsion integration wind tunnel test using standard aero-propulsion test techniques. This test will fully define the operating characteristics of the airframe integrated inlets and nozzles. Promising inlet and nozzle integration concepts will be identified within the first year (Aug 97). Verified performance and design databases for follow-on full scale development will be available at program completion (Sep 99)

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: April 1996

ESTIMATED CONTRACT AWARD DATE: August 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 36 months

BUYING ACTIVITY: WL/PK

TITLE: 3D Transition Mechanism

PROGRAM MANAGER: Dr. Roger Kimmel, WL/FIMA, (513) 255-5419

ESTIMATED DOLLAR VALUE: $650K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Recent experimental and computational research have suggested that the basic boundary layer transition processes in hypersonic facilities are unaffected by wind tunnel noise. Evidence suggests that wind tunnel noise affects the transition location, but the boundary layer stability processes leading up to transition are unaffected by noise. NASA has developed a quiet tunnel that enables transition to develop much as it would in free flight. WL and AEDC have developed instrumentation and test techniques that enable the precise measurement of the high frequency disturbances leading to transition. This raises the possibility of "calibrating" conventional facilities by comparing boundary layer stability and transition in them to quiet tunnel transition. To date no test has been conducted to directly compare the measurements and transition process in conventional and quiet facilities. This effort will acquire this data on a common wind tunnel model. Results will be compared with several transition prediction codes such as e^N and PSE. The final result will provide the data and methodology to define the validity and procedures to use to apply conventional wind tunnel facilities in the performance of high speed vehicles where transition can significantly impact the design.

TECHNICAL APPROACH: A common wind tunnel model and test configuration will be tested at both the AEDC VKF facilities and the NASA Quiet tunnels. High frequency instrumentation, measurements and data analysis will be acquired in both facilities with the same instrumentation suite. Results will be compared with computational codes and other empirical correlations to develop a methodology for continued use and application of wind tunnel data obtained in conventional test facilities. Milestones: FY96 NASA tests, FY97 AEDC tests, FY98 Facility Methodology developed.

ACQUISITION INFORMATION:

ESTIMATED PO/MIPR RELEASE DATE: 1 October 1995

ESTIMATED PO/MIPR ACCEPTANCE: 15 October 1995

SIC CODE: 8731

CONTRACT TYPE AND DURATION: MIPR or PO/ 30 Months

BUYING ACTIVITY: WL/PK

TITLE: Responsive Aerothermal Loads Analysis Program

PROGRAM MANAGER: James Hayes, WL/FIMA, (513) 255-5419

ESTIMATED DOLLAR VALUE: $650K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to provide the capability to rapidly predict the aerothermodynamic characteristics of advance hypersonic configurations throughout a flight trajectory. Current preliminary design programs such as SHABP lack the capability to evaluate the aerodynamic heating that occurs on the vehicle due to interference and shock interactions and has only limited viscous analysis capability. These effects are typically assessed in subsequent design iterations often leading to costly redesign. Current programs like AERHET are limited in the ability to represent complex three dimensional geometry and do not provide the ability to predict these loads throughout the trajectory. The product of this task will provide an aero heating program that will interface with vehicle design and performance codes allowing for the rapid prediction of the thermal load environment of candidate concepts. It will also provide output for compatibility to vehicle structural analysis and thermal management codes.

TECHNICAL APPROACH: The major tasks of this effort shall develop an enhanced methodology for the prediction of heating loads and a capability for assessing these loads at multiple points through out the flight trajectory by appropriate database output files. Configuration input and graphical presentation of output files for continued analysis is required. The program must interface with other vehicle design codes and display packages, and will include user friendly interface procedures with a highly interactive format. The effort is expected to require approximately 36 months with a major milestone of the code delivery and check out. Interim milestones of code selection and interface modules are expected in 20 months.

ACQUISITION INFORMATION:

ESTIMATED MIPR/RFP RELEASE DATE: 1 October 1995

ESTIMATED MIPR/CONTRACT AWARD: 15 October 1995/1 July 1996

SIC CODE: 8731

CONTRACT TYPE/DURATION: MIPR or CPFF / 36 months

BUYING ACTIVITY: WL/PK

TITLE: Real Gas Database

PROGRAM MANAGER: Neil Sliski, WL/FIMA, (513) 255-5419

ESTIMATED DOLLAR VALUE: $400K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to provide the experimental database needed to validate the computational flow codes in regions where reacting gases can significantly alter the flow properties assumed in the codes. The resulting flow chemistry can alter the shock structure as well as the surface flow properties. To date the only data available to validate this phenomena was the result of a WL/FIM contracted effort with Boeing. Extensive measurements were made with non intrusive instrumentation by AEDC. Currently, the development of the new shock tunnel facility at AEDC and advances in instrumentation and CFD provides an opportunity to extend the existing data set as well as providing critical data for the checkout and validation of the test facility.

TECHNICAL APPROACH: A cooperative effort between AEDC, WL/FIM, and PL will be conducted. The major tasks of this effort shall provide surface measurements and non-intrusive flow field measurements about a family of wind tunnel models. The existing WL models have been tested in the Boeing test facility and will be used in this program as reference test models as AEDC develops and checks out their facility and instrumentation. CFD analysis will be conducted jointly by AEDC and WL and results compared to the experimental data. Resulting effort will provide a validated analysis capability for use in aerodynamic and propulsion system analysis.

ACQUISITION INFORMATION:

ESTIMATED PO RELEASE DATE: 1 October 1995

ESTIMATED PO AWARD: 15 October 1995/1 July 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: AEDC PO/36 months

BUYING ACTIVITY: WL/PK

TITLE: Computational Fluid Dynamics and Advanced Diagnostics Development, Analysis and Assessment

PROGRAM MANAGER: Don Kinsey, WL/FIMC, (513) 255-3876

ESTIMATED DOLLAR VALUE: $9M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is threefold. First, a procedure will be available to respond quickly to customer needs and to new opportunities to exploit recent discoveries. It also provides a means to attack technology problems in less time, and to concentrate Estimated Dollar Valuefor more technology for the dollar. Second, it will provide a mechanism for independent engineering assessment of selected CFD Research Branch (FIMC) and Experimental Diagnostics Research Branch (FIMD) programs. Our R&D efforts must be continually compared and coordinated with other R&D efforts of government and private agencies in order to truly advance the state-of-the-art. In this manner the government will benefit from the technical advances of other organizations, can avoid wasteful duplication of effort, and provide the most efficient use of program dollars and manpower. Third, the program will allow the quickest and widest dissemination of technology and information from our programs in basic, exploratory and advanced development research.

TECHNICAL APPROACH: An R&D Task Assignment (TA) contract is the available government procurement vehicle that meets the stated objectives. The program will facilitate short term R&D, system support, and cooperative efforts not readily available either in-house or under existing contracts. A TA type contract will provide the flexibility and quick response time necessary to ensure the most efficient and effective accomplishment of FIMC and FIMD programs. Each task or subtask is to be of short duration and usually unique or highly specialized. The scope of each task will vary depending on the complexity and magnitude of the technical effort, but an average task would be approximately $100K, with the maximum amount for any one task less than $500K. These tasks, in general, do not represent new efforts, and could be perturbations of other Technology Investment Plans. This task assignment contract will be monitored at the Branch level.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 1 October 1995

ESTIMATED CONTRACT AWARD DATE: 1 May 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 60 months

BUYING ACTIVITY: WL/PK

TITLE: Aero-Structural CFD

PROGRAM MANAGER: Don Kinsey, WL/FIMC, (513) 255-3876

ESTIMATED DOLLAR VALUE: $1.7M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Aircraft are not perfectly rigid geometric shapes. Aerodynamic analyses that assume the geometry to be invariant is only an approximation to the real flight conditions. Future aircraft will be even more optimized for reduced structural weight and improved aerodynamic performance. This will make the effects of structural deflections much more important to the aircraft designer. The only way to properly account for the combined structural/aerodynamic effects is to include both effects in the analysis procedure. The objective of this effort will be to combine the best available advanced computational fluid dynamic (CFD) analysis methods with advanced structural analysis methods in order to simultaneously model both the aerodynamic and structural characteristics of an air vehicle. The results will be a procedure that will not only provide accurate analysis of the performance of the air vehicle, but could also provide information on such unsteady effects as flutter and buffet.

TECHNICAL APPROACH: The major task of this effort focuses on the development of a computational fluid dynamic (CFD) code that couples with a structural model of the flight vehicle. It is anticipated that an existing CFD solver and structural model will be used. Some pre- and post-processing tools will also have to be developed to support the modified flow solver. Work will begin in the third quarter of FY96. An Euler solver will be completed by FY97 and a Navier-Stokes method by FY98. Validation runs and documentation will be completed in FY00. The revised code, a final report and a user's manual will be delivered at the end of the effort.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 1 October 1995

ESTIMATED CONTRACT AWARD DATE: 1 May 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 48 months

BUYING ACTIVITY: WL/PK

TITLE: Propulsion and Weapons Integration Technology Development, Analysis and Assessment

PROGRAM MANAGER: D.Bowers, WL/FIMA, (513) 255-6207

ESTIMATED DOLLAR VALUE: $20.5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Provide independent engineering assessment of selected propulsion and weapons integration technology. Respond rapidly to user needs and new opportunities to evaluate and exploit recent discoveries. Offering great potential for reduced system affordability and increased system performance including range and payload carried, propulsion and weapons integration technologies are closely related by a common interest in limited aircraft volume. Further, the emphasis on enhanced survivability for current and future aircraft has placed stringent requirements on the integration of both the propulsion system and the carried weapons. The potential for improvement and the increased needs often dictate rapid development and assessment of suggested technology approaches. The payoff to the Air Force is timely solutions to current and projected future air vehicle deficiencies.

TECHNICAL APPROACH: R&D Task Assignment (TA) contracts are the procurement vehicles to meet the stated objectives of rapid development, assessment and analysis of technology solutions. Multiple (three or four) task order awards will provide short-term R&D and system support efforts not readily available either in-house or under existing contracts. These contracts will provide the flexibility and quick response time necessary to ensure the most efficient and effective accomplishment of the WL/FIMA R&D programs in propulsion and weapons integration. Each task or subtask is to be of short duration and of a unique or highly specialized nature. The score of each task will vary depending on complexity and magnitude of the technical area. The average task will be above $50K and the maximum dollar amount for any one task would be about $300K. These tasks, in general, do not represent any new efforts, but would be perturbations of other Technology Investment Plans. This task assignment contract would be monitored at the section level.

ACQUISITION INFORMATION:

ESTIMATED PR RELEASE DATE: September 1995

ESTIMATED CONTRACT AWARD DATE: May 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 60 months

BUYING ACTIVITY: WL/PK

TITLE: Active Aeroelastic Wing Demonstration

PROGRAM MANAGER: Ed Pendleton, WL/FIBGE, (513) 255-7384

ESTIMATED DOLLAR VALUE: $7.89M

APPLICABLE SYSTEMS: F-117, F-16, F-15, F-22, F/A-18, B-l, C-17

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to flight demonstrate key aspects of the extremely high payoff Active Aeroelastic Wing (AAW) concept, also known as the Active Flexible Wing (AFW) concept. AAW, which has been developed through exploratory analytical and wind tunnel tests, dramatically improves aircraft maneuverability while enabling significantly down sized vehicles. Studies have shown this technology to provide a 7% to 20% reduction in aircraft takeoff gross weight. While the greatest payoffs will be realized on new designs, this technology will be effective on new wing designs for current aircraft such as F-15, F-16, F/A-18, F-22, F-117, B-l, and C-17. Range and maneuverability payoffs would be realized by re-winging current aircraft. AAW enables elimination of the horizontal tail for roll control (tailless fighters), would significantly improve roll rates for many vehicles (such as the F-117), and will reduce drag during maneuvering. Full scale demonstration of this technology will show that integration of the wing structural design with an active control system enables use of the inherent wing aeroelasticity for a net benefit.

TECHNICAL APPROACH: As a low-cost demonstration, an existing fighter class aircraft with a digital flight control system will be modified. The stiffness of the wing structure will be representative of a wing designed for strength, buckling, and flutter constraints, without typical stiffness constraints for roll effectiveness. A high rate actuation system will be installed to upgrade the leading edge control surfaces and new control laws will be developed to utilize the increased structural flexibility. A full envelope flight test will demonstrate some of the performance benefits of the AAW concept. The demonstration will include use of trailing edge control surfaces beyond reversal, leading edge control surfaces as primary maneuver control effectors, and combined use of surfaces to achieve complete wing roll authority while minimizing maneuver drag and/or maneuver loads.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 31 March 1996

ESTIMATED CONTRACT AWARD DATE: 15 August 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF/60 months

BUYING ACTIVITY: WL/PK

TITLE: Automatic Rating Technique (ART)

PROGRAM MANAGER: C. Suchomel, WL/FIGC-2, (513) 255-8496

ESTIMATED DOLLAR VALUE: $500K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To develop and demonstrate techniques for flying qualities rating evaluations that can change what is now a subjective, qualitative discipline to a more quantitative science. Recent development in physiological workload assessment measuring (WAM) equipment by Armstrong Laboratories and improved measurements in pilot task performance provide the opportunity to quantify key elements of flying qualities. This ability will reduce scatter and inconsistencies typical of subjective pilot ratings and will reduce costs, time and resources currently expended to get pilot rating data in simulators and aircraft. The use of an ART in SPO acquisition of aircraft systems will provide measured flying quality ratings, removing intended or unintended pilot biases or agendas and could give the Air Force the means to contractually require demonstration of desirable flying qualities. Real time measurement of pilot performance and workload can add a new dimension to flight control design by allowing the designer to adapt the aircraft systems to the pilot physiological conditions.

APPROACH: This work will: (a) demonstrate the WAM equipment functions in the flying qualities test environment, and (b) develop a process, or processes that automates flying quality ratings using task performance and pilot physiological workload measurements. Ground based and in flight simulation will provide the testing environment with pilots performing specific tasks over a range of aircraft characteristics. During the experiments, pilots task performance, workload and subjective Cooper Harper ratings will be recorded. Analysis of the results will correlate the measured performance and workload to yield a predicted rating that will be compared with the pilot subjective ratings. Techniques combining WAM and task performance will be developed and evaluated.

ACQUISITION INFORMATION: Since the resources exist in and have been developed in Air Force laboratories, WL and AL in-house facilities will be used as appropriate for cost effective data acquisition. The best results will be achieved by getting a wide range of experience and data sources involved in concurrent research to meet the objectives in a timely manner. Contracts with aircraft manufactures and joint research efforts with NASA are planned.

BUYING ACTIVITY: WL/PK

TITLE: Unified PIO Program

PROGRAM MANAGER: David B. Leggett, WL/FIGC-2, (513) 255-8498

ESTIMATED DOLLAR VALUE: $965K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this effort is to acquire, analyze and catalogue PIO data from actual incidents, as well as generating PIO data from ground-based / in-flight simulation sources to develop a comprehensive set of highly effective design criteria, evaluation methods and predictive techniques for minimizing the risk of PIO from all causes.

TECHNICAL APPROACH: The major tasks of this effort are:

1) Evaluate current PIO criteria and pilot models against current incident data. Particularly to focus on the non-linear applications, and identification of weaknesses and shortcomings.

2) Analyze and catalogue current incident data as to completeness (for evaluation), and for PIO cause or type. Identify areas where parametric simulations (flight and ground based) are required to provide data for meeting the objectives, and then conduct these simulations.

3) Evaluate the relative effectiveness of ground-based and in-flight simulation techniques for identifying and correcting high risk PIO designs.

4) Using the PIO database, develop a set of comprehensive design criteria (include in MIL-STD-1797 update) and evaluation techniques for minimizing the probability of PIO risk in a given design.

5) Develop an on-board PIO identification system for detecting PIO or incipient PIO characteristics for the purpose of providing a warning or active control alleviation.

ACQUISITION INFORMATION: This effort will be multi-source contracts. Since the objectives are comprehensive in themselves, the best results will be achieved by getting a wide range of experience and data sources involved in concurrent research to meet the objectives in a timely manner. In addition to contracts with aircraft manufacturers, SBIR contracts and joint research efforts with NASA are planned. WL in-house facilities will be included as appropriate for cost effective data acquisition.

BUYING ACTIVITY: WL/PK

TITLE: Reconfigurable Control for Tailless Fighters

PROGRAM MANAGER: Capt Mark Spillman, WL/FIGC-3, (513) 255-8686

ESTIMATED DOLLAR VALUE: $1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: This program addresses the problem of designing flight control laws for tailless fighter aircraft that are robust to large parameter variations and can accommodate aerodynamic failures and damage while providing good tracking and handling qualities. Control laws are currently designed off-line with extensive analysis, simulation, iteration, and redesign. The objective of this program is to develop control design algorithms that execute on-line and in real-time. The resulting controller reacts to changes or events as they occur and tailors the control laws to yield the maximum possible performance. By concentrating on control design algorithms rather than a specific control law, the resulting adaptive/reconfigurable flight control system is more generic and therefore rapidly and easily extensible to new tasks, missions, aircraft modifications, and weapons, as well as to other aircraft. A level of flexibility and adaptation results that is simply not achievable using off-line design methods. The commercial transition potential of a self-designing controller is excellent, since it should be readily adaptable to applications such as autonomous vehicles, process control, robotics. etc. This work builds on algorithms developed under the 6.1 AFOSR task, Multivariable Control Theory, and a Phase II SBIR, Self-Designing Control System.

TECHNICAL APPROACH: The major tasks of this effort are 1) refine the algorithms developed under various reconfigurable control, adaptive control, self-designing control, and neural network efforts, 2) tailor the algorithms to address the unique control requirements of tailless fighter aircraft 3) perform non-real-time simulation, and 4) perform piloted simulation of a fighter aircraft with control effector damage. The final algorithm will perform system identification of critical stability and control derivatives and nonlinear on-line control design with hard constraints to ensure good tracking. A large suite of complex, nonlinear, highly coupled effectors will be integrated to yield maximum performance. Saturation limits, control axis prioritization, and handling qualities issues will also be included in the on-line optimization routine. Piloted simulation is planned in the summer of 1998.

ACQUISITION INFORMATION:

ESTIMATED CONTRACT AWARD DATE: 2 August 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF for 36 months

BUYING ACTIVITY: WL/PK

TITLE: Future Flight Control System Actuation Requirements Study

PROGRAM MANAGER: Bruce T. Clough, WL/FIGS, (513) 255-2831

ESTIMATED DOLLAR VALUE: $450K

TECHNICAL PROGRAM DESCRIPTION: Determination of actuation system requirements and resource investment strategy for implementation of advanced control technologies. Focus will be on actuation requirements for Active Aeroelastic Wing technology, but other advanced control concepts, such as reconfiguration and tailless, will be examined. Product: report detailing future actuation requirements (actuator level, associated VMS level, and secondary power level impacts), resource investment strategy to meet customer program timelines, engineering trade-offs to implement realistic solutions, and a technological roadmap detailing development process.

OBJECTIVE: There exists no clear-cut roadmap for development of actuation to meet future Air Force control system requirements. We are pressing ahead with advanced control techniques (active flexible wings, reconfigurable flight control systems, tailless aircraft, etc.) without examining the impact they have on the actuation system. Currently, the actuation technology to practically implement these techniques does not exist. Two actions have to be taken to insure actuation technology is available:

- Determine the actuation system requirements of future aircraft employing advanced control techniques.
- Develop the resource investment strategy to meet the future requirements.

Trade-offs between performance, safety-of-flight, and O&S metrics need to be understood for each advanced control technology in order to make rational technology investment decisions.

The study will examine all aspects of flight control implementation which are influenced by actuation. The actuation system includes more than the actuators themselves. It also includes position sensors and health monitors, electronics required to drive actuators, software to run the actuator redundancy management and built-in-test functions, and the signaling required to implement these functions. Actuation is a major user of secondary power (hydraulic or electric) determining pressure, flow, currents, and redundancy requirements.

The technology and implementation requirements for future advanced control techniques applications will be defined up-front, allowing the timely development of the actuation technology to reach overall aircraft goals. An aircraft with advanced control modes, but without the actuation to enable them, is useless.

TECHNICAL APPROACH: The study will look out at the advanced control techniques proposed for future demonstration in the next ten years. Active Aeroelastic Wing program requirements will be the prime focus to insure impact before PDR/CDR. For the advanced control techniques identified, actuation system requirements will be developed. By knowing the current actuation system state-of-the-art, and where future actuation requirements will drive it, a technology investment plan will be developed detailing resources and programs needed to put new actuation technology "on the shelf" for control system use.

ACQUISITION INFORMATION: An airframer will accomplish the study. The contractor will form an IPT of aircraft system disciplines (structures, flight control, aero, subsystems, etc.) for the program. Actuation system requirements synergistically interact with other flight control system requirements. Only companies which build aircraft truly understand this. The work would be accomplished using tasking on an existing contract (task under AMICS, subcontract task under LSI, VEDA, etc.) if possible. Failing this, a PRDA would be the next best choice for contractual vehicle. RFP would be last choice.

BUYING ACTIVITY: WL/PK

TITLE: VMS Architecture Requirements for Redundant Control Systems

PROGRAM MANAGER: Thomas F. Dermis, WL/FIGS-1, (513) 255-8442

ESTIMATED DOLLAR VALUE: $1.1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: A substantial amount of research is currently under way to develop new control functions that provide significant performance and mission capability benefits at the air vehicle level. The fact that many of these functions pose greater demands on the flight control system directly while others have lesser amounts of interaction, presents new design challenges in terms of throughput and data integrity. Existing architectures cannot provide adequate resources to implement these new control concepts within ever more demanding size, weight, and cost constraints. The objective of this effort is to identify the architectural characteristics and associated supporting technologies necessary to develop a system architecture capable of effectively and safely implementing advanced control concepts.

TECHNICAL APPROACH: To accomplish the objective, an approach combining both contract and in-house efforts will be used. Using a task order vehicle, contracts will be let to: evaluate existing and proposed flight control architectures; determine the suitability of commercial architectures and standards; and fault detection, isolation and accommodation requirements and techniques. The in-house activity will be directed toward implementing and evaluating the key architectural elements in preparation for developing the full architecture. It is expected that approximately 80% of the parts and materials requirement for the in-house activities can be met with existing resources thereby minimizing expenditures in this area. To supplement manpower for the in-house portion, a partnership with AFIT will be established so that graduate students studying technical areas associated with the program can perform work that will benefit both the program and their academic endeavors.

ACQUISITION INFORMATION: An industry team consisting, as a minimum, of an airframer and a flight control system supplier will accomplish the contractual portion of this effort. The contract work would be accomplished using tasking on an existing contract, if possible. Failing this, a PRDA would be the next best choice for a contractual vehicle. RFP would be the last choice. The in-house portion of the effort would utilize government manpower supplemented by graduate students through a partnership with AFIT.

BUYING ACTIVITY: WL/PK

PROGRAM TITLE: Photonic Interface Module

PROGRAM MANAGER: Raymond A. Bortner, WL/FIGS, (513) 255-8292

ESTIMATED DOLLAR VALUE:$1.5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Photonics have some highly favorable characteristics for implementing high performance fault tolerant systems. A key characteristic is the ability to wavelength multiplex numerous signals upon a single fiber. This technique allows the co-existence of multiple physically isolated signals to reside on the same medium, a key requirement for fault tolerance. Wavelength Division multiplexing is not being fully exploited in the first generation implementations of Fly-By-Light (FBL). The current approach is the replacement of digital electronic sensors and interfaces with comparable optical technologies. This approach maintains heavy reliance on electro-optic conversion, data bus interfacing, and electrical power distribution, which negates the weight saving EMI immunity benefits of FBL. To fully glean the claimed FBL benefits for a fighter sized aircraft, a top down, system-level architecture must be developed, employing true optical multiplexing techniques, passive optical sensors, and optically driven actuation.

The objective of this program is the development of architectural concepts employing photonic techniques of sensing, multiplexing, and interfacing. The criteria for this development shall be verification of FBL benefits: reduced cost, reduced weight/volume, increased EMI immunity, and increased performance.

TECHNICAL APPROACH: The program has a two phase approach. The first phase is System Analysis/Design and the second phase is System Development/Demonstration.

Phase One- System Analysis/Design: The first phase will consist of three tasks:
Task #1- Concept Design/Requirements Definition
Task #2- System Analysis
Task #3- System Design

Phase Two- System Development/Demonstration: The second phase will consist of four tasks:
Task #1- Demonstration Plan
Task #2- Hardware/Software Development
Task #3- Integration/Test
Task #4- Ground Demonstration in EMI environment

ACQUISITION INFORMATION: The first Phase of this program is appropriate to solicit as a PRDA, to be released Oct 95. The award is anticipated by Jan 96. The second Phase would be normal RFP, dates pending on acceptance into the FY98 POM.

BUYING ACTIVITY: WL/PK

TITLE: Next Generation Optical Air Data Technology

PROGRAM MANAGER: Stanley Pruett, WL/FIGS, (513) 255-8294

ESTIMATED DOLLAR VALUE: $2.3M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To mature optical air data technology to the point that a full demonstration can be performed at low risk. This system must reduce air data Life Cycle Cost (LCC) by 50% and provide for interservice commonality. This work will support the Optical Air Data System Integrated Support Team (OADS IPT) as the requirements of a future air data system are formulated. An integrated approach to an OADS system development is necessary. Development and test of a hardware prototype to demonstrate program concepts will be accomplished.

BACKGROUND: WL/FIGS has been advocating, performing, and managing OADS research. Two recent examples are particularly important. One explores using molecular backscatter for an OADS system. The other is exploring an OADS system that is primarily composed of optical fiber optical components. These two efforts are attempting to overcome the two major technical challenges facing OADS system acceptance. A molecular approach can satisfy the first challenge-assuring that the OADS system always has atmospheric backscatter. The second challenge is to reduce the high cost to desensitize complex optical systems to vibration. An all fiber OADS is expected to have a high immunity to vibration. Historically, conventional air data systems have high cost both in development and operational use. A very good example is the high cost of calibrating a low observable air data system. Newer optical technologies potentially solve this problem and offer substantially better maintainability than current air data systems. Furthermore, these optical air data technologies potentially have insignificant radar cross section, better performance, and can provide data for gust alleviation systems, advanced ride quality control systems and wind shear/clear air turbulence data for safety of flight.

APPROACH: Phase I will consist of a concepts study and preliminary concept implementation for data analysis. Phase II will provide for the development and test of the next generation OADS. Phase I will incorporate the results of prior efforts into a OADS concepts study. The OADS IPT, composed of Air Force, Navy, NASA, and industry representatives, will be supported. Analysis, breadboard fabrication, and laboratory testing would be performed to reduce technical risk of implementing an OADS system. Examples are: continuing LCC analysis, optical window, beam steering, and sensor placement analyses and experiments, atmospheric data analysis, global operation analysis and preliminary system design. Phase II will provide OADS system development including of hardware prototyping and flight testing. The program would explore how different OADS concepts could be used in a complimentary way.

ACQUISITION INFORMATION: The first Phase of this program is appropriate to solicit as a PRDA, to be release during the first quarter, FY96. An award is expected in the third quarter, FY96. The second Phase would be a normal RFP, dates pending on acceptance of the phase I results.

BUYING ACTIVITY: WL/PK

TITLE: Ada Software Integrated Development System (ASIDS), VISTA Vision Tool

PROGRAM MANAGER: Richard T. Gallivan, WL/FIGS-1, (513) 255-8436

ESTIMATED DOLLAR VALUE: $180K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The Ada Software Integrated Development and Verification System (ASIDS) program has developed a highly automated workstation type environment for Ada software with the capability to design, develop, modify, and conduct verification test of real time flight critical software. This new capability will enable flight control or software engineers to easily incorporate new or changing control modes, to more readily test these changes for added mission capability, and quickly accommodate changes in flight simulations. Through this automation, traceability is provided between the requirements specification, the software source language (Ada), and the operational flight program. The objective of this effort is to implement the "Vista Vision" tool environment to enhance the process of software development and testing from design through ground simulation to flight simulation capabilities in the VISTA F- 16 aircraft.

TECHNICAL APPROACH: Incorporate the existing generic design, development and simulation capabilities within WL/FIG into ASIDS to provide a cohesive tool environment for the development and testing of flight critical control software integrated with flight simulation test and evaluation capabilities. Initially a study will determine the extent of the existing capabilities at both WL/FIG and the supporting VISTA contractor - CALSPAN. Integration will then be accomplished. Key experiments, now being accomplished in-house on robust control systems, will be conducted using the new tool to provide demonstration and verification of its applicability and utility.

ACQUISITION INFORMATION: The developer of the ASIDS tool is the most logical contender for this effort. This will be accomplished through a task order on an existing contract or through PRDA released by Oct 95. Contract award is expected in Dec 95. Contract duration will be 15 months.

BUYING ACTIVITY: WL/PK

TITLE: Passive Terrain Estimation Sensor

PROGRAM MANAGER: Stanley Pruett, WL/FIGS, (513) 255-8294

ESTIMATED DOLLAR VALUE: $1.8M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Determine feasibility of passively sensing terrain features and quantify benefits of integrating a gravity gradiometer sensor into the flight control system for applications such as terrain-following/avoidance.

BACKGROUND: Capabilities such as terrain-following and ground collision avoidance require reliable knowledge of ground terrain for the flight control system. Digital map technology is not sufficiently reliable to meet flight control requirements for low-level flight maneuvering. without being verified via sensors. Current terrain- following systems require both active forward looking radar and downward looking radar altimeters to safely fly at low altitude in weather. Digital map technology has had some impact on decreasing sensor emissions but have not eliminated them. The Navy has developed and demonstrated a passive sensor technology that can detect terrain features from measuring gravity gradients. Resolution and accuracy of gravity gradient measurements in a moving aircraft for terrain estimation have not yet been defined but it appears that 3 dimensional terrain features ahead of an aircraft can be measured with the gravity gradiometer system. The gravity gradient sensor technology has been extensively tested on a moving ground vehicle and naval vessels. The Defense mapping Agency has demonstrated that the gravity gradient sensor technology can successfully operate in an airborne environment. A study was recently concluded (Sept 94) by Phillips Laboratory, "Passive Airborne Detection and Avoidance of Oncoming Terrain Using Gravity Gradiometry" which supports the potential of this concept.

APPROACH: Phase I will consist of a study to quantify and characterize error sources associated with terrain measurement via gravity gradient measurements for air vehicle application. The study will establish gravity gradiometer sensor requirements to perform terrain-referenced flight control. Phase II will develop and test prototype hardware to quantify feasibility, performance adequacy and system benefits.

ACQUISITION INFORMATION: The first phase of this program is appropriate to solicit as a PRDA to be released during the first quarter, FY96. The award is anticipated during the third quarter, FY96. The second phase would use a normal RFP with dates of release in FY98 pending acceptable results in phase I.

BUYING ACTIVITY: WL/PK

TITLE: Thermal Component Development

PROGRAM MANAGER: Roland Watts, WL/FIVE-2, (513) 255-6078

ESTIMATED DOLLAR VALUE: $1.2M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of Thermal Component Development program is to reduce fixed weight and volume of the critical aircraft thermal management components in high performance air vehicles. Operational demands require advanced aircraft configurations to be faster, more agile, and less observable. This requires the development of lighter more efficient subsystem components to provide aircraft cooling and fuel management in order to efficiently meet the thermal demands of future aircraft systems. The technical thrust is to research efficient, affordable, and reliable heat transfer and heat exchanger technology. As heat exchangers make up nearly half of advanced aircraft's thermal management system weight, a primary thrust will focus on aggressive development of high strength and thermally conductive composite and metal matrix materials for use in aircraft heat exchangers. Significant reduction in heat exchanger weight has the potential to dramatically reduce thermal management system weight. Other components in the avionics cooling subsystem, fuel sink management subsystem, and other utility subsystem components will be considered if significant weight savings and performance enhancements can be achieved. The overall goal of the effort is to reduce the thermal management system weight of next generation aircraft by 10%.

TECHNICAL APPROACH: The approach is to design and develop advanced thermal management components for aircraft applications. The focus will be to assess the feasibility of developing and testing light weight heat exchangers and other thermal management components that influence aircraft weight. The effort will research novel components that have the potential to significantly decrease subsystem weight and select the most promising applications for development and testing. The end product of this effort will be component prototypes that will be evaluated and tested. The effort will also include a comprehensive analysis of the subsystem weight savings and overall benefits to the vehicle.

ACQUISITION INFORMATION:

ESTIMATED PRDA RELEASE DATE: 30 November 1995

ESTIMATED CONTRACT AWARD DATE: 1 June 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 42 months

BUYING ACTIVITY: WL/PK

TITLE: Advanced Diagnostics for the Landing Gear System (ADLGS)

PROGRAM MANAGER: David L. Morris, WL/FIVMA, (513) 255-6891

ESTIMATED DOLLAR VALUE: $450K

OBJECTIVE: One of the best methods for addressing the maintenance of complex systems such as the landing gear system (struts/tires/wheels/brakes/anti-skid/retract and extend actuation/nose wheel steering) is through the use of automated diagnostics which can monitor the status and health and provide timely feedback to both the aircrew and ground personnel. The Advanced Diagnostics for the Landing Gear System (ADLGS) Program will result in the definition, design, fabrication and evaluation of this diagnostic system which will result in enhanced safety and supportability of the landing gear system. Current design requirements which account for under-serviced conditions will be addressed by this technology, resulting in lower design loads and reduced structural weight.

TECHNICAL APPROACH: An initial review will be conducted of the current state-of-the-art in diagnostic technology. Potential diagnostic parameters will be identified and evaluated for system level benefits and sensor requirements identified (early FY96). Diagnostic algorithms will be developed to obtain the desired diagnostic information from sensor inputs (late FY96). Breadboard hardware will be designed, fabricated and tested to verify the processing requirements and performance of the system (late FY97). Testing will include landing gear drop tower and dynamometer evaluation using actual aircraft landing gear components to obtain realistic operational conditions and verify overall system level performance (early FY98). The requirements for a complete landing gear diagnostic system will be established by this program (mid FY98). Additionally, the interface requirements between the advanced diagnostic system and the aircraft vehicle management system will also be identified as part of this program (late FY98).

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 17 July 1995

ESTIMATED CONTRACT AWARD DATE: 1 December 1995

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF/33 Mo

BUYING ACTIVITY: WL/PK

TITLE: Transparency Life Extension

PROGRAM MANAGER: Richard A. Smith, WL/FIVE-1, (513) 255-4640

ESTIMATED DOLLAR VALUE: $712K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Aircraft transparent crew enclosures are high life-cycle cost items in the US Air Force. Unexpected deterioration or catastrophic failure during service have necessitated expensive programs to redesign, re-test, and retrofit new transparency systems. The current state-of-the-art technology does not facilitate a failure analysis methodology to predict or extend the service life of aircraft transparencies. The Transparency Life Extension Program will improve the design of aircraft windshields and canopies by improving knowledge of aging material properties, studying effects of surface finish and treatment of bolt holes, and improving test methods for all transparency materials. The payoff of this program will be the development and application of diagnostic, predictive, and preventive techniques for the fracture of polymer materials utilized in present aircraft transparency systems.

TECHNICAL APPROACH: The technical approach includes the use of optics, crazing, abrasion, cracking, and physical aging to develop predictive tools and better manufacturing processes of transparency materials, and adapting data from flight tests to improve coupon scale test methods. Various mechanisms contribute to transparency failures including residual stress resulting from processing and installation, physical aging of transparency materials due to aggressive environments, and thermomechanical fatigue and stress concentrations due to design and service conditions. First, an analysis of field service data will be conducted to classify types of failures, and frequencies of occurrence. Next, a pipeline will be established to send service aged transparencies to a central location for examination. The examination and test results will be used to develop an understanding of the failure and determine if failures are due to materials, design, manufacturing, or a combination of all of these. Products include an acceptance test methodology for IR windows that will allow the Air Force to be a smarter buyer, delivery of an optical distortion criteria and measuring device, and a complete research road map. Finally, a detailed design data base and new transparency design guides will be developed. This program is expected to save an estimated $800K in transparency throw-aways for the F- 16 aircraft alone.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: 1 January 1996

ESTIMATED CONTRACT AWARD DATE: 1 July 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF/36 months

BUYING ACTIVITY: WL/PK

TITLE: GPSonde System Development

PROGRAM MANAGER: Capt Scott Hamilton, WL/FIVMB, (513) 255-4008

ESTIMATED DOLLAR VALUE: $226K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Headquarters Air Mobility Command (AMC) has identified, as an AMC Top Priority, the need for an affordable method to airdrop cargo with improved precision in adverse weather and from an altitude which minimizes the crew and aircraft vulnerability to ground fire. The leading cause of error is a lack of accurate ballistic wind data over the drop zone. This program will develop a design for an operational ballistic wind sensing system based on GPSonde technology.

TECHNICAL APPROACH: WL/FIVMB has procured the first-ever portable ballistic wind measurement system designed for use with airdrop operations. This prototype system is based on a technique that meteorologists use to determine atmospheric profiles: releasing a sensor package (pressure, temperature, and humidity) called a sonde and tracking its position to determine wind velocity and direction. This system uses GPS technology to track the sonde, but takes into account the disposable nature of the sonde. Since the sonde will not be recovered after release, it only contains a GPS antenna, the pressure, temperature and humidity sensors, and a UHF transmitter. A remote station collects, interprets and analyzes the signals to develop the wind profile. For this prototype system, current operational procedures for deploying the sonde require the loadmaster to manually deploy the sonde from the rear cargo door. This procedure is cumbersome and operationally limited, since it requires either a "pathfinder" aircraft to deploy the sonde directly over the drop zone or multiple passes. As part of a current effort, WL/FIVMB is investigating other deployment concepts, such a forward deployment via an boosted projectile, or dispensing from another aircraft, such as from a UAV or from a chaff dispenser on a CAP aircraft. This effort would be a follow-on effort to develop detailed designs of the most promising concepts for advanced deployment systems.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: September 1995

ESTIMATED CONTRACT AWARD DATE: January 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF/60 months

BUYING ACTIVITY: WL/PK

TITLE: Computed Air Release Point Performance Model

PROGRAM MANAGER: Capt Scott Hamilton, WL/FIVMB, (513) 255-4008

ESTIMATED DOLLAR VALUE: $201K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The Computed Air Release Point (CARP) generated for each airdrop mission depends on the ballistic characteristics of the cargo/parachute combination. These characteristics are listed in table form in AMCR 55-40, Computed Aerial Release System Procedures. The current method for determining the ballistic parameters of cargo/parachute combinations requires the use of a special test range equipped with expensive optical tracking gear and does not collect a real-time ballistic wind profile of the conditions on the drop zone. This is both costly and inaccurate. This effort will establish and implement a reliable test methodology that will be cheaper and more accurate than current techniques. A database will be developed that will allow for the computation of the ballistic parameters of minor variations of existing designs without expensive testing and lay the groundwork for developing improved CARP algorithms.

TECHNICAL APPROACH: Global Positioning System transceivers will be used to track cargo trajectories and measure real-time ballistic wind conditions. The GPS transceivers currently used to measure winds are capable of measuring position in a highly dynamic environment, and this system can be modified for the purpose of tracking the cargo/parachute trajectory. By correlating the actual winds during the drop with the measure trajectory, the derived ballistic parameters will be more reliable. By implementing a cheaper test methodology, more data can be collected. This data will allow for the computation of the ballistic parameters of minor variations of existing designs without expensive testing and lay the groundwork for developing improved CARP algorithms.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: November 1995

ESTIMATED CONTRACT AWARD DATE: March 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF/36 months

BUYING ACTIVITY: WL/PK

TITLE: Turbine Engine Battle Damage Repair

PROGRAM MANAGER: Donald Voyals, WL/FIVS, (513) 255-6179

ESTIMATED DOLLAR VALUE: $1.26M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: During Operation Desert Storm, a long build up time, pipe lines to depots, and a short conflict insured enough turbine engines were available to replace battle damaged engines and meet sortie demands. In future conflicts, rapid deployment and long pipe lines will greatly reduce depot support and the availability of replacement engines. In turn, aircraft will be grounded and sortie rates missed. To maintain an effective Air Force, simple, fast, and effective means are needed to assess and repair battle damaged engines at the organizational level. The objective is to exploit current technologies with the Aircraft Battle Damage Repair (ABDR) requirements to rapidly return battle damaged turbine engines to a usable status at the operational level.

TECHNICAL APPROACH: The approach is to establish engine operational requirements, establish level of damage to be repaired, evaluate assessment tools and methods, investigate repair materials, develop repair concepts, integrate into an assessment and repair procedure, and field evaluate and test. Users such as AFMC, ACC, and AMC ABDR units will be involved in the development and evaluation. Product oriented results will be documented and transitioned.

PAYOFF: The product will be a transitionable ABDR procedure with state-of-the-art tools, materials, training aids, and supporting technical data. The payoff will be the capability to return battle damaged engines to a useable status in time to enable aircraft to be made mission capable and meet sortie demands.

ACQUISITION INFORMATION:

ESTIMATED RFP RELEASE DATE: April 1996

ESTIMATED CONTRACT AWARD DATE: August 1996

SIC CODE: 8731

CONTRACT TYPE AND DURATION: CPFF, 27 months

BUYING ACTIVITY: WL/ML

TITLE: Economic Carbon-Carbon

PROGRAM MANAGER: K.M. Kearns, WL/MLBC, (513) 255-3670

ESTIMATED DOLLAR VALUE: $2.2M

PROGRAM DESCRIPTION:

OBJECTIVE: To generate new carbon-carbon concepts, materials, and processing approaches which will provide lower cost and shorter time to manufacture carbon composites realizing a substantial advancement over state-of-the-art materials and to look at new fibers and/or matrices that will allow for lower composite costs as well as the processing techniques to produce the composite in half the current manufacturing times.

TECHNICAL APPROACH: The effort shall include the study of novel approaches for decreasing the cost and time to manufacture carbon-carbon composites. Available fiber and matrix materials will be examined to determine their effectiveness in producing a lower cost carbon-carbon. These materials will be used in new processes to increase the char yield during carbonization to eliminate or minimize the need for any further densification of the composite. As the program develops, meetings will be held in order to bring together the contractor, govern-ment in-house research investigators, and other Air Force contractors to review and critique the progress and direction of the effort. The data and conclusions generated from this program will be correlated by the Materials Directorate and disseminated to the DoD materials research com-munity through technical reports and seminars. Major milestones are: (a) FY97, selection of fibers and matrices to examine for reduced cost; (b) FY98, develop processing techniques to produce low cost composite; and (c) FY99, refine processing methodologies and verification of reduced process time and reduced carbon-carbon cost.

QUANTITY: N/A

ESTIMATED PRDA RELEASE DATE: 26 April 1996

ESTIMATED CONTRACT AWARD DATE: 30 August 1996

CONTRACT TYPE AND DURATION: CPFF, 40 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Aging Reentry Materials Baseline Study

PROGRAM MANAGER: S. Schulman, WL/MLBC, (513) 255-9061

ESTIMATED DOLLAR VALUE: $1,550

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To conduct aging reentry vehicle thermal protection materials baseline studies to establish the existence and extent of any aging degradation problem. The results will provide guidance for all thermal protection materials programs. The thermal protection materials of interest consist of the heatshield, antenna window, adhesive bonds, and aft cover. The initial effort will focus on tapewrapped carbon-phenolic heatshield and adhesive bond materials.

TECHNICAL APPROACH: The principally experimental effort shall evaluate government-furnished, adhesively bonded heatshield frusta segments for any aging effects with emphasis on the degradative effects of moisture absorption and extended residence on thermal and mechanical properties. Experimental and analytical techniques shall be applied to quantify aging and degrada-tive effects in terms of: (a) debonding, delamination, and related, including high resolution non-destructive evaluation and (b) changes in density, moisture content, interlaminar shear strength, phenolic resin characteristics, thermal conductivity and expansion, volatiles content, etc., including moisture diffusivity and permeability measurements. Subject to resources, an evaluation shall be made of aging effects on ablative performance, insulative ability, and char quality for government-furnished, pre-/post-test models and test data. Timely initiation of this effort, data generation, and definition of an aging reentry materials effects baseline is of vital importance in effectively impact-ing the planning, funding levels, and technical activities for other programs. As the effort develops, timely meetings shall be held to bring together the contractor, other DoD contractors, the Silo-Based ICBM SPO, and other DoD agencies to review and critique the progress and direction of the effort, including the rapid response transition of data to the SB ICBM SPO to determine system implications. The data and conclusions generated from this program will be correlated by the Materials Directorate and disseminated to the SB ICBM SPO and DoD materials research community through timely working group meetings and technical reports. Major milestones are: (a) FY96, evaluation of materials aging and property degradative effects and (b) FY97, generation of an aging reentry materials effects baseline for future materials R&D and ICBM RV systems guidance.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 15 October 1996

ESTIMATED CONTRACT AWARD DATE: 15 February 1996

CONTRACT TYPE AND DURATION: CPFF, 24 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Synthesis of Intermediates Required for Polymer Compositions

PROGRAM MANAGER: Marilyn R. Unroe, WL/MLBP, (513) 255-9145

ESTIMATED DOLLAR VALUE: $694,000

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To conduct the synthesis of various classes of specialized and complex chemical compounds to be used as intermediates, monomers, and novel and unique polymers for evaluation in the Air Force nonmetallic materials program. The materials are to be prepared in high purity and in sufficient quantities for evaluation as improved candidates for high modulus materials with improved compressive properties. Precursor monomers for rigid-rod polymers and novel model compounds will also be prepared for exploration under the Air Force nonmetallic materials program in the area of opto-electronic transport properties such as nonlinear optics and conductivity.

TECHNICAL APPROACH: The preparative procedures empolyed in this technical effort shall be either improvements of established routes or, in some cases, may be newly developed procedures and methods of synthesis. A variety of unique chemical intermediates are required by means of complex and difficult scale-up of research synthesis techniques. Analytical techniques are required that provide the reliability of establishing the purity in excess of 99% for the synthesized compositions of matter.

QUANTITY: 1

ESTIMATED RELEASE DATE: 15 December 1995

ESTIMATED CONTRACT AWARD DATE: 1 July 1996

CONTRACT TYPE AND DURATION: Time/materials; 54 months, technical; 5 months, final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Polymer Degradation

ESTIMATED DOLLAR VALUE: $203,000

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To analyze new polymers of interests to the Air Force using state-of-the-art TG-MS (thermogravimetry-mass spectroscopy) instrument.

TECHNICAL APPROACH: This program involves the use of TG-MS instrument to study the volatile product evolution which results from the heating of the polymers under reduced pressure. The materials to be studied include thermoset resins, thermoplastics, organosilicon, ceramics, ordered polymers, molecular composites, and all new polymers of vital importance to the Air Force polymer research and development programs. The data obtained shall be analyzed to identify the type of volatiles evolved and their origins during polymerization, curing, and degradation of such materials. Major milestones are: FY96, TG/MS analyses of 30 research samples; FY97, TG/MS analyses of 30 research samples; FY98, TG/MS analyses of 35 research samples; FY99, TG/MS analyses of 25 research samples.

QUANTITY: 1

ESTIMATED RELEASE DATE: 18 May 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: CPFF, 48 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Low Energy Cure Resin Development

PROGRAM MANAGER: T. Benson Tolle, WL/MLBC, (513) 255-9065

ESTIMATED DOLLAR VALUE: $635,000

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To develop and demonstrate polymeric composite materials which process at low temperatures and pressures and have properties comparable to conventional aerospace epoxies. The Low Cost Composite Processing program has demonstrated that the reduction of non-recurring costs (tooling) through the use of low temperature/low pressure processing resins can drastically reduce the cost of applying composites to military structural applications. Although feasibility has been demonstrated with existing resins, insufficient materials development has resulted in the existing resins having lower than desired properties. A resin that can process at the lower temperature and pressure yet retain properties comparable to conventional aerospace epoxies is required to successfully transition this affordable approach.

TECHNICAL APPROACH: The effort shall initially screen existing and modified resins for the potential of curing under low temperature and pressures. Key mechanical and physical properties of interest will be characterized. After the most promising candidates have been identified, the materials will be further modified in an effort to meet requirements of interest for structural applications. Mechanical and physical property targets will be defined. Processing studies will be performed and prepreg characterized.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 March 1996

ESTIMATED CONTRACT AWARD DATE: 1 July 1996

CONTRACT TYPE AND DURATION: CPFF, 38 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Thermal-Structural Materials Solutions for Spacecraft

PROGRAM MANAGER: John P. Mistretta, WL/MLBC, (513) 255-9059

ESTIMATED DOLLAR VALUE: $1.55M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop and demonstrate affordable lightweight polymeric composite materials that meet spacecraft structural and thermal requirements. Spacecraft are continually placing thermal demands on structural materials as higher densities of electronics are sought. This program will provide payoffs in lower weight and decreased complexity through the minimization or elimination of the use of heat pipes or other costly thermal management approaches and allow the weight savings offered by polymeric composites to be taken advantage of in structures that require thermal conductivity.

TECHNICAL APPROACH: Thermal conductivity requirements of spacecraft structures, such as equipment panels, will be defined based upon current and projected spacecraft designs. Current systems as well as other government programs will be used to define the requirements. Innovative material options will be explored to provide polymeric composite materials which are capable of providing the strength and stiffness required as well as the thermal conductivity. Mechanical, thermal, and other evaluations will be conducted to define and optimize material performance. Additionally, robust processing will be developed and producibility issues such as joining will be addressed. These evaluations will be based upon existing, well-standardized, reliable, and verified test methods. Demonstration of the performance and benefits of the developed material will be performed against baseline stat-of-the-art materials. The key milestones of this program are: FY95, assessment of spacecraft thermal and structural requirements; FY96, completion of thermal and mechanical property evaluation; FY97, evaluation and demonstration of performance and processing and data dissemination to government and industry.

QUANTITY: 1

ESTIMATED RELEASE DATE: October 1994

ESTIMATED CONTRACT AWARD DATE: June 1995

CONTRACT TYPE AND DURATION: CPFF, 34 months (Additional proposal purchase from FY95 PRDA)

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Space Materials & Processes Dem/Val

PROGRAM MANAGER: E. Shinn, WL/MLBC, (513) 255-9062

ESTIMATED DOLLAR VALUE: $1.61M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To demonstrate and validate the application of state-of-the-art materials & processes for use in USAF space systems. This program will demonstrate /validate the integration, assembly and materials interface properties for prototype space hardware. Generic prototypes that represent electro-optical subcomponents, thermal management subcomponents, communications subcomponents and structural elements are to be used to demonstrate/validate the material combinations and resulting performance property improvements.

TECHNICAL APPROACH: Current space systems will be used to define the requirements and the goal will be to match or improve those requirements while minimizing the hardware interconnects and interfaces. Current space components (subsystems) have complicated assembly and integration due to the many interfaces of dissimilar materials. The past five years have provided new and improved materials (such as thermal control coatings, lubricants, optical coatings, detectors, advanced composites) which require demonstration and validation of their properties after integration into functional hardware.

The bidder will be asked to propose a generic prototype representative of real hardware and will be evlauated on the rationale for that selection and the cost, weight and performance benefits to the USAF. Extensive testing will be required to validate the performance of the chosen prototype in the intended space environment.

The data and conclusions from this program will be correlated by the Materials Directorate and disseminated to the space acquisition community and industry through design reviews, technical reports and briefings. Major milestones are: (a) FY96 - material properties identified (goals established); (b) FY97 - Prototype design, materials and process selection and Test plan developed; (c) prototype fabrication complete; (d) FY98 - validation (testing) of prototype and transition (includes lessons learned).

QUANTITY: 1

ESTIMATED PRDA RELEASE DATE: August 1996

ESTIMATED CONTRACT AWARD DATE: January 1997

CONTRACT TYPE AND DURATION: CPFF, 36 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: R & D On Advanced Nonstructural Materials

PROGRAM MANAGER: Kent J. Eisentraut, WL/MLBT, (513) 255-4860

ESTIMATED DOLLAR VALUE: $9.6M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To develop the nonstructural materials technology base critical to achieving operational improvements over current fluids, liquid and solid lubricants, paints, thermal and tribological coatings, sealing systems and other nonstructural materials for aircraft and/or spacecraft systems.

TECHNICAL APPROACH: Chemical synthesis, nonstructural materials characterization, surface analysis, computational chemistry, molecular and tribological modeling of new fluids, lubricants, coatings, additives, sealing materials and other nonstructural materials shall be conducted in order to meet the requirements for improved operational capability of current and future advanced aerospace systems. Candidate lubricant materials to be investigated include synthetic hydrocarbon esters, polyphenylethers, silahydrocarbons, perfluoropolyalkylethers and others having the potential to improve operational performance of current and future systems by increasing the temperature range of operation and/or use lifetime over existing materials. Thin solid film technology studies shall be conducted using pulsed laser deposition and other techniques to evaluate the tribological (friction, wear, film adhesion, etc.) properties of candidate hard coatings and lubricious materials. Techniques such as Raman spectroscopy, Fourier transform infrared spectroscopy, X-ray photoelectron spectroscopy, etc. will be employed to determine the tribological properties of these materials. Thermal control and other improved spacecraft coatings shall be evaluated in a space-simulated environment. Aircraft coatings studies are directed at investigation of degradations mechanisms and corrosion protection treatments. The key milestones of this program are: the successful development of a high temperature gas turbine lubricant basestock (FY97), the successful development of performance improving additives (FY98), high temperature formulated turbine oil lubricant and sealing system (FY99), high temperature solid lubricant (FY00), improved spacecraft thermal control coatings (FY01), and successful development of environmentally benign surface treatments for corrosion prevention of aging aircraft (FY01).

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: February 1996

ESTIMATED CONTRACT AWARD DATE: June 1996

CONTRACT TYPE AND DURATION: IDIQ, 55 month technical effort & 5 month for final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Life Prediction of Seals

PROGRAM MANAGER: William M. Warner, WL/MLBT, (513) 255-9016

ESTIMATED DOLLAR VALUE: $200K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To develop a method for the life prediction of elastomer seals in actual service using easily measured physical and mechanical properties of the seals.

TECHNICAL APPROACH: Develop new computational methods or modify existing methods to correlate the ititial physical and mechanical properties of military specification elastomeric seals with a predicted service life in hydraulic fluid and fuel sealing systems. Test the accuracy of the developed method using known high leakage and low leakage seals and optimize or develop further. Develop an aircraft seal life data base to compare actual service life to life predicted by the optimized method.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: January 1996

ESTIMATED CONTRACT AWARD DATE: May 1996

CONTRACT TYPE AND DURATION: CPFF, 18 months technical effort & 5 months for final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: MS Development II

PROGRAM MANAGER: Howard W. Brown, WL/MLBT, (513) 255-9035

ESTIMATED DOLLAR VALUE: $550K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop technology to reduce the reflectance of aircraft canopies. This visual "glint" phenomia increases the risk of detection and must be suppressed. A previous development program yielded good results in an unoptimized MS, but did not solve all the problems associated with production of an optimized MS. This program will produce an optimized MS.

TECHNICAL APPROACH: The program will address technical problems identified in contract F33615-90-C-5953, and will improve the performance of low-reflectant, transparent materials. Proof of concept will be demonstrated by fabricating and testing several small samples employing the improved tecnology. An assessment will be made of the ease and cost of scaling-up the technology for application to large curved surface areas (full-size canopies).

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 31 January 1996

ESTIMATED CONTRACT AWARD DATE: 31 May 1996

CONTRACT TYPE AND DURATION: CPPF, 18 months technical effort and five months for the final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Mechanisms and Metrics of Aircraft Coatings

PROGRAM MANAGER: Howard W. Brown, WL/MLBT, (513) 255-9035

ESTIMATED DOLLAR VALUE: $775K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Establish physical performance requirements and define metrics of aircraft coatings through an understanding of functional mechanisms of coatings.

TECHNICAL APPROACH: The program will consist of seven tasks. Task 1 - Define performance requirements of aircraft coatings and the environmental conditions that these coatings will be subjected. Task 2 - Determine how the performance requirements interrelate and the relative importance of each. Task 3 - Determine what material properties affect the performance requirements, and how these material properties relate to the performance requirements. Task 4 -Evaluate material properties of existing and novel aircraft coatings using established testing methods and/or new testing methods. Task 5 - Test coatings to verify the relationship between material properties and performance requirements. Task 6 - Develop the metrics to evaluate aircraft coatings incorporating the knowledge and data generated in tasks 1-5. Task 7 - Deliver the metrics for procuring new aircraft coatings using data generated by inexpensive laboratory tests. As the program develops, meetings will be held in order to bring together the contractor, government in-house research investigators, and other Air Force contractors to review and analyze the progress and direction of the effort. The data and conclusions generated from this program will be correlated by the Materials Directorate and disseminated to the DoD materials research community through technical reports and seminars.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 30 March 1996

ESTIMATED CONTRACT AWARD DATE: 17 June 1996

CONTRACT TYPE AND DURATION: CPFF, 60 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: High Velocity Thermal Sprayed Aircraft Coatings

PROGRAM MANAGER: Mike J. Halliwell, WL/MLBT, (513) 255-3877

ESTIMATED DOLLAR VALUE: $1.29M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To provide a High Velocity Thermal Spray (HVTS) process method, powder materials and technology to improve aircraft Low Observables (LO) coatings performance, through an increased selection of coating resin materials and to increase environmental acceptability of all aircraft coatings through elimination of Volatile Organic Compounds (VOC's) and Hazardous Air Pollutants (HAP's) use to apply current coatings. Infrared signature reduction is an integral part of Low Observables technology. Coatings are required to reduce the airframe contribution to the total infrared signature. Eliminating the volatile organic solvents is a Air Force Goal.

TECHNICAL APPROACH: Develop and optimize HVTS equipment and coatings that will provide the desired elimination of organic solvents for application and provide improvements in overall coating system performance. HVTS equipment will be optimized for field compatibility. Coating materials including polymer, pigment and additives composition, cross-linking chemistry, morphology and size will be selected and optimized to provide the best combination of properties. Coating will be optimized for the best combination of properties including adhesion, solvent resistance and rain erosion durability. Non-chromate corrosion inhibiting coatings primers as well as topcoats will be developed.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: February 1996

ESTIMATED CONTRACT AWARD DATE: June 1996

CONTRACT TYPE AND DURATION: CPFF, 20 month technical effort & 5 month for final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Materials Development Research

PROGRAM MANAGER: Capt John Farraro, WL/MLLM, (513) 255-1379

ESTIMATED DOLLAR VALUE: $13.5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The overall objective of this on-site research effort is to advance the technological base for the development of usable high temperature materials and cost efficient processing methods. This effort will include exploratory research on high temperature materials including intermetallics, metallic-matrix composites, and ceramic-matrix composites. These materials are aimed for advanced turbine engine applications and structures for hypersonic vehicles.

TECHNICAL APPROACH: This effort will provide support and insight to in-house research investigations such as processing/microstructure/property correlation's on high temperature materials. This effort will include work such as material fabrication, thermo-mechanical processing, heat treating, phase analysis, mechanical testing, and microstructure/property evaluation. These tasks will be accomplished primarily within in-house laboratories, however, materials and services from outside organizations may be necessary where appropriate. Additionally, this effort will include research on computational material science and nano-structures. Furthermore, this effort will provide expertise in the design, fabrication, and maintenance of laboratory instrumentation and test fixtures and in maintaining multiple-user laboratories at 'state-of-the-art' levels.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 May 1996

ESTIMATED CONTRACT AWARD DATE: 3 September 1996

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 53 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Mechanical Behavior of Advanced Aerospace Materials

PROGRAM MANAGER: Jay R. Jira, WL/MLLN, (513) 255-1358

ESTIMATED DOLLAR VALUE: $1.2M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To develop and demonstrate a methodology for predicting the high-cycle fatigue life of gas turbine engine blade materials containing defects of either intrinsic or extrinsic origin using threshold fracture mechanics concepts.

TECHNICAL APPROACH: The following technical issues will be investigated: (a) the determination of unique values for threshold stress intensity; (b) the measurement of closure; (c) the effects of stress ratio; (d) the interactive effects of low- and high-cycle fatigue; (e) the initiation of cracks from small flaws; and (f) the growth characteristics of small cracks. The approach includes the development and verification of a life prediction methodology by using the unique experimental capability in WL/MLLN to: (i) conduct high-cycle fatigue tests in the kilohertz regime using specialized apparatus incorporating electromagnetic shakers; (ii) measure the growth of very small cracks using laser interferemetric displacement gages (IDG); (iii) to document crack initiation and growth using microscopic photography; and (iv) conduct threshold fatigue crack growth tests and measure crack closure loads under fully automated test conditions. Experiments will be conducted on two material systems, i.e. alpha-beta titanium alloys (Ti-6Al-4V) and single crystal nickel-base superalloys. The development and demonstration of a methodology for predicting the HCF life of blade materials will provide design engineers with a tool to more accurately predict failure in gas turbine engine blade materials, optimize blade designs to more fully utilize a material's mechanical properties, and extend the maintenance-free life of Air Force gas turbine engines. Potential payoffs include decreased failure rates, improved system safety, reduced maintenance and spare parts cost, and reduced system weight.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 September 1995

ESTIMATED CONTRACT AWARD DATE: 30 November 1995

CONTRACT TYPE AND DURATION: Contract Modification, 24 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Isotropic Al-Li Wrought Products

PROGRAM MANAGER: Jim Morgan, WL/MLLM, (513) 255-9835

ESTIMATED DOLLAR VALUE: $300K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to use the technology developed on the Isotropic Al-Li program to scale-up the ingot size of Al-Li ingots to full production size and to produce and evaluate large plates typical of spacelift applications.

TECHNICAL APPROACH: Full production size (15,000 lb.) ingots of the alloy developed under the current Isotropic Al-Li program will be cast. The processing methodology also developed under the current program will be used to produce plate products for spacelift applications. Mechanical property testing of the plates will be conducted to determine the degree of isotropy. Cryogenic testing, welding studies, and corrosion testing will be conducted as determined by spacelift product specifications. The applicability of the products produced for spacelift applications will be determined.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 30 October 1995

ESTIMATED CONTRACT AWARDS DATE: 1 February 1996

CONTRACT TYPE AND DURATION: Contract Modification, 18 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Corrosion Effect Prediction on Structural Life

PROGRAM MANAGER: Michael Church, WL/MLLM, (513) 255-1306

ESTIMATED DOLLAR VALUE: $170K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Determine if available aircraft (fleet) histories when combined with empirical fatigue/corrosion data and analytical damage growth prediction technologies are sufficient to accurately calculate inspection intervals, economic life or safe life of aircraft (fleet). Identify a plan to develop a prediction methodology.

TECHNICAL APPROACH: Current AF maintenance program and basing history information shall be reviewed to determine if the information contained therein is sufficient for developing a predictive model/methodology for structural lives and inspection intervals. The contractor shall review and critically evaluate research efforts on aircraft corrosion initiation and growth of corrosion damage, corrosion-accelerated fatigue cracking, MDCS, airbase corrosion severity indices, and relationships between environment/materials (common AF aircraft metals, coatings and sealants), and corrosion damage in aircraft structures. The contractor shall prepare a technical report to provide a comprehensive review and technical assessment of available fleet information and it's adequacy for the basis of a model. The report shall make recommendation on how a corrosion predictive model can be included in the AF maintenance scheduling decision logic. The contractor shall determine the viability of developing better corrosion predictive technology in terms of material characterization and environmental factors. The prediction process shall be able to determine the growth of corrosion damage and the critical damage state for inspection and repair. The predicting method shall be able to determine the critical damage state for detection and repair. The contractor shall devise a scheme to correlate results to actual service corrosion using representative airframe sections.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 30 October 1995

ESTIMATED CONTRACT AWARD DATE: 1 February 1996

CONTRACT TYPE AND DURATION: Contract Modification, 9 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Advanced Metallics for Increased Rocket Propulsion Performance

PROGRAM MANAGER: Steve Schwenker, WL/MLLM, (513) 255-1299

ESTIMATED DOLLAR VALUE: $1.47M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to increase the performance of current and future specialist systems through the use of high strength, low weight, creep resistant metallic materials. Successful achievement of this objective will provide a new family of metallics with improved properties that will enable a significant increase in specific thrust and payload capacity.

TECHNICAL APPROACH: This effort will build on a study currently being conducted to evaluate all recently developed and near-production qualified materials for use in the extremely aggressive environment of rocket engines. The results of the current study will be used as the basis for a more detailed evaluation, which will consider materials compatibility from the perspective of temperature, chemistry, stress and combinations of these parameters. The recommended material application will be further evaluated in a testing phase that will identify any material limitations. This will be followed by a material optimization phase where alloying and process modification will tailor the mechanical properties for specific rocket engine applications.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 5 February 1996

ESTIMATED CONTRACT AWARD DATE: 1 June 1996

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 5 years

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Materials Processing Research and Development

PROGRAM MANAGER: William T. O'Hara, WL/MLLN, (513) 255-1995

ESTIMATED DOLLAR VALUE: $3.65M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To establish the processing conditions required to control microstructure and the mechanical properties of aerospace materials. These materials will include high temperature metal and intermetallic alloys, high temperature composites, and other structural materials

TECHNICAL APPROACH: Material behavior models will be developed to address constitutive, fracture, and phase transformation behavior. To this end, materials of different compositions and starting configurations will be studied using a variety of conventional processes (e.g., heat treatment, extrusion, forging, rolling, casting, and hot pressing) under both simulative laboratory and pilot-plant conditions. The material behavior models will be incorporated into finite element codes or closed form analytical models to study deformation, powder consolidation, solidification, or other processes for the manufacture of high temperature materials. Numerical or analytical results will be verified by physical modeling methods. In addition, novel processes to enhance microstructure control, avoid fracture, or reduce cost shall be investigated. Special attention shall be focussed on processes which are particularly robust. Furthermore, property data will be obtained, and the relationships among microstructure, processing conditions, and mechanical properties will be determined. The output of this work shall form the basis for a scientific understanding of materials behavior under processing conditions and the application of this understanding to the design of laboratory and production-scale processes.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 4 December 1996

ESTIMATED CONTRACT AWARD DATE: 1 September 1996

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 48 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: High Temperature Coatings for Advanced Intermetallic Alloys

PROGRAM MANAGER: Capt John Farraro, WL/MLLM, (513) 255-1379

ESTIMATED DOLLAR VALUE: $1.18M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop suitable coatings for advanced intermetallic alloys. The program will use information gained from previous advanced intermetallic program and select at least one promising alloy. This alloy will be a silicide based intermetallic alloy to which a coating system will be designed to protect. Improvements in gas turbine engine performance and the development of hypersonic vehicles depend, in part, on lower density turbine materials with high temperature capability such as the advanced intermetallics.

TECHNICAL APPROACH: This program will develop and evaluate possible coatings that would be compatible with the silicide based intermetallics. Coating adhesion and stability in an engine environment will be evaluated. Mechanical property tests of coated specimens will be conducted to evaluate the effect of coatings on mechanical properties. This program will use advanced intermetallic alloys developed from on-going Air Force in-house research (WUD-55) and contractual efforts for selection of an appropriate state-of-the-art alloy to develop appropriate coatings. These programs include: 'Advanced Intermetallic Research' and 'Intermetallic Composite Alloy Development'

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 May 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 42 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Rocket Propulsion Applications for Ceramic Matrix Composites

PROGRAM MANAGER: Allan P. Katz, WL/MLLN, (513) 255-9824

ESTIMATED DOLLAR VALUE: $1.04M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The goal of this program is to identify and develop structural ceramics for application in advanced liquid rocket engines. Utilization of high temperature materials such as ceramic is deemed essential to these future engines. This is particularly true if the goals of the new Integrated High Payoff Rocket Propulsion Technology (IHPRPT) Initiative are to be met. This joint government/rocket-engine-industry undertaking seeks to achieve significant improvements in engine component performance, reliability, operations, and service life. The subject program aims to help achieve IHPRPT objectives for liquid rocket engines.

TECHNICAL APPROACH: The first phase of this effort will determine the life limiting behavior of selected ceramic materials deemed candidates for turbomachinery and/or combustion device application in advanced liquid rocket engines. Specific component(s) to be considered will be selected by the Air Force. Candidate materials will be evaluated under conditions simulating as best possible those to be encountered by the components(s) in the rocket engine environment. The second phase of the program will address materials and process development improvements for at least one promising material, as needed to enhance the likelihood of future transition to successful component demonstration. The development activities will be undertaken in an iterative fashion, directed at refinements needed for improved performance and fabricability. It is expected that this effort will provide the foundation for successful prototyping and component demonstration efforts anticipated in future Air Force programs.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 30 October 1994

ESTIMATED CONTRACT AWARD DATE: 30 April 1995

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 42 Months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Orthorhombic Titanium Aluminide Composite Processing Optimization

PROGRAM MANAGER: Katherine A. Stevens, WL/MLLM, (513) 255-1348

ESTIMATED DOLLAR VALUE: $1.04M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Develop expertise to reliably produce high quality continuously-reinforced orthorhombic titanium aluminide matrix composites (O-TMC).

TECHNICAL APPROACH: Utilizing results from the parallel matrix processing optimization program, O-TMC cooperative research efforts, and titanium matrix composite industrial base development under Titanium Matrix Composite Turbine Engine Component Consortium (TMCTECC), evaluate competing composite methods. Develop proper input material specifications and consolidation process parameters, schedules, and controls for reproducibly manufacturing high quality composites. Fabricate composites via optimized route. Perform mechanical property verification tests.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 5 April 1996

ESTIMATED CONTRACT AWARD DATE: 1 September 1996

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 3 1/2 years

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Materials for Electronic and Optical Devices

PROGRAM MANAGER: David W. Fischer, WL/MLPO, (513) 255-4474, x3220

ESTIMATED DOLLAR VALUE: $9.85M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to complement on-going inhouse research programs in fabrication, growth, and processing of semiconductor materials (both layered heterostructures and bulk materials), nonlinear optical materials, and high temperature superconducting materials by developing, improving, and performing specific research tasks (transport, optical, surface, and interface properties) for which inhouse expertise is not available. This research is required to develop higher quality electronics and optical materials needed for a wide range of ultra-high speed digital electronic, analog (microwave/millimeter wave), infrared detector, opto-electronic and nonlinear device applications. Definite improvements are needed in control of materials parameters such as dopant, impurity, and defect concentrations, thickness and homogeneity of epi-layers, and depth and profile of implanted regions. A better understanding of how these material parameters affect performance characteristics such as detectivity, responsitivity, power consumption, electronic speed, radiation hardness, high temperature capabilities, etc., is also required. The payoff will be improved electronic and optical materials for a wide range of applications such as advanced electronics, radar and communication systems, space surveillance systems, ultra-fast computers, and high temperature missile and aircraft electronics.

TECHNICAL APPROACH: This program shall involve on-site research to grow and process materials and to perform and evaluate experimental measurements using techniques such as photoluminescence, deep level transient spectroscopy, secondary ion mass spectroscopy, Auger electron spectroscopy, scanning electron microscopy, and magnetic susceptibility. Experimental results will be correlated with various parameters such as growth conditions and material properties. Theoretical models will be developed to guide experimental work. Major milestones are: Dec. 1996 - Preliminary theoretical model of specific heterostructure detector developed; Feb. 1998 - wide variety of heterostructure and wide bandgap materials analyzed and characterized; March 1999 - Optimum growth conditions for heterostructure materials established.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 October 1995

ESTIMATED CONTRACT AWARD DATE: 15 February 1996

CONTRACT TYPE AND DURATION: CR, 55 months technical effort and 5 months for final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Defect Reduction for MCT Detector Materials

PROGRAM MANAGER: L. E. Brown, WL/MLPO, (513) 255-4474 ext. 3237

ESTIMATED DOLLAR VALUE: $1.2M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of the program is to identify the defect structure(s) inherent in current mercury cadmium telluride (MCT) long wave infrared (LWIR) materials that limit the detector performance at lower than 65K operating temperatures, and reduce the defect structure as necessary to provide high performance detector arrays. It has been demonstrated that LWIR materials are tunneling limited regime at lower than 65K operation. There are several identified sensor systems that would best operate at these temperatures. Available data indicates that a reduction in defects by a factor of ten would overcome the performance limitations prevalent at these operating temperatures. This is a high payoff program for low background space applications. Current technology has limited performance in the low background regime. This performance shortfall has been traced to the defect structure of the detector material. Successful completion of the program will be enabling for this application. Users include both the Air Force and BMDO.

TECHNICAL APPROACH: Identification of the source of defects, types of defect, electrical characteristics of those defects and the optical characteristics of those defects are necessary for their elimination. It is known that some defects in MCT are mutually enhancing; i.e., the effect of the sum of two defects is greater than the effect of each of the defects. This program is designed to identify the source of defects both theoretically and experimentally, evaluate the impact of said defects on the electrical and optical characteristics of the detector materials, and eliminate those defects that affect performance characteristics. Milestones include the expansion of existing models of the crystal structure of MCT throughout the program, the identification of performance limiting material defects by January 96, elimination of performance limiting material defects by June 97, and the demonstration of FPA's capable of meeting the performance specifications of space based low background applications by the end of FY98. This is the third award on PRDA solicitation 93-08-MLKN.

QUANTITY: 1

ESTIMATED PRDA RELEASE DATE: 1 January 1993

ESTIMATED CONTRACT AWARD DATE: 30 October 1995

CONTRACT TYPE AND DURATION: CPFF, 36 mo. tech effort, 5 mo. final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: EO Polymers for Space Communications: Evaluation

PROGRAM MANAGER: J.S. Zetts, WL/MLPO, (513) 255-4474 x3212

ESTIMATED DOLLAR VALUE: $500K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Organic and polymeric films make possible high-speed data links and interconnects (>100GHz) required for several future AF systems such as for satellite-to-satellite communications. They also offer very small dielectric constants (<3.5 versus ~30 for $LiNbO_3$), ease of fabrication for devices (spin-on coatings), and compatibility with semiconductor substrates. The objective of this effort is to determine the long-term aging effects on electro-optic (EO) polymer and organic films in a space environment.

TECHNICAL APPROACH: The contractual effort shall consist of a study of the properties of EO polymers subjected to the adverse conditions of a space environment. Several current state-of-the-art EO polymer systems shall be exposed to simulated space conditions such as radiation (UV through gamma rays), atomic oxygen, vacuum and ultracold temperatures for prolonged periods of time. The effect of each of these factors on the performance (EO coefficient, optical loss, physical integrity) of the EO polymers shall be investigated and a performance baseline determined. Novel approaches for mitigating the detrimental aging effects of these adverse exposures will also be investigated. As the program develops, meetings will be held in order to bring together the contractor, government in-house research investigators, and other Air Force contractors to review and critique the progress and direction of the effort. The data and conclusions generated from this program will be correlated by the Materials Directorate and disseminated to the DoD materials research community through technical reports and seminars. Major milestones are: (a) FY97 - Determination of physical degradation of polymer systems caused by prolonged exposure to space conditions and (b) FY98 - Identification of physical degradation mechanisms in polymer systems caused by exposure to space conditions.

QUANTITY: 1

ESTIMATED PRDA RELEASE DATE: 1 November 1995

ESTIMATED CONTRACT AWARD DATE: 31 March 1996

CONTRACT TYPE AND DURATION: CPFF, 28 months + 5 months for final report

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: F-117 Rain Protection

PROGRAM MANAGER: Eron S. Kelly, WL/MLPO, (513) 255-4474, X3184

ESTIMATED DOLLAR VALUE: $300K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To replace the current rain erosion screen on the F-117A Stealth Fighter with a more durable, and optically superior infrared (IR) transparency. The rain erosion system currently deployed by the F-117 is poor optically, and is constantly being replaced due to rain erosion. F-117 is interested in a new window system to reduce their down time and cut back on maintenance costs. This funding will be used as an add on to the existing contract, New Concepts in IR Transparency Protection (contract number F33615-94-C-5419). Critical features of this system would include a minimum transmission of 60% at 1.064 microns with a goal of 80%. Transmission in the long wave IR (7.6-11.5 microns) should be a minimum of 60% with a goal of 90%. The system shall withstand high subsonic rain impingement while mounted in the nose of an F-117A (57.5 degrees from vertical) for a minimum of 100 hours, with a goal of 300 hours. The F-117 relies heavily on IR imaging systems and IR guided munitions to fulfill its mission. Without effective rain erosion protection, the F-117 suffers a significant loss in capability. This program will provide F-117 with a much needed increase in capability while reducing maintenance.

TECHNICAL APPROACH: Develop and transition Rain Dispersive Mesh (RDM), a new material design , to solve the F-117 rain erosion problem and improve their all-weather capability. This RDM will not only demonstrate improved rain erosion protection, but it will also out-perform the current screen optically. A system that could retrofit the F-117 at the field level would be considered highly desirable. New, more durable optical mesh material, improved physical arrangement and optimized spatial placement from the IR sensor will be developed to meet program objectives.The RDM must also demonstrate improved life-cycle cost for the F-117A to transition. This cost savings will be derived from the higher durability of the system, replacement costs as well an increased mean time between failures. The program will culminate with a full scale prototype and a possible flight test with F-117. Milestones include: Jan 96 - demo current size; July 96 - complete small scale durability tests; Sep 96 - full optical characterization; Jul 97 - full scale prototype demonstration; Sep 97 - flight test

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: N/A

ESTIMATED CONTRACT AWARD DATE: Add-on to current contract, F33615-94-C-5419

CONTRACT TYPE AND DURATION: CPFF, 40 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Enhanced Sensor Modules

PROGRAM MANAGER: James Theodore, WL/MLPJ, (513) 255-3808 x3167

ESTIMATED DOLLAR VALUE: $3.25M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop laser-hardened optical modules for the LANTIRN and AC-130U Gunship Forward-Looking Infrared (FLIR) systems. These modules will allow efficient retrofit of the identified FLIR systems through form, fit and function replacements of existing sensor modules or by the addition of new modules which can be accommodated by the FLIR systems. These modules will contain advanced laser protection technologies which will significantly improve the survivability of the FLIR systems.

TECHNICAL APPROACH: This program will establish hardening goals based on mission profiles and threat projections. The protection devices will be fabricated from materials most capable of meeting the pulsed and continuous wave laser hardening goals. Hardening devices will then undergo a series of component level tests in the laboratory to evaluate their effectiveness. Following the component level tests, the hardened components will be integrated into retrofittable sensor modules and will undergo system level testing. Testing will be performed to determine device laser rejection efficiency and to characterize the performance of the resulting hardened FLIR sensor. Technology will be transitioned through technical reports, design and test data, and technical reviews with other DoD agencies, system program offices, and user commands in accordance with the Sensor Hardening Implementation Advanced Technology Demonstration (ATD) project. Major milestones are: (FY 96) establish hardening goals; identify hardening material system/architecture; fabricate and characterize hardening components; (FY97) fabricate and characterize hardened sensor modules; characterize hardened FLIR system performance.

QUANTITY: 1

ESTIMATED PRDA RELEASE DATE: 1 August 1995

ESTIMATED CONTRACT AWARD DATE: 1 February 1996

CONTRACT TYPE AND DURATION: CPFF, 24 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Advanced NDE for Corrosion

PROGRAM MANAGER: Freddy Mullins , WL/MLLP, (513) 255-9795

ESTIMATED DOLLAR VALUE: $760K

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Due to the stretch-out of new systems acquisition, the Air Force is being forced to extend the operational life of its aerospace weapon systems much longer that it has in the past, and to use systems significantly longer than their original design lifetimes. Nondestructive inspection plays a critical role in life extension, resulting in significantly increased inspection requirements, and the cost and quality of inspection is now a major concern. The objective of the Air Force NDI/E research and development program is to identify, develop, and transition innovative inspection methods and equipment that will reduce the operation and maintenance costs of aerospace weapon systems. This effort will focus on the detection of hidden corrosion at its initiation, allowing remediation efforts to be undertaken at the least expensive stage in the vehicle's life.

TECHNICAL APPROACH: Discussions with ALC NDI personnel, SPO's and developers of new materials have identified a number of areas where new or improved inspection techniques are currently required. The problem areas of interest include detection of hidden corrosion under paint, within multiple layered structures, in fuselage lap joints, around fasteners and on hidden surfaces under sealant.

A PRDA will be issued so that a variety of innovative technical approaches can be considered. These approaches will be significantly different from existing state-of-the-art inspection or evaluation methods, and will have the potential for a high payoff to offset the high technical risks involved. Advanced techniques will be developed to the point where they can be transitioned to other 6.2 or 6.3 follow-on programs. Special consideration will be given to inspection techniques which do not require environmentally harmful surface preparation agents.

Major milestones are: (a) FY98 - Demonstration of feasibility of an enhanced corrosion detection techniques ; and (b) FY99 - Assessment of the factors involved with inspection for widespread corrosion.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 May 1996

ESTIMATED CONTRACT / GRANT AWARD DATE: 1 September 1996

CONTRACT TYPE AND DURATION: CPFF, 2.5 Years

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Scanned Eddy Current Crack Detection

PROGRAM MANAGER: Charles Buynak, WL/MLLP, (513) 255-9795

ESTIMATED DOLLAR VALUE: $1.87M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Due to the stretch-out of new systems acquisition, the Air Force is being forced to extend the operational life of its aerospace weapon systems much longer that it has in the past, and to use systems significantly longer than their original design lifetimes. Nondestructive inspection plays a critical role in life extension and airframe structural integrity. The objective of the Air Force NDI/E advanced development program is to develop and transition demonstrated inspection methods and equipment that will reduce the operation and maintenance costs of aerospace weapon systems. This effort will focus on the detection of cracks as a critical element in the Airframe Structural Integrity Program being used to manage the Air Force fleet.

TECHNICAL APPROACH: Discussions with ALC NDI personnel, SPO's and ASC Technical Advisors have identified the need for detection of small, widespread cracks that may propagate to cause premature failure of airframe structures. These cracks characteristically propagate from fasteners and are either hidden under paint or under the fastener head. The need for finding very small cracks over a large area poses very difficult detection and automation problems to satisfy the requirement to increase sensitivity and reliability while increasing speed and decreasing cost. This effort will utilize technology from prior exploratory and advanced development efforts for provided enhancements in the use of eddy current to scan for hidden cracks. Technologies to be considered would include at least the Low Frequency Eddy Current Array and Mobile Automated Scanner developed under prior Air Force efforts. Probability of Detection (POD) determination for the developed systems will be an integral part of the effort, as will the limited validation of the equipment in the depot and field.

An RFP will be issued to focus on the key technical approaches. These approaches will flow directly from inspection methods for which feasibility has already been demonstrated and will have the potential for a high payoff to offset the technical risks involved. Advanced techniques will be developed to the point where they can be transitioned to use in the depot and/or field. Special consideration will be given to inspection techniques which do not require environmentally harmful surface preparation agents. Major milestones are: (a) FY98 - Demonstration of an enhanced crack detection techniques; and (b) FY99 - Assessment of the POD for inspection for widespread cracking.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 April 1996
ESTIMATED CONTRACT / GRANT AWARD DATE: 1 September 1996
CONTRACT TYPE AND DURATION: CPFF, 3 years

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: High Res RTR Evalution and Characterization

PROGRAM MANAGER: Charles Buynak, WL/MLLP, (513) 255-9807

ESTIMATED DOLLAR VALUE: $1.26M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To develop intelligent data analysis capabilities to assist the user of digital radiography at all levels. To develop a methodology optimally generate scan plans for inspection of complex aerospace components. Develop methodologies to permit data set merging, image enhancement and automatic feature recognition. Because there is a great deal of data generated with real time radiographic systems, advanced data management techniques will also be developed.

TECHNICAL APPROACH: The approach will be to design and build prototype real time radiographic instrumentation. This equipment will be optimized and merge with existing radioscopic instrumentation installed in Air Logistics Centers. Further, it will be refined for optimal scanning of representative components, automatic defect detection and archival and retrieval of inspection information generated by these systems.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: February 1996

ESTIMATED CONTRACT AWARD DATE: July 1996

CONTRACT TYPE AND DURATION: CPFF, 36 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: Enhanced Laser Generated Ultrasound

PROGRAM MANAGER: Curtis J. Fiedler, WL/MLLP, (513) 255-9797

ESTIMATED DOLLAR VALUE: $2.1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Laser Generated Ultrasound (LGU) has been demonstrated to be able to inspect complex composite parts significantly faster than conventional techniques. This capability has matures to the point where ALCÕs, such as SM-ALC are now procuring LGU systems. Because this is a very new technology there are enhancements which can be made to improve LGU systems. The objective of this system is to develop techniques to increase the speed, resolution and range of inspectable materials of LGU systems, using ALC systems to demonstrate these improvements.

TECHNICAL APPROACH: Potential Enhancements include:

1) Transition multiplexing to ALC level LGU system.
2) Develop a technique to transmit the laser beam which generates the ultrasound via fiber optics.
3) Assess lasers with increased pulse repetition rates to increase the speed of LGU.
4) Evaluate methods to increase the signal to noise ratio of ultrasound detected via interferometry.
5) Assess the ability of LGU to detect heat damage.

Major milestones will be: Transition multiplexing (4 MAC); Demo laser transmission via fiber optics (12 MAC); Evaluate increased pulse rate lasers (18 MAC); Evaluate enhancements for signal to noise ration improvement (20 MAC); Assess heat damage detection (24 MAC)

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1 December 1994

ESTIMATED CONTRACT AWARD DATE: 1 April 1995

CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee, 30 Months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/ML

TITLE: MIL-Handbook-5

PROGRAM MANAGER: Neal R. Ontko, WL/MLSE, (513) 255-5063

ESTIMATED DOLLAR VALUE: $2.14M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: To provide for planning, coordination, and the implementation activities necessary to maintain and improve Military Handbook-5 as the source for statistical design allowables and related design information needed for aerospace vehicles. This effort is to include an assessment of design data requirements and assist the Air Force in it's responsibility to keep pace with changes in those requirements and application of the development of design data and allowables. To initiate a new contract to phase in with the current MIL-HDBK-5 activity.

TECHNICAL APPROACH: MIL-HDBK-5 "Metallic Materials and Elements for Aerospace Vehicle Structures" contains standardized mechanical property design values and other related design information for metallic materials, fasteners and joints, as well as other structural elements used in aircraft, missiles, and space vehicles. As design concepts and structural materials have evolved, there have also been evolutionary changes in analysis procedures and presentation methods. The Air Force has the responsibility for maintaining and updating MIL-HDBK-5 in coordination with the Army, Navy, and FAA. The contractor will establish and continue a liaison with personnel in various DoD agencies, FAA, and NASA centers, Aerospace Companies, and Material Producers to establish a continuing perspective of design allowables, needs, and requirements. The contractor shall collect and maintain a running audit of data from open literature, information center files, government-sponsored research projects and industry. The results of this effort shall be the presentation of partial and complete revisions to MIL-HDBK-5 plus periodic technical reports on data analysis and achievements including: collection of data, statistical analysis of data to determine design allowable properties, and preparation of drafts which contain revisions to MIL-HDBK-5 for incorporation of new data. The contractor will present these drafts at twice-yearly Government-Industry coordination meetings for approval and prepare revisions of MIL-HDBK-5 to incorporate these approved changes as necessary.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 19 February 1996

ESTIMATED CONTRACT AWARD DATE: 17 June 1996

CONTRACT TYPE AND DURATION: CPFF, 60 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: WL/MNK

TITLE: Agent Defeat Payload Weaponization

PROGRAM MANAGER: Robert G. LeBeau, WL/MNMW, (904) 882-2141, Ext 2220

ESTIMATED DOLLAR VALUE: $1M-$5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The Agent Defeat Warhead Technology (ADWT) program, and other related programs, have produced kill mechanisms that have potential for success in defeating Chemical and Biological (CB) targets of interest. These mechanisms are presently being taken into proof of concept testing beyond a laboratory benchtop environment. WL/MN has 6.2 programs, both ongoing and beginning in FY96, that are considering numerous potential kill mechanisms. Together with efforts being funded by other Federal agencies, a wide range of near-term and far-term kill mechanisms, including incineration, deflagration, neutralization, radiation, genetic deformation, denial, and agglomeration, are being investigated. The specific objective of this program is to take successfully tested kill mechanisms and integrate them into an air-deliverable penetrating weapon capable of attacking hardened CB targets. This effort will address the issues associated with the integration of a proven kill mechanism with a penetrating weapon. Along with agent defeat, the weapon must minimize agent venting, thus minimizing collateral damage. The goal of this program is to develop and demonstrate technology compatible with existing air-to-surface weapon systems, suitable for both internal carriage by advanced aircraft featuring low observable technology, such as the F-117A, and B-2; and external carriage by conventional aircraft, such as the F-16, F-15E, and F/A-18. The payoff of this effort is a proven weapon technology base for defeating fixed hardened CB production and storage facilities.

TECHNICAL APPROACH: Given the technology to defeat the agents stored in hardened targets, the challenge of weaponization is to package selected kill mechanisms in a penetrating weapon that has the capability to: 1) guide itself to the selected target aimpoint, 2) penetrate existing soil/concrete over-structure, 3) detonate within the storage/production facility, 4) expose the threat agent, 5) dispense the kill mechanism, 6) neutralize the threat agent, and 7) minimize the collateral release of threat agent. FY96-FY99 funding will be used to integrate and test the weapon functions listed above. An integrating contractor will assess available guidance schemes, fuzing options, penetrator payload configurations, payload dispensing systems, and kill mechanism payloads available for demonstration in the FY00 timeframe. The most mature candidates will be integrated into a single weapon system and demonstrated in dynamic ground tests and sled tests against representative CB target test structures. Inputs will come from 6.2 and 6.3 efforts in the areas of Enhanced Penetrators, Smart Fuzes, Advanced Guidance, and Agent Defeat payload development. Inputs will also flow in from the Counterpro-liferation Initiative Advanced Concept Technology Demonstration and associated testing and technology demonstrations.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 39 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Advanced Gps Inertial Navigation Technology

PROGRAM MANAGER: Mr George E. Gibbs, Jr., WL/MNAG, (904) 882-5489, Ext. 3363

ESTIMATED DOLLAR VALUE: $1M-$5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The objective of this program is to develop an advanced tactical weapon guidance system that maintains high antijam capability (120 dB J/S) yet is smaller (100 cu in), lighter, and lower cost ($15K) and uses less power than its predecessor, the Tactical High Antijam GPS Guidance (THAGG) unit. The need we address is our warfighter's desire to obtain affordable and accurate weapon guidance. Incorporation of advanced technologies such as digital beam/null forming antenna electronics, lower cost inertial measurement units (IMU), newer direct P(Y)-code acquisition capability and differential GPS will help meet that need. These advancements could relax the need for terminal seekers in some guidance applications.

TECHNICAL APPROACH: After contract award, a 3 month requirements review will ensue (Jan 96 - Mar 96) to determine the proper design path to implement the advances. The design phase will cover an 18 month period (Apr 96 - Sep 97) with preliminary design presented after 9 months (Dec 96). Fabrication and integration (Oct 97 - Sep 98) and Laboratory acceptance testing of two brassboard units will be a 26 month option (Oct 98 - Nov 99) exercised after successful design completion. A second option will be exercised for field maintenance support of the two units during semi-dynamic tests on the Mobile Inertial Test System (MITS) at Eglin AFB (Dec 99 - Jun 00).

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 3rd Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 60 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Active Hard Target Smart Fuze

PROGRAM MANAGER: Danny Hayles, WL/MNMF, (904) 882-2005

ESTIMATED DOLLAR VALUE: $1M-$5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The overall objective of this program is to improve existing smart fuze designs to provide increased operational effectiveness of hard target munitions against hardened/buried targets through burst point control/ optimization. The program will develop and apply intelligent penetration fuzing to next generation hard target weapon concepts. A primary objective will be to achieve increased capability over the existing Hard Target Smart Fuze (HTSF) baseline while decreasing design complexity, miniaturizing the design where possible and decreasing cost. Fuze sensor fidelity and computational capability will both be increased to permit faster decision times with a higher probability of target/media detection. These advances will permit the use of autonomous decision making over a wide range of hard targets. Application of the technology to next generation hard target weapons will require alternate fuze mounting locations and methods and multiple outputs/functions of the fuze. Sensor and fuze operation data will be made available to an external transmitter interface so that the fuze can serve an additional role as a weapon borne sensor for use in Battle Damage Assessment. The fuze technology will be adapted to systems requiring application such as Multistage Penetrator, Boosted Penetrator, Advanced Unitary Penetrator, Agent Defeat Weapons, and Miniature Munition Technology (MMT). The increased capability coupled with miniaturization and reduced cost is critical to the development of the smaller weapon systems used as force multipliers. These smaller weapons will require increased burst point control to optimize the output of smaller warheads (e.g. 50 lbs of high explosive). Advances in the fuze state of the art and application to novel weapon concepts will additionally support the Counterproliferation Advanced Concept Technology Demonstrations (ACTD) during FY96-99.

TECHNICAL APPROACH: The Active Hard Target Smart Fuze will increase the current state of the art in penetration fuzing using the existing HTSF baseline and improving critical components, investigating a multiple piece-multiple function fuze capability, integrating of multiple sensors and increasing sensor fidelity achieved through nose mounted fuze/weapon designs. Algorithm technology will be enhanced to provide an autonomous fuze capability providing real-time target discrimination through media recognition. The program will decease fuze complexity while achieving a more reliable and robust design through the use of neural network processing, micro machined sensors and components, and combining circuitry functions through the use of Digital Signal Processing (DSP) chips and Multi-Chip Module packaging designs.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 33 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Advanced Munition Telemetry

PROGRAM MANAGER: Norman Coker, WL/MNSI, (904) 882-3160 Ext 3231

ESTIMATED DOLLAR VALUE: $250K-$1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Ongoing research in the Subminiature Telemetry program has yielded a telemetry instrumentation chip-set and packaging technology optimized primarily for testing airborne missiles with extreme miniaturization requirements. This technology will be expanded into munitions test to include 3 key objectives: (1) warhead characterization; (2) fuze characterization; (3) battle damage assessment. The existing subminiature telemetry component set and chip-on-board packaging technique must be modified to meet the extreme environment of munitions testing while reducing cost, a requirement necessary for operational deployment. This effort will satisfy a need that exists for live transmission of data during penetrator warhead and fuze testing to complement data recorders currently being employed. This work unit will also address sensor integration and selection issues as they directly impact component selection and data analyses.

TECHNICAL APPROACH: Critical areas of research are: (1) Multi-Chip Module construction techniques for survival and operation during high shock, acceleration and temperature; (2) component design to meet mission sensor and cost requirements; (3) sensor requirements for battle damage assessment and munitions (primarily penetrators) research. A contracted study will begin in FY96 to baseline requirements for component design and sensor selection. Requirements will feed from the Counter-Proliferation and Behavior of Explosives Under Penetrating Environments efforts in the Munitions Division. In-house research, begun in FY95, will continue through FY97 with the goal of statistically characterizing MCM construction techniques for fuzewell and warhead instrumentation systems. Development of a Battle Damage Assessment Telemeter for a hard target penetrator, also begun in FY95, will continue into FY97 with a demonstration on a BLU-109 equipped with the Hard Target Smart Fuze.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 3rd Qtr FY97

CONTRACT TYPE AND DURATION: TBD

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Computational Mechanics/ Bomb Case Fracture/Fragmentation Simulation Development

PROGRAM MANAGER: William Cook, WL/MNMW, (904) 882-8302, ext 3430

ESTIMATED DOLLAR VALUE: $250K-$1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The purpose of this effort is to develop a method for enhancing the capabilities of hydrocodes to predict bomb case failure, fracture and fragmentation during the penetration and detonation events. While current hydrocodes can predict case stresses and strains during penetration, they cannot accurately indicate when the penetrator would actually fail. An enhanced understanding of dynamic crack propagation phenomena is essential to this effort as well as material behavior at high strain rates. It is also desired to improve the ability of hydrocodes to predict the break-up of the case after detonation of the explosive has taken place. This work is related to that done in development of predictive capabilities of hydrocodes in the formation of explosively formed penetrators and shape charge jets; close cooperation will be achieved between the efforts as well as with related work at the DoE laboratories under Project Reliance. Needs to be addressed in this effort include dynamic fracture and fragmentation prediction and how that relates to improved ordnance design. The payoff to the Air Force consists of an improved ability to numerically predict warhead performance during hard target penetration and detonation; this will result in a greater understanding of penetrator design and more focused range testing.

TECHNICAL APPROACH:
Task I: Development of Failure, Fracture, and Fragmentation Criteria. Failure, fracture, and fragmentation theories of warhead case materials will be investigated and candidate criteria will be selected based on their applicability to hydrocodes. If current models are found to be deficient based on comparison with known test results, new models and criteria will be developed.
Task II: Hydrocode Modeling. The selected criteria will be coded by first developing specialized computer programs. The validated models will be coded into the EPIC hydrocode.
Task III: Code Verification and Validation. Results of numerical simulations will be compared against suitable designed range testing to be performed at the Advanced Weapons Experimentation Facility (AWEF) and at contractor facilities if necessary. The results of this work will lead to the improved capability of the EPIC hydrocode to model hard target weapon performance.
Task IV: Report Publication. Interim reports will be published each year, with a final report to be prepared at the conclusion of the project.

ACQUISITION INFORMATION:

QUANTITY: 1
ESTIMATED RFP RELEASE: 3rd Qtr FY96
ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96
CONTRACT TYPE AND DURATION: Cost Plus Fixed Fee (3 years)
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Demonstration of Advanced Solid State LADAR (DASSL)

PROGRAM MANAGER: 2LT Kent Broome, WL/MNGS, (904) 882-1726

ESTIMATED DOLLAR VALUE: Greater than $5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Develop and demonstrate a modern solid state Laser Radar (LADAR) that incorporates advanced technology concepts. Several technologies have been demonstrated as potential enhancements to LADAR seekers. These technologies have yet to be integrated into a fully functional LADAR seeker to demonstrate the advanced performance. The demonstration of an advanced LADAR seeker is necessary to transition tactical LADAR seekers to developmental Air Force and Navy weapons such as the Miniaturized Munition Technology (MMT) program, Anti Materiel Submunition (AMS), advanced Tomahawk and Joint Advanced Standoff Missile (TSSAM follow on).

TECHNICAL APPROACH: Current solid state LADAR sensor technology will be extended to include those techniques that are sufficiently mature to include in a fabrication effort. The technology innovations to be considered include: variable pulse rate and variable resolution for increased frame rate and direct control of field-of-view; increased laser power to extend range; precision pointing for more accurate scene reconstruction; and polarimetric discriminator for separating man made and natural objects.

A processor architecture will be developed that is capable of real time processing of mission planning, imaging processing, and guidance decision making using only Commercial Off The Shelf (COTS) components.

Mission planning, real time mission control, autonomous target acquisition (ATA) and battle damage indication (BDI) algorithms will be matured and expanded. The Laser Radar Technical Analysis Group (LRTAG), under Wright Laboratory's Solid State LADAR Algorithm Development and Evaluation Program, will have the responsibility for the terminal guidance algorithm development and verification. The LRTAG will utilize real imagery collected under the LOCAAS and LORISK programs as well as Wright Laboratory's IRMA multi-channel signature modeling code developed under the DAAM & MSMA programs for algorithm evaluation. A digital system simulation will be developed for early system evaluation and this will be evolved into a Hardware In The Loop (HWIL) simulation as the necessary system hardware is completed. A low speed instrumented captive flight test will provide a controlled checkout of the system and algorithms prior to final system packaging.

ACQUISITION INFORMATION:

QUANTITY: 1
ESTIMATED RFP RELEASE: 2nd Qtr FY96
ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96
CONTRACT TYPE AND DURATION: CPFF, 5 years
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Dense Metal Case Technology

ESTIMATED DOLLAR VALUE: $1M-$5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Future aircraft will be smaller and require munitions capable with downsized weapons bays. Current penetrator weapons are 2000 pounds or larger and restrict aircraft range and maneuverability. The objective of this task is to develop and demonstrate technology for dense metal penetrating warheads that are compatible with guidance kits such as PAVE WAY III and JDAM and provide for reduced weapon bay sizes on future aircraft. A two fold increase in hard target penetration over current penetrating warheads is projected. The warhead will be compatible with future smaller aircraft carriage and release. This effort builds on exploratory development efforts in FY93-95 on tungsten dense metal warhead technology. Technology demonstration will include flight tests of dense metal penetrators with PAVE WAY III kits. Results of this program will allow reduced aircraft size means reduced costs for future aircraft.

TECHNICAL APPROACH: This effort is comprised of four phases:

PHASE I: A technology application investigation will be accomplished to define technologies comprising the most promising dense metal case concepts. Metallurgical assessments will be accomplished in the WL materials laboratory to identify the tungsten alloys with the best toughness and strength. Design and fabrication issues will be studied for weapon applications. (1Q97)
PHASE II: The preliminary design of selected PAVE WAY III demonstration weapon configuration concepts will be accomplished. Materials testing and alloy optimization efforts will be completed. Component and subsystem performance requirements will be established. (3Q97)
PHASE III: The dense metal components and subsystems will be designed and developed in accordance with the preliminary design. Subscale testing will be conducted to evaluate performance and fabrication techniques. Full scaled dynamic tests will be conducted on the Eglin sled track and performance assessed. (4Q98)
PHASE IV: Dense metal components and subsystems will be integrated into PAVE WAY III flight demonstration hardware. (1Q99)

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE: 2nd Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 4th Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 30 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Antimateriel Warhead Technology/ High Rate Mechanical Properties Of Conventional Warhead Materials

PROGRAM MANAGER: 1Lt Bryan T. Martin, WL/MNMW, (904) 882-9643 x200

ESTIMATED DOLLAR VALUE: $250K-$1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The purpose of this effort is to develop analytical tools which are essential elements of the conventional warhead design problem. These materials are divided into the broad catagories of inert and energetic materials. Many inert metals used in warheads have demonstrated anisotropic, or orientation dependent, material behavior. Currently, existing design tools are inadequate for resolving design/function parameter problems associated with material anisotropy because they lack effective mathematical description of this type of behavior. The capability of continuum models, or hydrocodes, to model in 3-dimensions exceeds the validity of the material algorithms embedded in the program. Energetic materials effect the survivability and safety of munitions. High rate mechanical properties of energetic materials are needed to support a fundamental understanding of mechanical ignition of combustion in penetrating ordnance. Previous efforts have benn conducted by Dr Stan Jones of the University of Alabama for isotropic materials (ie. copper). Results of this effort will provide methods for designing antimaterial warheads using heavy metal liners which will increase warhead lethality.

TECHNICAL APPROACH: This program will investigate and develop algorithms which will incorporate dynamic material properties into analytical tools describing high strain rate material behavior. During phase one, algorithms which describe material anisotropy will be used to predict material response under conditions of low strain rate and planar stress. Also,work to develop a basic understanding of the viscoplastic behavior of plastic bonded explosives will be initiated. This phase will be used to study the appropriateness of available algorithms, to develop specimen designs, and to perform predictive calculations of controlled experiments. The use of low strain-rate and planar stress will allow the direct measurement of material response for comparison. Phase two will apply the algorithm developed earlier to the high strain-rate behavior found during impact testing of selected materials of ineterest. Classical analysis assumes that the cylinder impact specimen will deform plastically in an axi-symmetric manner. This phase will incorporate anisotropy and viscoplasticity into the description of material motion during the high strain rate deformation process. Phase three will include using the anisotropic and viscoplastic models in theories which relate materials behavior to experimental measurements. Completion Milestones: Phase I, 4Q96; Phase II, 4Q97; Phase III, 4Q98.

ACQUISITION INFORMATION:

QUANTITY: 1

RFP RELEASE DATE: 4th Qtr FY95
ESTIMATED CONTRACT AWARD DATE: 2nd Qtr FY96
CONTRACT TYPE AND DURATION: FFP, 36 Months
SIC CODE: 3721
TYPE OF COMPETITION ANTICIPATED: Competitive BAA

BUYING ACTIVITY: WL/MNK

TITLE: Penetration Fuze Technology/Hard Target Penetrating Radar

PROGRAM MANAGER: Kwang S. Min, WL/MNMF, (904) 882-2005

ESTIMATED DOLLAR VALUE: $250K-$1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Recent experiences in world events strongly indicate the need for detecting and characterizing deeply buried structural targets. Currently fielded systems rely upon target data gathered prior to the mission to preset the fuze to a selected time delay. Once the mission is underway, the selected fuze delay cannot be modified. Present advanced development technology for hard target fuzing uses accelerometer data collected during the penetration event to select the warhead burst point. Effective fuzing of deep penetrators can be greatly enhanced, if the detection and/or characterization of these targets are carried out in one of the following three modes. (1)In-situ detection as the weapon penetrates and looks forward using a RF radar, (2) In air detection by looking down while the weapon is in air and necessary fuzing decisions are made just before ground impact, (3) Pre-mission detection from an airborne platform (information can be used to program the hard target fuze). A common technology which would enable all three of these modes, is transmission of extremely short electromagnetic pulses and reception of scattered (reflected) pulses from strata of dense media. The contractual program will integrate a hard target penetrating radar pulse source, antenna(s) for transmission and reception, and a signal processing element. Relevant algorithms for the target structural estimation will be part of the program. The program will include (1) design, (2) fabrication, (3) testing of a breadboard which will lead to a follow on 6.3 development starting in FY99. Operational benefits of this technology are potential autonomous weapon burst point determination based upon target structure interrogation and elimination of the need for a priori target structural information.

TECHNICAL APPROACH: The contractor will integrate the hard target penetrating radar system for Air Force tests against targets consisting of layers of hard target materials . The Air Force will provide the pertinent technical data base accumulated through its on-going in-house research and related contracted efforts over the last several years to assist the design of the system. The item will be designed to fit in a small volume to insure that it meets Air Force requirements.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 2nd Qtr FY96
ESTIMATED CONTRACT AWARD: 4th Qtr FY96

CONTRACT TYPE AND DURATION: Competitive, CPFF 28 Months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Internetted Unattended Ground Sensors

PROGRAM MANAGER: Capt Jeff Palumbo, WL/MNAV, (904) 882-4085

ESTIMATED DOLLAR VALUE: $1M-$5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The Internetted Unattended Ground Sensors (IUGS) Precision Air Delivery effort is a joint program between the Armament Directorate and the Advanced Research Projects Agency (ARPA). ARPA initiated the program in FY95 to develop technologies to air drop a sensor package to a specific map reference point with an accuracy approaching 5 meters. The deployed sensor package must be difficult to detect since it will be behind enemy lines. No current method exists which can safely deploy the designated sensors with these restrictions. This particular effort is part of a comprehensive ARPA program to identify technologies which will provide mid-term and long term solutions to enhance the capabilities of friendly military forces to detect, identify and track time critical targets and to provide long duration surveillance of selected geographical areas. This precision air drop effort will integrate into three other concurrent ARPA technology demonstrations: data fusion, packaging, and integration; target tagging; and long haul communications. The Air Force will be a direct beneficiary of this technology. Air power is the only practical means of destroying mobile, time critical targets operating deep behind enemy lines (such as SCUD launchers). The systems that will be developed from these technologies will enhance the Air Force's ability to defeat these targets.

TECHNICAL APPROACH: A development contract will be awarded in response to a Broad Agency Announcement initiated by ARPA. The Armament Directorate will award this contract and serve as program manager. The contractual effort will probably involve at least three phases. The first phase, lasting approximately 18 months, will design and test a hard-drop, low cost system that will demonstrate controlled, guided flight and ground penetration. The second phase, lasting about 12 months, will demonstrate precision guidance with a goal of 5 meters, circular error probable. A third phase, lasting 12 months, will demonstrate an optional, soft drop deployment mechanism. Appropriate in-house tests will be conducted to complement these contractual phases.

ACQUISITION INFORMATION:

QUANTITY: 1

ACTUAL BAA RELEASE DATE: 4th Qtr FY94

ESTIMATED CONTRACT AWARD DATE: 1st Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 42 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive BAA

BUYING ACTIVITY: WL/MNK

TITLE: LADAR Technology Development

PROGRAM MANAGER: Maj Todd Steiner, MNGS, (904) 882-1726

ESTIMATED DOLLAR VALUE: $1M-$5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The LADAR Technology Development Project objective is to research, develop, test, and evaluate solid state laser radar technology in critical technology areas including: laser sources, detectors and detector arrays, receiver electronics, signal pre-processing, target recognition algorithms, spatial and spectral target characterization, optics, and beam scanning technology, for insertion into LADAR systems for autonomous weapon guidance for near term transition to weapon systems such as the AF Miniaturized Munition Technology (MMT) program, Joint Standoff Weapon (JSOW), the Joint Advanced Standoff Missile (the follow-on to TSSAM), and the Navy's Tomahawk Cruise Missile.

TECHNICAL APPROACH: This project will develop two critical components for LADAR systems - the laser source and the detector array. The laser source development will be done via MIPR to MIT/Lincoln Lab and will center around the development of compact lasers in the 1.5 to 2.1 micron wavelength range, with high peak powers and high pulse repetition frequencies. Compact, high power lasers are needed for eyesafe ranging. To complement these efforts, we will also develop GaSb based Avalanche photodiodes sensitive in the 1.5 to 2.5 micron wavelength range.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 3rd Qtr FY96

CONTRACT TYPE AND DURATION: MIPR, 5 years

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: WL/MNK

TITLE: Programmable Integrated Ordnance Suite (PIOS)

PROGRAM MANAGER: Mr. Don Cunard, WL/MNMF, (904) 882-2005

ESTIMATED DOLLAR VALUE: Greater than $5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Existing US missiles lack the flexibility to support counter air and self protection roles within a single missile airframe. PIOS will develop and demonstrate integrated guidance and ordnance technologies for dual-role missiles capable of providing increased lethality for counter air and self protection against opportunistic SAMs.

TECHNICAL APPROACH: PIOS will be conducted as a collaborative project with the UK's Defense Research Agency as a Nunn Project. The ordnance technology development will be based on a "guidance-aided fuzing" approach that combines missile seeker data (angle, angle and closing velocity) and infrared target image data from the target detection device (TDD) to accurately predict terminal encounter intercept geometry, determine the lethal target aimpoint, and execute a precision timed and directionally controlled fragmentation event to maximize lethality. The PIOS conceptual ordnance approach consists of a wide-angle, high speed, passive imaging infrared TDD, an electronic safe and arm device (ESAD) and a mass focused warhead. A unique velocity and angle based fuzing algorithm provides precise burst point solutions for any encounter, including extreme early and late bird. A dual-mode seeker that integrates existing air-to-air and anti-radiation homing guidance technologies will be selected for development through a systems engineering development approach that strives to maximize ordnance effectiveness. The concept of using the PIOS TDD as an adjunct sensor, cued by the missile's anti-radiation homing sensor, to improve warhead aim and burst point control against SAM sites will also be explored. The PIOS project will transition demonstrated brassboard TDD, ESAD, warhead and guidance technologies enabling dual-role missiles for both counter air and self protection.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED PRDA RELEASE DATE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 3rd Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 72 month

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive PRDA

BUYING ACTIVITY: WL/MNK

TITLE: Fuzing for Advanced Threats/RF Fuze Target Simulator

PROGRAM MANAGER: Robert H. Orgusaar, WL/MNMF, (904) 882-2005

ESTIMATED DOLLAR VALUE: $250K-$1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The instantaneous bandwidth of the fuze RF target simulator is not adequate to test planned next generation RF fuze sensors. The existing Fuze Branch RF Target Simulator can sweep over a 6 gigahertz wide band, but its Digital RF Memory (DRFM) is limited by an instantaneous bandwidth of 100 megahertz. This is more than adequate for testing current inventory and existing developmental sensors, but will not be compatible with planned advanced RF fuze sensor concepts. Prototype gallium arsenide devices are being fabricated with the goal of a 500 megahertz instantaneous bandwidth as part of a Phase II SBIR effort being run by WL/AAWW-2. These devices would be the building block for a target simulator upgrade development that will be required to thoroughly test the next generation air-to-surface and air-to-air RF fuze sensor hardware. Other organizations using similar signal sequencer cards have also expressed interest in this effort including WL/MNGS and the Navy at Point Mugu. This technology will insure that future Air Force target detection devices provide increased target definition and the improved missile intercept parameters necessary to increase the effectiveness of future weapons.

TECHNICAL APPROACH: The 6 month Phase I SBIR effort will be accomplished as a cooperative effort between the designers of the target simulator and an appropriate vendor of 500 megahertz DRFM technology. Technology required to reconfigure the existing target simulator will be identified and documented. Preliminary designs for a 500 megahertz signal sequencer card will be generated and documented along with requirements for other hardware and software changes. An 18 month Phase II SBIR effort would finalize designs and build the required signal sequencer cards along with modifying the RF section of the target simulator and generating new software to support this increased capability.

ACQUISITION INFORMATION:

QUANTITY: 1

SBIR SOLICITATION: 1st Qtr FY96

PHASE I CONTRACT AWARD: 3rd Qtr FY96
CONTRACT TYPE AND DURATION: FFP, 6 months

PHASE II CONTRACT AWARD: 3rd Qtr FY97
CONTRACT TYPE AND DURATION: FFP, 18 months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive SBIR

BUYING ACTIVITY: WL/MNK

TITLE: Time Critical Target Technology

PROGRAM MANAGER: Gregg Abate, WL/MNAV, (904) 882-4085

ESTIMATED DOLLAR VALUE: Greater than $5M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: The goal of this program is to determine what technological challenges exist in the weapon airframe area for fast reaction weapons which includes drag and aerodynamic heating and optimal design. This effort will develop cost effective low-risk solutions for critical airframe technology needs. The emergence onto the world scene of tactical range missiles armed with nuclear, biological, or chemical warheads has generated a compelling need to eliminate this threat using very fast reaction counter weapons. The need for speed has never been more militarily important. Given attack scenarios which would require time critical target weapons to fly 500 miles in 3 to 5 minutes opens up a whole new arena for weapon subsystem development effort. The sensors, processor, guidance, control, airframe, material, warhead, fuzing, safe and arming, and propulsion technologies required to perform in the extreme performance design space of Time Critical Target (TCT) weapons need to be identified and evaluated. The purpose of the TCTT program will be to compile a design guideline handbook to aid future weapon makers as they come to grips with the complex technical problems generated by the extreme high speeds of TCT weapons, eg. aero heating, high temperature sensor performance, ultra high speed digital data processing, materials ablation, warhead aiming, subsystem integration, etc.

TECHNICAL APPROACH: This program will consist of trade studies and analysis and system simulation to provide a design guideline for time critical target technology development. The effort will begin with technology surveys to identify existing and emerging technologies to address the time critical target problems. Sensors, processors, guidance, control, airframe, material, warhead, fuzing, safe and arming and propulsion technologies will be surveyed and identified (milestone 1, 2Q97). The technologies to be investigated will build on a firm foundation of current Wright Laboratory Armament Directorate weapon subsystem development programs. Several seeker programs (Advanced Synthetic Aperture Radar ASARG, ATLAS CO_2 Ladar, Submunition Guidance Solid State Ladar, etc.) will provide technology to be considered for the high speed, high temperature applications for time critical targets. These technologies will then be modeled in system level simulation and the performance of various technology suites will be evaluated versus SSM, SAM, and buried command and control targets (milestone 2, 4Q97). Improved missile design tools and trade studies will provide for the more efficient design of advanced weapons. Improved RCS and heat transfer predictions will result in increased missile survivability. These efforts will provide direct contributions to the mission by providing cost-effective and timely in-house analysis for existing and future advanced air-to-surface and air-to-air weapon systems. The simulation results will be used to evaluate the most promising technologies and generate a set of design guidelines for applying these most promising technologies in future time critical target weapons (milestone 3, 2Q98).

ACQUISITION INFORMATION:

ESTIMATED BAA RELEASE DATE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD DATE: 3rd Qtr FY96

CONTRACT TYPE AND DURATION: FFP, 24 Months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive BAA

BUYING ACTIVITY: WL/MNK

TITLE: Fuzing for Advanced Threats, Air-to-Air/Target Detection Device Sensor Fusion

PROGRAM MANAGER: Eric L. Scarborough, WL/MNMF, (904) 882-2005

ESTIMATED DOLLAR VALUE: $250K-$1M

TECHNICAL PROGRAM DESCRIPTION:

OBJECTIVE: Current Anti-Air fuze models have several deficiencies which this program aims to correct. Some of these are: a) Current endgame simulations (where the fuze function is modeled) do not model any other missile subsystems, this prevents studies on Guidance Integrated Fuzing or Sensor Fusion (ie. seeker and fuze target detection device). b) Current endgame simulations are difficult to modify to allow "swapping out" of the fuze target detection device models. c) Current fuze simulations are limited in the way in which data can be visualized, and input into the program. This program seeks to remedy these limitations by fully developing a personal computer (PC) based endgame simulation package for Anti-Air missile fuzing and by developing a standardized munitions modeling tool set that will be used to develop modular models representing missile systems. The program will include (1) software design of target detection devices both RF and optical, (2) software upgrades to existing endgame simulations. Results of this program will provide a computer design simulation for developing advanced air-to-air missiles and antimateriel munition fuzes.

TECHNICAL APPROACH: There are two major tasks of this effort: First a six degree of freedom (6DOF) air-to-air missile model will be created that uses a standardized modeling and simulation system. This missile model will be complete with two radar fuze models that can be easily interchanged. The second part of this program is to fully develop a PC based endgame simulation to evaluate fuze-target interactions, warhead effects and to assess damage to the target aircraft.

ACQUISITION INFORMATION:

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: 1st Qtr FY96

ESTIMATED CONTRACT AWARD: 3rd Qtr FY96

CONTRACT TYPE AND DURATION: CPFF, 16 Months

SIC CODE: 3721

TYPE OF COMPETITION ANTICIPATED: Competitive

BUYING ACTIVITY: ASC/PKWO

TITLE: Environmental Restoration (Cleanup) Program

PROGRAM MANAGER: Ms. Amy L. Mercado, 88 ABW/EMR, (513) 257-2201

ESTIMATED DOLLAR VALUE: The estimated cost for this acquisition is $75 million. It will be funded by the Defense Environmental Restoration Account (DERA), Environmental Compliance Program (ECP) funds, other Operation and Maintenance (O&M) funds, funds derived from sales proceeds (legislation), etc.

PROGRAM DESCRIPTION: This is for acquisition for environmental remediation services. Such services will include the cleanup of environmental contamination problems resulting from inappropriate waste disposal practices, cleanup of recent waste or materials releases, and implementation/operation of other miscellaneous environmental protection projects. The Environmental Restoration Branch (88 ABW/EMR) is the using organization, and ASC/EMR is the support organization. The cognizant contracting activity is ASC/PKWO, Wright-Patterson Air Force Base, Ohio (WPAFB). The Environmental Restoration Program will require environmental remediation or pollution prevention activities at many pre-existing or future sites located on WPAFB or adjoining properties (onto which extends contamination resulting from waste sites on WPAFB), at ASC Government Owned Contractor Operated (GOCO) properties, or other Air Force properties supported by ASC. Prior to 1990, the restoration programs relied solely on the support of service centers for fulfillment of contract requirements. These service centers included the US Army Corps of Engineers, Air Force Center for Environmental Excellence (AFCEE) at Brooks AFB, and the Department of Energy Work for Others Program (DOE-Oakridge and Idaho National Labs). The signing of interagency agreements with state and federal regulators has given the restoration programs enforceable schedules and strict specifications for performance. The service centers were unable to meet the tight schedules and heavy demands of the two environmental management organizations. There is a need for new, more flexible and responsive contracting mechanisms.

QUANTITY: A maximum of four (4) contracts will be awarded.

ESTIMATED RFP RELEASE DATE: 31 August 1995

ESTIMATED CONTRACT AWARD DATE: NLT 31 March 1996. The current contracts expire 30 September 1995. However, the contracts will be extended for six (6) months, through 31 March 1996 to allow contract support while procuring the follow-on contracts.

CONTRACT TYPE AND DURATION: Construction contracts with some service provisions for a one-year base period plus four one-year options.

SIC CODE: 8744

TYPE OF COMPETITION ANTICIPATED: Full and open competition, with up to two (2) of the contracts to be awarded under this solicitation set aside for small business (SB) concerns (partial set aside) in accordance with FAR 19.5.

BUYING ACTIVITY: ASC/PKWOS

TITLE: Vehicle Operations

PROGRAM MANAGER: Mr John Mayfield, 88TRNS/LGTQ, (513) 257-3805

ESTIMATED DOLLAR VALUE: $36M

PROGRAM DESCRIPTION: Operation and Maintenance of Government-Owned Motor Vehicles

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: December 1995

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price - Five Years

SIC CODE: 4173

TYPE OF COMPETITION ANTICIPATED: Unrestricted Full and Open

BUYING ACTIVITY: ASC/PKWOS

TITLE: Lease of Radio Pagers

PROGRAM MANAGER: MSgt Donald E. Ollom, 88CS/SCMLL, (513) 257-2896

ESTIMATED DOLLAR VALUE: $150K

PROGRAM DESCRIPTION: Requirements contract for leasing of Pagers for Numerous Organizations

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: April 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: ID/IQ - Five Years

SIC CODE: 7359

TYPE OF COMPETITION ANTICIPATED: Reserved for Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Base Information Transfer Center (BITC)

PROGRAM MANAGER: Anita Doughman/Dave Williams, 88 CG/IMAA-A, (513) 257-7208

ESTIMATED DOLLAR VALUE: $2.5M

PROGRAM DESCRIPTION: Distribution of Mail throughout Wright-Patterson

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: December 1995

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price - Five Years

SIC CODE: 4212

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Maintenance, Electron Microscope

PROGRAM MANAGER: Charles Powers, AFIT/ENG, (513) 255-3430

ESTIMATED DOLLAR VALUE: $50K

PROGRAM DESCRIPTION: Preventative and Remedial Maintenance of Electron Microscope

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price - Five Years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Restricted Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Lease/Maintenance Golf Carts

PROGRAM MANAGER: Lt Col Charles Henthorn, 88 SPTG/SV, (513) 257-2595

ESTIMATED DOLLAR VALUE: $275K

PROGRAM DESCRIPTION: Lease and Maintenance of Golf Carts

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price - Five Years

SIC CODE: 7359

TYPE OF COMPETITION ANTICIPATED: Restricted Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Lease/Maintenance Washers and Dryers

PROGRAM MANAGER: Ray Zimmerschield, 88 SPTG/SV, (513) 257-6377

ESTIMATED DOLLAR VALUE: $100K

PROGRAM DESCRIPTION: Lease and Maintenance of Washers and Dryers

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7215

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Service and Test Fire Extinguisher Systems

PROGRAM MANAGER: Jerry Sableski, 88th CEG/CEFT, (513) 257-4075

ESTIMATED DOLLAR VALUE: $115K

PROGRAM DESCRIPTION: Provides all Parts, Labor and Equipment necessary to Inspect and Test Low Pressure Carbon Dioxide Systems

QUANTITY: Six Inspections Per Year

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price, Estimated Quantity - Five Years

SIC CODE: 8999

TYPE OF COMPETITION ANTICIPATED: Unrestricted Full and Open

BUYING ACTIVITY: ASC/PKWOS

TITLE: Stack Testing

PROGRAM MANAGER: Sheri Kilborne, 88th ABW//EM, (513) 257-5535

ESTIMATED DOLLAR VALUE: $89K

PROGRAM DESCRIPTION: Stack Testing on Two major Coal Firing Heating Facilities

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: April 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price - Five Years

SIC CODE: 8734

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Custodial Services, Area C

PROGRAM MANAGER: Art Johnson, 788 CES, (513) 257-6093

ESTIMATED DOLLAR VALUE: $3.5M

PROGRAM DESCRIPTION: Janitorial Services for Numerous Buildings in Area C, Wright-Patterson AFB

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7349

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Overhaul of Electric Motors

PROGRAM MANAGER: Art Johnson, 788 CES/CEZ, (513) 257-6093

ESTIMATED DOLLAR VALUE: $250K

PROGRAM DESCRIPTION: Overhaul of Various Size Electric Motors

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7694

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Landfill Usage

PROGRAM MANAGER: Art Johnson, 788 CES/CEZ, (513) 257-6093

ESTIMATED DOLLAR VALUE: $75K

PROGRAM DESCRIPTION: Use of Authorized Dump Site for Construction Debris from WPAFB Complex

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: March 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7349

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Bulk Asbestos Sampling

PROGRAM MANAGER: Art Johnson, 788th CES/CEZ, (513) 257-6093

ESTIMATED DOLLAR VALUE: $75K

PROGRAM DESCRIPTION: Perform Bulk Sampling and Analysis from Various Sites on WPAFB

QUANTITY: 6,000 Samplings

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price - Five Years

SIC CODE: 8734

TYPE OF COMPETITION ANTICIPATED: Restricted Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Maintain/Repair Appliances for Various Facilities

PROGRAM MANAGER: Art Johnson, 788 CES/CEZ, (513) 257-6093

ESTIMATED DOLLAR VALUE: $50K

PROGRAM DESCRIPTION: Perform all Operations Necessary to Maintain/Repair Appliances at WPAFB

QUANTITY: 1,350 Calls

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7629

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Maintain/Repair Appliances

PROGRAM MANAGER: Art Johnson, 788 CES/CEZ, (513) 257-6093

ESTIMATED DOLLAR VALUE: $87K

PROGRAM DESCRIPTION: Maintenance and Repair of Appliances at the Dining Hall, WPAFB

QUANTITY: 800 Calls

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7629

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: NAIC Custodial

PROGRAM MANAGER: Ron Owens, 788 /CES/CEZ, (513) 257-1120

ESTIMATED DOLLAR VALUE: $960K

PROGRAM DESCRIPTION: Janitorial Services for the National Air Intelligence Center

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 7349

TYPE OF COMPETITION ANTICIPATED: Restricted Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Maintenance of Cranes & Hoists

PROGRAM MANAGER: Ron Owens, 788 CES/CEZ, (513) 257-1120

ESTIMATED DOLLAR VALUE: $100K

PROGRAM DESCRIPTION: Maintenance of Cranes & Hoists at WPAFB

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price - Five Years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Restricted to Small Business

BUYING ACTIVITY: ASC/PKWOS

TITLE: Refuse Removal for MFH

PROGRAM MANAGER: Roger Smith, 788 CES/CEC, (513) 257-0340

ESTIMATED DOLLAR VALUE: $1.2M

PROGRAM DESCRIPTION: Weekly Removal of Refuse from Military Family Housing at WPAFB

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Firm Fixed Price - Five Years

SIC CODE: 4953

TYPE OF COMPETITION ANTICIPATED: Unrestricted Full and Open

BUYING ACTIVITY: ASC/PKWOS

TITLE: Military Family Housing Maintenance

PROGRAM MANAGER: Roger Smith, 788 CES/CEC, (513) 257-0340

ESTIMATED DOLLAR VALUE: $15M

PROGRAM DESCRIPTION: Repairs, Maintenance and Change of Occupancy Maintenance for all Military Family Housing at WPAFB

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: December 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed Price with Estimated Quantities - Five Years

SIC CODE: 1799

TYPE OF COMPETITION ANTICIPATED: Restricted Small Business

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maint Imaging System

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $204K

PROGRAM DESCRIPTION: Preventive and Remedial Maint of Imaging System

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 7279

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Repair/Install Carpet

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $293K

PROGRAM DESCRIPTION: Repair and install Carpet at USAF Med Center

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 1752

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maint/Overhaul Ventilator

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $115K

PROGRAM DESCRIPTION: Preventive/Remedial Maintenance on Ventilator at the USAF Med Center

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 7629

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maintain CT Scanner

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $295K

PROGRAM DESCRIPTION: Preventive and Remedial Maintenance on a 9800 CT Scanner for the USAF Med Center

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Heat Treat Alum/Steel

PROGRAM MANAGER: John Steele, ASC/AMDQB, (513) 255-4978

ESTIMATED DOLLAR VALUE: $113K

PROGRAM DESCRIPTION: Heat Treatment for Aluminum and Steel Items; ASC

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 3398

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maintenance for Anesthesia Machines

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $152K

PROGRAM DESCRIPTION: Preventive and remedial maintenance of anesthesia machines; USAF Med Center

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Medical Equipment Rental

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $68K

PROGRAM DESCRIPTION: Rental of Medical Equipment for the USAF Med Center

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 7352

TYPE OF COMPETITION ANTICIPATED: Sole Source

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maintain Furnace

PROGRAM MANAGER: Gary Russel, (513) 255-2123

ESTIMATED DOLLAR VALUE: $106K

PROGRAM DESCRIPTION: Furnace Maintenance

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 8734

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Technical Support

PROGRAM MANAGER: Frank Borasz, WL/MLI, (513) 255-6981

ESTIMATED DOLLAR VALUE: $7M

PROGRAM DESCRIPTION: Provide Support Services for WL/MLI

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: February 1996

ESTIMATED CONTRACT AWARD DATE: August 1996

CONTRACT TYPE AND DURATION: Time & Materials, Five Years

SIC CODE: 8731

TYPE OF COMPETITION ANTICIPATED: 8a Competitive

BUYING ACTIVITY: ASC/PKWOV

TITLE: Infectious Waste Removal

PROGRAM MANAGER: Bill Meinerding, 88ABW/EM, (513) 257-7152

ESTIMATED DOLLAR VALUE: $280K

PROGRAM DESCRIPTION: Treatment and disposal of Infectious medical wastes and regulated garbage

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: May 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 4953

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Furniture Maintenance

PROGRAM MANAGER: Sheila Vita, JLSC/RMH

ESTIMATED DOLLAR VALUE: $141K

PROGRAM DESCRIPTION: Design, Inventory, Storage and Maintenance of Systems Furniture for JLSC/RMH

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: May 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 7379

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Furniture Maintenance

PROGRAM MANAGER: MSgt Black, ASC/YT

ESTIMATED DOLLAR VALUE: $260K

PROGRAM DESCRIPTION: Design, Inventory, Storage and Maintenance of Systems furniture for ASC/YT

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: May 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 4952

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Furniture Maintenance

PROGRAM MANAGER: Capt Coker, ASC/YF, (513) 255-6893

ESTIMATED DOLLAR VALUE: $50K

PROGRAM DESCRIPTION: Design, Inventory, Storage and Maintenance of Systems Furniture for ASC/YF

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: July 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 4952

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maintain Ultrasound

PROGRAM MANAGER: Gwen Garrett, 74 MDSS/SGSLM, (513) 257-5361

ESTIMATED DOLLAR VALUE: $50K

PROGRAM DESCRIPTION: Preventive and remedial maintenance of Medical Center Ultrasound Equipment

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: July 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Sole Source

BUYING ACTIVITY: ASC/PKWOV

TITLE: Maintain Stereolithography Equipment

PROGRAM MANAGER: Gary Russell, (513) 255-5813

ESTIMATED DOLLAR VALUE: $224K

PROGRAM DESCRIPTION: Preventive and remedial maintenance for stereolithography apparatus, SLA-500

QUANTITY: 12 Months

ESTIMATED RFP RELEASE DATE: June 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Fixed-Price, Five Years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Sole Source

BUYING ACTIVITY: ASC/PKWOV

TITLE: Operate Resource Library

PROGRAM MANAGER: Ann Marburger, Armstrong Labs, (513) 255-8420

ESTIMATED DOLLAR VALUE: $4.2M

PROGRAM DESCRIPTION: Operation and Maintenance of the Armstrong Labs Resource Library

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: January 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Time and Materials, Five Years

SIC CODE: 7379

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Operation of Test Equipment

PROGRAM MANAGER: Dave Dawson, WL/FIGS, (513) 255-3012

ESTIMATED DOLLAR VALUE: $10M

PROGRAM DESCRIPTION: Operate, Maintain, Repair Experimental and Test Equipment for WL/FIG

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: January 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Time and Materials, Five Years

SIC CODE: 8711

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Operation and Maintenance of Survivability Research lab

PROGRAM MANAGER: Larry Coulthard, WL/FIVST, (513) 255-2661

ESTIMATED DOLLAR VALUE: $10M

PROGRAM DESCRIPTION: Operation and Maintenance of the Survivability Research lab, WL/FIV

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: January 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Time and Material, Five Years

SIC CODE: 8744

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWOV

TITLE: Compressor Research Facility Support

PROGRAM MANAGER: Dan Tasch, WL/POTX, (513) 255-6802

ESTIMATED DOLLAR VALUE: $5M

PROGRAM DESCRIPTION: Support Services for the operation of the Compressor Research Facility, WL/POTX

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: January 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Time and Material, Five Years

SIC CODE: 8711

TYPE OF COMPETITION ANTICIPATED: 8a Competitive

BUYING ACTIVITY: ASC/PKWOV

TITLE: Support Services for WL/FIMO

PROGRAM MANAGER: Mark Geis, WL/FIMO, (513) 255-6318

ESTIMATED DOLLAR VALUE: $3.7M

PROGRAM DESCRIPTION: Support Services for Experimental Test Equipment/Computer Hardware/Software

QUANTITY: Unknown

ESTIMATED RFP RELEASE DATE: January 1996

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: Time and Material, Five Years

SIC CODE: 7699

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: ASC/PKWRE

TITLE: JOVIAL Integrated Tool Set (ITS) Management Function

PROGRAM MANAGER: John Miller, AGMC/MAEB (Newark AFB), (614) 522-7170; unit will transfer to WPAFB

ESTIMATED DOLLAR VALUE: $5M

PROGRAM DESCRIPTION: Software design and maintenance

OBJECTIVE:

TECHNICAL APPROACH:

QUANTITY: TBD

ESTIMATED RFP RELEASE DATE: August 1996

ESTIMATED CONTRACT AWARD DATE: October 1996

CONTRACT TYPE AND DURATION: TBD

SIC CODE: 7371

TYPE OF COMPETITION ANTICIPATED: Sole Source

BUYING ACTIVITY: ASC/PKWRE

TITLE: Polution Prevention Technical Support

PROGRAM MANAGER: HQ AFMC/ENSE

PROGRAM DESCRIPTION: Contractor assistance to support pollution efforts necessary to identify, eliminate and reduce the use of Ozone Depleting Substance (ODS) and hazardous materials.

OBJECTIVE:

TECHNICAL APPROACH:

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: December 1995

ESTIMATED CONTRACT AWARD DATE: September 1996

CONTRACT TYPE AND DURATION: TBD

SIC CODE: 7371

TYPE OF COMPETITION ANTICIPATED: 8(a)

BUYING ACTIVITY: ASC/PKWRE

TITLE: AFIT ADPE Support Services

ESTIMATED DOLLAR VALUE: $10M

PROGRAM DESCRIPTION: Computer and Communications Hardware Maintenance and Software Support Services

OBJECTIVE:

TECHNICAL APPROACH:

QUANTITY: TBD

ESTIMATED RFP RELEASE DATE: 1 February 1996 or TBD

ESTIMATED CONTRACT AWARD DATE: 1 May 1996 or TBD

CONTRACT TYPE AND DURATION: T & M, 1 October 1996 - 30 September 2001

SIC CODE: 7379

TYPE OF COMPETITION ANTICIPATED: Small Business Set Aside

BUYING ACTIVITY: ASC/PKWRM

TITLE: Mechanized Materials Handling Systems (MMHS)

PROGRAM MANAGER: Irv Hermann, AFMC-LSO/LOE, (513) 257-3078

ESTIMATED DOLLAR VALUE: TBD based upon each requirement

PROGRAM DESCRIPTION: AFM67-1, Vol 7, established the program office as the Air Force organization responsible for the design and installation of standardized MMHS within the Air Force and other DoD installations with air freight terminals. The number and locations of systems to be acquired is determined annually. The average number of projects and dollar value of the program for the last five years has been 30 pojects and $30M.

QUANTITY: TBD

ESTIMATED RFP RELEASE DATE: TBD

ESTIMATED CONTRACT AWARD DATE: TBD

CONTRACT TYPE AND DURATION: Firm-Fixed Price; duration is project dependent

SIC CODE: 3535

TYPE OF COMPETITION ANTICIPATED: Small Business Set-Aside

BUYING ACTIVITY: ASC/PKWTP

TITLE: PSS Egypt

PROGRAM MANAGER: John Rabith, OMC/PSS-PMO, (202) 376-8318

ESTIMATED DOLLAR VALUE: $91M

PROGRAM DESCRIPTION: PSS Egypt

OBJECTIVE: To provide Personnel Support to Egyptian Air Force

TECHNICAL APPROACH: Overseas Service Contract

QUANTITY: N/A

ESTIMATED RFP RELEASE DATE: 1 December 1995

ESTIMATED CONTRACT AWARD DATE: 16 July 1996

CONTRACT TYPE AND DURATION: Cost Plus Award Fee, 1 Yr Base, 4 - 1 Yr Options

SIC CODE: 8744

TYPE OF COMPETITION ANTICIPATED: Full and Open

BUYING ACTIVITY: AFIT/SC

TITLE: Automatic Data Processing Equipment Support Services (ADPESS)

PROGRAM MANAGER: Capt Charles A. La Fleur, AFIT/SCP, (513) 255-6565 ext 4363

ESTIMATED DOLLAR VALUE: $7.5M

PROGRAM DESCRIPTION: ADPESS will be a contract for non-personal support services for communications-computer systems, to include hardware maintenance and software support. Computer and communications maintenance services includes remedial maintenance (RM), preventative maintenance (PM), installation of new equipment, equipment relocation and reconfiguration, fabrication and installation of cables, recommendation on site preparation, and data communications maintenance in support of the Local Area Network. Software services include the following: Information Systems Services, Customer Support Center Services, Graphics Support, Systems Administration, Technical Services (i.e. assistance to student, faculty, and staff on equipment use), Database Administration, Software Maintenance, Software Engineering, and Technical Support. Some services will be full-time on-site, whereas, others will be by task order.

QUANTITY: 1

ESTIMATED RFP RELEASE DATE: November 1995

CONTRACT TYPE AND DURATION: Non-personal services. Period of performance is anticipated to be 1 October 1996 - 30 September 1999.

SIC CODE: 3571

TYPE OF COMPETITION ANTICIPATED: Competitive 8(a)