(1)

UNCLASSIFIED

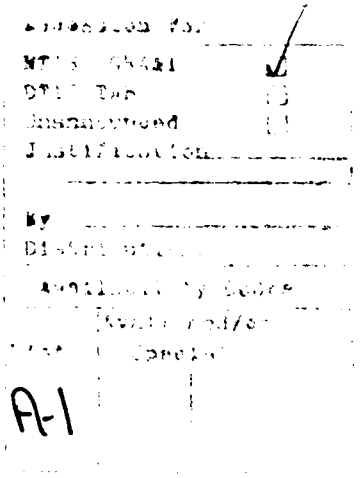
FY 1992/FY 1993 BUDGET

DESCRIPTIVE SUMMARIES

FOR THE

OFFICE OF THE SECRETARY OF DEFENSE

FEBRUARY 1991



Dist. A. per telecon Dave Hoen, OSD(C) 697-7804.

JK 5/14/91

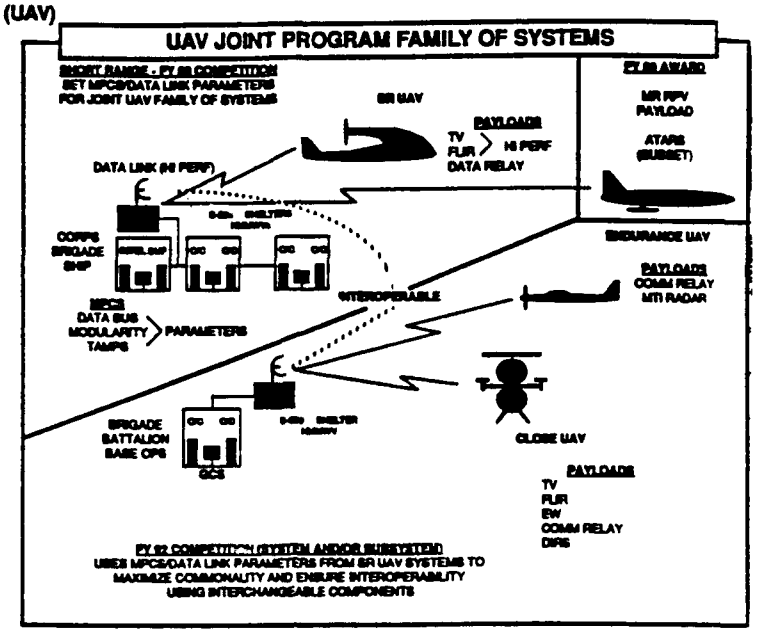
A-1

UNCLASSIFIED

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

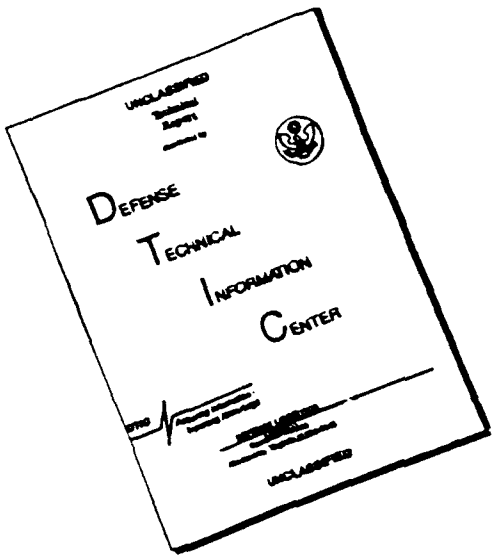


POPULAR NAME: UNMANNED AERIAL VEHICLES JOINT PROGRAM (UAV)

A. SCHEDULE/BUDGET INFORMATION:

SCHEDULE	FY90	FY91	FY92	FY93	PROGRAM TOTAL (1994-1997)
PROGRAM MILESTONES	CR/END-MSO	MR-IPR	SR-MSIIIB CR-MSI/II	SR-MSIIIC MR-MSIIB	SR-IOC-94 MR-MSIIIA-94/95 SR-MSIV-96 CR-MSIII-97 MR-IOC(USMC)-96 MR-IOC(USN/USAF)-97
ENGINEERING MILESTONES		SR-FCA	SR-PCA	MR-CDR CR-CDR	MR-FCA-94 CR-CDR-95 CR-FCA-96 MR-PCA-96 CR-PCA-97

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

SCHEDULE	FY90	FY91	FY92	FY93	PROGRAM TOTAL (1994-1997)
T&E MILESTONES		SR-OTIIA/TET	SR-OT SR-OPEVAL		MR-DT/OA-94/95 MR-OTIIA-96 CR-DT/OT-96
CONTRACT MILESTONES			SR-DOWNSEL	SR-OPTII CR-FSD	SR-OPTIII-94 SR-OPTIV-95 MR-LRIP-95 MR-OPTI-96 CR-LRIP-97

LEDGEND: CR = CLOSE RANGE, SR = SHORT RANGE, MR = MEDIUM RANGE

BUDGET ($000)	FY90	FY91	FY92	FY93	PROGRAM TOTAL (1994-1997)
1. SHORT RANGE					
MAJOR CONTRACTS	$934	$585	$15,955	$22,685	$39,681
SUPPORT CONTRACTS	$1,018	$800	$500	$500	$2,000
IN-HOUSE SUPPORT	$0	$0	$0	$0	$0
FIELD SUPPORT	$5,255	$10,510	$7,301	$6,895	$24,519
T&E/DT/OT EFFORT	$2,737	$6,105	$1,944	$120	$5,000
TOTAL	$9,944	$18,000	$25,700	$30,200	$71,200

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

BUDGET ($000)	FY90	FY91	FY92	FY93	PROGRAM TOTAL (1994-1997)
2. MEDIUM RANGE (INCL USAF EFFORTS ON ATARS AND MARS)					
MAJOR CONTRACTS	$38,819	$23,000	$23,000	$16,800	$50,375
SUPPORT CONTRACTS	$795	$2,100	$2,100	$2,750	$1,400
IN-HOUSE SUPPORT	$4,728	$292	$270	$360	$2,031
FIELD SUPPORT	$5,420	$6,908	$4,730	$3,190	$7,794
T&E/DT/OT EFFORT	$0	$1,000	$1,000	$5,500	$12,000
TOTAL	$49,762	$33,300	$31,100	$28,600	$73,600
3. CLOSE RANGE					
MAJOR CONTRACTS	$0	$4,500	$0	$5,200	$49,200
SUPPORT CONTRACTS	$0	$0	$0	$0	$0
IN-HOUSE SUPPORT	$0	$0	$0	$0	$0
FIELD SUPPORT	$0	$3,200	$1,900	$2,000	$8,500
T&E/DT/OT EFFORT	$0	$0	$0	$0	$3,500
TOTAL	$0	$7,700	$1,900	$7,200	$61,200

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

BUDGET ($000)	FY90	FY91	FY92	FY93	PROGRAM TOTAL (1994-1997)
4. VERY LOW COST (EXDRONE/POINTER)					
MAJOR CONTRACTS	$328	$1,100	$300	$0	$0
SUPPORT CONTRACTS	$0	$0	$0	$0	$0
IN-HOUSE SUPPORT	$0	$0	$0	$0	$0
FIELD SUPPORT	$294	$1,041	$0	$0	$0
T&E/DT/OT EFFORT	$35	$0	$0	$0	$0
TOTAL	$657	$2,141	$300	$0	$0
5. INTEROPERABILITY/COMMONALITY					
MAJOR CONTRACTS	$5,093	$6,072	$2,000	$4,710	$9,530
SUPPORT CONTRACTS	$0	$250	$0	$0	$0
IN-HOUSE SUPPORT	$250	$300	$0	$350	$1,500
FIELD SUPPORT	$11,002	$13,378	$2,000	$5,040	$3,870
T&E/DT/OT EFFORT	$0	$0	$0	$0	$0
TOTAL	$16,345	$20,000	$4,000	$10,100	$14,900

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

BUDGET ($000)	FY90	FY91	FY92	FY93	PROGRAM TOTAL (1994-1997)
6. JOINT TECHNOLOGY CENTER					
MAJOR CONTRACTS	$0	$1,076	$0	$500	$2,200
SUPPORT CONTRACTS	$0	$0	$0	$0	$0
IN-HOUSE SUPPORT	$0	$874	$800	$150	$750
FIELD SUPPORT	$0	$1,150	$0	$950	$4,250
TOTAL	N/A*	$3,100	$800	$1,600	$7,200
*INCLUDED IN I/C TOTAL FOR FY90					
7. PROJECT MANAGEMENT					
AMBER CONTRACT CLOSEOUT	$170	$0	$0	$0	$0
SUPPORT CONTRACTS	$1,010	$2,080	$1,743	$2,657	$13,764
IN-HOUSE SUPPORT	$1,433	$2,404	$400	$238	$825
FIELD SUPPORT	$2,015	$1,405	$1,762	$1,800	$12,975
Other	$0	$1,445	$857	$1,043	$3,236
TOTAL	$4,628	$7,334	$4,762	$5,738	$30,800
GRAND TOTAL	$81,336	$91,575	$68,562	$83,438	$258,900

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM: The non-lethal UAV mission is to provide complementary capabilities to manned systems in the functional areas of electronic warfare, intelligence, reconnaissance, surveillance, target acquisition, and command, control, and communications. This Joint Program provides management oversight of DOD non-lethal UAVs to assure cost-effective approaches to fielding expeditiously a needed capability. Principal RDT&E objectives include UAV related technology base initiatives and the near term elimination of duplication among programs through development of common components and subsystems for non-lethal UAVs.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. Prior Years Accomplishments: Mission Need Statement (MNS) for Joint Short Range System approved December 1988. Completed PIONEER Systems development in 1989. Obtained MSII-B decision for the Joint Medium Range System and awarded competitive FSD contract in 1989. Initiated systems specification development for Joint Close Range and Endurance systems. Obtained MS II/IIIA decision for Joint Short Range System and awarded NDI baseline system contracts. Established a UAV Joint Technology Center. Identified System Integration Lab (SIL) requirements for the Joint Technology Center. Exercised priced options for additional Short Range System hardware in preparation for FY 1991 testing and competitive flyoffs. Approved MNS for both Close and Endurance Systems. Awarded a joint program Systems Engineering and Integration Agency (SEIA) contract December 1989. Initiated for the whole family of UAVs a JPO managed set of interoperability and commonality initiatives to insure common/interoperable hardware, software, subsystem interface specifications, sensors, control stations and air vehicles. Started design of a Common Data Link Architecture for the UAV family (a standard Very Low Cost Data Link). Established a UAV Joint Training Base at the U.S. Army Intelligence Center & School, Ft Huachuca, AZ. Commence operational experimentation efforts with five Pointer UAV systems. Redefining Medium Range FSD program to incorporate broad engineering changes, program FSD extended into FY98. Deployed 5 Pioneer and 4 Pointer systems to Persian Gulf under Desert Storm operations.

3. FY 1991 Accomplishments: Complete specification definition of Block I and II upgrades for the Joint Short Range System. Complete development of the Close Range system specification. Continue Medium Range FSD program. Complete Short Range contractor competitive flyoffs allowing for an FY 1992 downselect. Complete Short Range supplemental subsystem hardware procurements to bring systems up to OT configurations. Continue JPO managed interoperability/commonality technological development initiatives. Procure 110 Exdrone air vechicles for a joint revised FY 91/92 operational experimentation effort.

4. FY 1992 Plan: Seek MSI/II decision for Joint Close Range System. Obtain MS-IIIB approval for the Joint Short Range System and down select to one contractor. Exercise first production option buy of Short Range Systems (4 systems). Commence Short Range System Block II upgrades. Continue Medium Range FSD program.

5. FY 1993 Plan: Seek MSII decision for Short Range Block I/Maritime System. Complete OPEVAL/Operational Testing for Joint Short Range, exercise second production option for Joint Short Range systems (8-10 systems), and continue Short Range Block development efforts. Seek MS-IIB decision for Medium Range Program. Award Close Range FSD contract.

6. FY 1994-1997 Plans:

Close Range -- Continue FSD through FY96 leading to a Milestone III approval for production in FY97 and system IOC in FY97. Close Range system design includes commonality with Joint Short Range ground control and mission planning hardware and interoperability with Joint Short Range systems.

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

Short Range – In FY94 incorporate Block II upgrades into baseline production systems and procure an additional 10-11 Baseline Short Range systems. IOC is planned for FY94. During FY95 through FY97 incorporate Block III upgrades into ongoing baseline annual production system procurements fulfilling a 50 baseline system inventory objective. Additionally, retrofit FY94 and prior year production systems with upgrades. Material support date for the Baseline Short Range is FY96.

Medium Range – In FY95 commmence production initiation w/ATARS payloads.

Interoperability/Commonality – Continue Congressionally directed I/C efforts through FY97 to ensure maximized cost savings through commonality of subsystems between all UAV systems.

Project Management and Joint Technology Center – Continuing level of effort sustains UAV-JP management efforts and a minimum sustaining labor effort for the JTC. Additional resources would establish the long needed advance development line for joint DARPA/UAV-JP technology base initiatives and adequately resource a viable JTC/System Integration Laboratory.

7. Program Plan to completion: This is a continuing program.

D. (U) WORK PERFORMED BY:

CONTRACTORS	IN-HOUSE	
Leading Systems, Inc., Irvine, CA	Army Missile Command, Huntsville, Al	Hill AFB, Ogden, UT
Sandia National Lab, Albuquerque, NM	NADC, Warminster, PA	NSWC, Crane, IN
Teledyne Ryan Aeronautical, San Diego, CA	PMTC, Point Mugu, CA	NWEF Kirtland, AFB NM
Vitro Corp., Bedford, Middlesex, MA	NAC, IN	NOSIH Indian Head, MD
Sierra Nevada Corp., reno NM	NAEC, Lakehurst, NJ	AFHRL, AZ
Interiog, Falls Church, VA	NATC, Patuxent River, MD	HDL, Adelphi, MD
Israel Aircraft Industries, Israel	MWC, China Lake, CA	RADC, Rome, NY
McDonnell Douglas Aerospace Missiles Division, St. Louis, MO	NOS, Indian Head, MD	PEO-IEW, Vent Hill Farms, VA
Aero Vironment, Monrovia, CA	ESD, Hanscom AFB, Lexington, MA	WRDC, Dayton, OH
H.J. Ford Assoc., Inc., Arlington, VA	ASD, Dayton, OH	DTESA, Alburquerque, NM
AAI Corp, Hunt Valley, MD	AICS, Ft Huachuca, AZ	MCBCP, Oceanside, CA
DACOR, Arlington, VA	USMC R&D COMM, Quantico, VA	MISMA, Wash, DC
McDonnell Douglas Aircraft, St. Louis, MO	NTSC, Orlando, Fl	TRADOC, Norfolk, VA
	Eglin AFB, FL	ECAC, Annapolis, MD
	NAPC, Trenton, NJ	
	EPG, Ft Huachuca, AZ	

E. (U) COMPARISON WITH FY1991 DESCRIPTIVE SUMMARY: This program's resourcing levels (RDT&E and Procurement), reflected in the FY91 RDDS submit of January 1990 were a product of FY88 Congressional direction to merge all service UAV resource lines as they existed in FY88 for diverse service unique UAV programs. This merger of resources in essence cancelled service programs and required a full joint program restart. The merged profile in no way reflected adequate out-year resourcing coverage for the subsequent congressionally approved family of joint UAVs. Systems level resource allocations of the inherited RDT&E and Procurement resources were made in FY89 firming up resourcing profiles adequate to initially support:

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

. Close out of the Aquila Program in FY89

. Complete the Pioneer Program in FY93

. Establish the Joint Short Range Program in FY89

. Establish the Joint Medium Range Program in FY89

. Sustain the new UAV Joint Project in FY89

. Start the Congressionally directed Interoperability/Commonality development efforts in FY90

Procurment resourcing covered Medium Range production requirments but only partially covered Short Range approved requirements FY92 through FY94. Additionally, since establishment this new program has developed joint Military Construction resourcing requirements not provided to date.

Subsequent to the FY91 Budget profiles POM 92 guidance levels received in March/April 1990 further reduced both UAV RDT&E and Procurement resource levels from POM 1990 levels by 12% in FY92, 16% in FY93 and 20% in FY94. Based on these reductions and a technical requirement to realign the Medium Range programs FY92–FY94 Procurement lines into RDT&E, this RDDS reflects Procurement to RDT&E realignments in FYs 92–94 and RDT&E to Procurement realignments in FY96 and FY97. All realignments were within POM-92 TOA Guidance. Guidance reductions against original program lines for the Short Range, Medium Range and Close Range programs are outlined below.

TYPE OF CHANGE	IMPACT ON SYSTEM CAPABILITIES	IMPACT ON SCHEDULE	IMPACT ON FY92 COST
CLOSE RANGE			
FY92-FY94 RDT&E RESOURCING REDUCTIONS	N/A	DELAYS FSD TWO YEARS	N/A
SHORT RANGE			
FY92-FY97 PROCUREMENT RESOURCING REDUCTIONS	N/A	EXTENDS PRODUCTION SCHEDULE OUT TWO YEARS	SR SYSTEM UNIT COS RISE $.99M PER SYSTEM FOR REDUCE LOT BUYS

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

MEDIUM RANGE

FY93-FY97 PROCUREMENT AND RDT&E RESOURCING REDUCTIONS/ REALIGNMENTS	TBD	PRODUCTION START DELAYED UNTIL FY95. FSD REQUIRES FULL RESTRUCTURING	TBD FOLLOWING FSD REALIGNMENT

F. (U) PROGRAM DOCUMENTATION:

CATEGORY	MISSION NEED STATEMENT	ACQ PLAN	DCP	TEMP	JILSP
CLOSE RANGE	Jan-90	Apr-92	May-92	May-92	Feb-91
MEDIUMRANGE	Aug-89	Sep-86	Oct-91	Dec-91	May-89
SHORT RANGE	Dec-88	Feb-89	Aug-89	May-91	May-89

. DOD UAV Master Plan updated and approved 16 Feb 1990

. JROC Master Plan for Non-Lethal UAVs, 4 May 1988

. UAV JPO Charter Updated and Signed 16 Oct 89

. Acquisition Decision Memorandum Approving Close Range MSO signed 9 Mar 90

G. (U) RELATED ACTIVITIES:

. Program Element #027217F Joint Services Imagery Processing System (JSIPS)
- ATARS: Joint USAF/USN development of Advanced Tactical Air Reconnaissance system (ATARS) using USAF developed RECCE sensor package to work with the Joint Medium Range System's air vehicles.

- Program Element #0605130, Foreign Comparative Test
- Maritimized VTOL UAV System
- Foreign Weapons Evaluation (Sprite/CL-227/Raven)

- Program Element, #062782A, Army Radar Technology
- UAV MTI Radar Tech Concept Demo (U.S. Army LABCOM)

- Program Element, #03999I, OSD C3I
- UAV Imagery Interpretation Study (RADC)

PROGRAM ELEMENT: #0305141D
P.E. TITLE: UNMANNED AERIAL VEHICLES
JOINT PROGRAM (UAV)

BUDGET ACTIVITY: 4-TACTICAL PROGRAMS

- Program Element, 064770A, JSTARS
  - SASS Low Intensity Target Exploitation (U.S. Army PEO IEW)

- Program Element, 0604707N, TAMPS
  - Tactical Aircraft Mission Planning System

H. (U) OTHER APPROPRIATION FUNDS:

Procurement, Defense Agencies

FY1990	FY1991	FY992	FY1993	PROGRAM TOTALS (1994-1997)
$28,857	$24,272	$138,370	$206,944	$1,185,109

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: See the 1990 DOD UAV Master Plan for details on Foreign Comparative Testing and Foreign Weapons Evaluation programs underway or planned for UAVs between the DOD Joint UAV Program, the Services and allies.

J. (U) TEST and EVALUATION DATA: Not Applicable.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0305815D Budget Activity: #4-Tactical Programs
PE Title: General Support for SO/LIC

A. (U) RESOURCES (dollars in thousands)

Proj No. & Title	FY 1990 ACTUAL	FY 1991 ESTIMATE	FY1992 ESTIMATE	FY 1993 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
General Support for Special Operations/Low Intensity Conflict	0	2000	0	0	TBD	TBD

B. (U) BRIEF DESCRIPTION OF ELEMENT: New DoD start in FY 1991. This program provides specialized research and analytical support for the Assistant Secretary of Defense for Special Operations and Low-intensity Conflict, ASD(SO/LIC). Projects executed address a very broad spectrum of technical issues relating to SO, LIC, counter- and anti-terrorism, counterinsurgency, and unconventional warfare. The scope of the program includes assessing impacts of regional political situations, general military options and planning, force structure analyses, threat assessments, resource allocations, countermeasure options, and options for initiatives. The program supports and is integrated into the overall DoD efforts in these areas.

C. (U) JUSTIFICATION FOR PROJECTS LESS THAN $10.0 MILLION IN BOTH FY 1992 AND FY 1993: These funds provide for technical and analytical studies and the special expertise needed to address SO, LIC, terrorism, and regional political/economic/military issues essential to support ASD(SO/LIC)'s oversight and policy responsibilities. This program provides critical information and analysis for the OASD(SO/LIC) staff.

(U) FY 1990 Accomplishments: N/A (FY 1991 DoD new start).

(U) FY 1991 Planned Program: Assessments and analyses will be started and conducted in the areas of SO, LIC, counter- and anti-terrorism, counterinsurgency, and unconventional warfare. The scope of the projects include assessing impacts of regional political situations, general military options and planning, force structure and resource analyses, threat assessments, technical and countermeasure options, and initiatives.

(U) FY 1992-1993 Planned Program: *N/A*

(U) Work Performed By: Program will be managed by OASD(SO/LIC). Projects will be performed by a variety of academia, commercial analytical organizations, and Federally Funded Research and Development Centers,

(U) Related Activities: Program is coordinated with other DoD organizations, especially USSOCOM and USD(P). There is no unnecessary duplication within DoD.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: N/A

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0305190D Budget Activity: 5
PE Title: C3I Intelligence Programs

A. (U) RESOURCES ($ in Thousands)

Project Number & Title	FY1990* Actual	FY1991* Estimate	FY1992 Estimate	FY1993 Estimate	To Complete	Total Program
ISSO	6,978	1,200	8,600	7,500	ongoing	ongoing

* FY 90 funding in PE 0603710D, FY91 funding in PE 0605804D

B. BRIEF DESCRIPTION OF ELEMENT: PE includes all resources and manpower in support of projects managed by the Intelligence System Support Office (ISSO) as directed by the ASD(C3I). ISSO was established on 5 July 1990 by the direction of the Deputy Secretary of Defense.

C. (U) JUSTIFICATION FOR PROJECTS LESS THAN $10.0 MILLION IN BOTH FY 1992 AND FY 1993

Project Number and Title: ISSO provides program management for
- Linked Operations Intelligence Centers Europe (LOCE) for EUCOM
- Command and Management System (CMS) for SOUTHCOM
- Foreign Commercial Purchasing Program (FCP)
- National Drug Intelligence Center (NDIC) for DoD

Prior Accomplishments:
- ISSO began operations in July 1990
- Assumed program management responsibilities for LOCE after disestablishment of the Joint Tactical Fusion Program
- Provided program management support for the SOUTHCOM CMS Proof of Concept demonstration

Current Year Plans:
- Expand LOCE network into US and in support of current EUCOM/NATO operations for Desert Storm
- Complete transition for CMS operations and maintenance to the Army
- Develop and execute the NDIC program as directed by Congress
- Execute the FCP program

FY 1992 Plans
- Continue management of the FCP program
- Continue management of the NDIC by upgrading and enhancing the hardware and software system
- Integrate LOCE into multi-national/NATO intelligence network

FY1993 Plans
- Continue management of FCP program
- Upgrade LOCE to meet evolving requirements for Europe as well as for detection and monitoring of drugs into CONUS.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: # 0601103D
Title: University Research Initiative
Project No.: P-103
Budget Activity: 1. Technology Base

A. (U) RESOURCES ($ in Thousands)

Project Number & Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
P 103 UNIVERSITY RESEARCH INITIATIVE	94,800	230,711	87,373	85,040	TBD	Continuing

B. (U) BRIEF DESCRIPTION OF ELEMENT: The University Research Initiative (URI) is designed to: provide new knowledge for the future development of advanced military systems; improve the quality of defense research performed at universities; and promote education of scientists and engineers in disciplines critical to future defense research and development. URI's principal component is multidisciplinary research. For questions suited to this approach, multidisciplinary activity can accelerate research progress and transition of research results to application. A non-multidisciplinary, Research Initiation Program broadens URI participation to further build the national infrastructure for science and engineering research and education in defense-critical fields. URI also includes "people programs": fellowships, to encourage U.S. citizens to pursue graduate study in science and engineering; young faculty awards; personnel exchanges among universities and DoD laboratories; and oceanographic education awards, to attract promising young scientists from other fields into post-doctoral positions in oceanography. URI research areas include: mathematics; electronics; fluid dynamics; materials; biotechnology; electro-optics; physical and structural acoustics; human performance factors; environmental science; and propulsion. In FY 1991, URI supports various other activities identified in the Department of Defense Appropriations Act, 1991.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS

(U) FY 1990 Accomplishments: The Services and DARPA conducted competitions for Research Initiation and "people" programs. This was the fourth of five years for multidisciplinary efforts funded by Army, Navy and DARPA (Air Force competitively made new three-year awards in 1989). Technical accomplishments include:

* Researchers at the University of Delaware created models and software that enable a designer early in the design process to consider a product's manufacturability and make cost-effectiveness tradeoffs in materials, process and parts design to meet customer requirements. The Army is using the methods to design missile components, electronics packages, and chemical masks for protecting air crews.

* Two teams advanced toward shorter-wavelength (blue-green) diode lasers. These have use in optical computing, communications (especially underwater), high-density optical recording and compact color displays. A seven-institution consortium used their new laser-assisted growth technique to

Program Element: # 0601103D
Title: University Research Initiative

Project No.: P-103
Budget Activity: 1. Technology Base

reproducibly and stably produce blue-emitting diodes in quantity and made multilayer structures with potential for blue-green lasing. California Institute of Technology developed and demonstrated a green light emitter that likely will be used now in active displays.

* Massachusetts Institute of Technology researchers created the first software to integrate manipulation, reasoning and vision. With it, a robot manipulator can pick up objects of any shape and orientation. The robot can plan how to grasp an object, put it down and pick it up again, if necessary, to get the object to a desired position. A major U.S. computer maker is using the software in its manufacturing area.

* Brown University and State University of New York at Buffalo researchers developed and tested a mathematical method for determining damping in flexible structures made of composite materials. This is the first verification in transient situations. Knowledge of transient damping is key to control of flexible structures such as space mirrors or antennas.

(U) FY 1991 Plans: URI "people" and Research Initiation programs will continue, with competitions for FY 1992 starts. Army, Navy and DARPA multidisciplinary efforts will perform their final year of research. This portion of URI will be recompeted for FY 1992 starts. Air Force multidisciplinary programs will perform their second year of research. URI will support other activities directed in the Department of Defense Appropriations Act, 1991.

(U) FY 1992 Plans: URI "people" and Research Initiation programs will continue, with competitions for FY 1993 starts. FY 1992 will be the first year of effort for Army, Navy and DARPA multidisciplinary programs. Air Force multidisciplinary programs will be in their final year, and a competition will be held for FY 1993 starts.

(U) FY 1993 Plans: URI "people" and Research Initiation programs will continue, with competitions for FY 1994 starts. Army, Navy and DARPA multidisciplinary programs will continue, and new Air Force programs will get under way.

(U) WORK PERFORMED BY: The program is performed by academic institutions and executed by the research offices of the Services and DARPA. An OSD-chaired steering group assures coordination.

(U) RELATED ACTIVITIES: Complementary activities are funded under the Defense Research Sciences Program Elements of the Army, Navy, Air Force, and DARPA (PE's 0601102A, 0601153N, 0601102F, and 0601101E).

(U) OTHER APPROPRIATION FUNDS: Not Applicable.

(U) INTERNATIONAL COOPERATIVE AGREEMENTS: Not Applicable.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element # 0601106D Project No.: P1102

Title: Research Projects Budget Activity: 1 Technology Base

A. (U) RESOURCES ($ in Thousands)

TITLE	FY 90 ACTUAL	FY 91 EST.	FY 92 EST.	FY 93 EST.	TO COMPT.	TOTAL PROG.
COAL UTILIZATION CENTER *	0	5,000	0	0	5,000	5,000
LIBERTY SCIENCE CENTER *	0	15,000	0	0	15,000	15,000
ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY	0	19,913	0	0	19,913	19,913
TOTAL	0	39,913	0	0	39,913	39,913

B. (U) BRIEF DESCRIPTION OF ELEMENT: These are congressional setasides projects. The goal of the Coal Utilization Center is to advance the technology of coal utilization through application of chemical, analytical, conversion, and combustion test activities. The goal of the Liberty Science Center is to develop museum exhibits which will enable children and adults to experience the wonders of science and advances in technology through interactive exhibits. The goals of the Environmental and Molecular Sciences Laboratory are to develop solutions to long-term environmental restoration and waste-management problems and to foster improved understanding of basic molecular chemistry science which can benefit a wide range of environmental and other issues.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0601112D Project: NONE

PE Title: Critical Technologies Institute Budget Activity 1

A. (U) Resources ($thousands)

FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	Total Program
0	4,986	0	0	4,986

B. (U) Brief Description of Element: The FY 1991 National Defense Authorization Act, PL 101-510, directed the establishment of a nonprofit membership corporation to be known as the "Critical Technologies Institute", to be sponsored by the Director of the Office of Science and Technology Policy. The Institute is required to survey the views of US industry, colleges and universities, and Federal and State agencies involved in R&D or utilization of critical technologies identified in the report of the National Critical Technologies Panel, chaired by the Director of the Office of Science and Technology Policy, and to analyze worldwide trends. The Institute is to identify national objectives for R&D and production capabilities in critical technologies, prepare possible strategies for achieving them, and report on progress in these matters.

C. (U) Program Accomplishments and Plans:

(U) FY 1990 : N/A

(U) FY 1991:
Analytical/technical studies to develop a national critical technologies plan.

(U) FY 1992: N/A

D. (U) Work Performed By: The work will be performed by a variety of organizations yet to be determined by the Institute under the direction of the Office of Science and Technology Policy.

E. (U) Program Documentation: Not Applicable

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0602222D Budget Activity: #1-Technology
PE Title: Counterterror Technical Support (CTTS)

A. (U) RESOURCES (dollars in thousands)

Proj No. & Title	FY 1990 ACTUAL	FY 1991 ESTIMATE	FY1992 ESTIMATE	FY 1993 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
o Counter Hostage-Taking	0	0	1100	1200	Cont	Cont
o Counter-Assassination	0	0	1000	900	Cont	Cont
o Counter Explosive and Unconventional Devices	0	0	2200	2000	Cont	Cont
o Counter Attack of Targets	0	0	600	900	Cont	Cont
o Counter Perimeter and Entry Point Breaches	0	0	700	800	Cont	Cont
o Technology for Surveillance and Threat Information Processing	0	0	1400	1200	Cont	Cont
Total	0	0	7000	7000	Cont	Cont

B. (U) BRIEF DESCRIPTION OF ELEMENT: New DoD start in FY 1992. This program develops technology and initial prototype equipment having direct operational application in the National effort to counter terrorism. The program concurrently pursues many subprojects addressing two programmatic objectives: (1) focused technology, developing initial prototypes for evaluation within 12-24 months and (2) less focused, longer timeframe, technology development. Individual projects include technologies to counter terrorist capabilities relative to: hostage-taking; assassinations; explosive and unconventional devices; attack of installations, individuals (VIPs), infrastructure, and the general populace; and perimeter and entry point breaches. Also included is technology for surveillance and terrorist threat information processing and dissemination. The program supports and is integrated into the interagency, National response to terrorism. The program specifically avoids duplication of other R&D efforts and is not a substitute for other DoD and Executive Branch programs to counter terrorism, this program's focus being future terrorist threats and multiple agency requirements. The program is a continuation of the National counter terrorism program that was funded by Department of State (DoS) under the Technical Support Working Group (TSWG). TSWG, which is co-chaired by DoD and DoE and has multi-agency membership, is the R&D working group under the auspices of the NSC's Policy Coordinating Committee on Terrorism which is chaired by DoS. The TSWG prioritizes requirements which, when approved, become program requirements.

C. (U) JUSTIFICATION FOR PROJECTS LESS THAN $10.0 MILLION IN BOTH FY 1992 AND FY 1993:

1. (U) Counter Hostage-Taking.

(U) FY 1990 Accomplishments: N/A (FY 1992 DoD new start).
(U) FY 1991 Planned Program: N/A (FY 1992 DoD new start).

UNCLASSIFIED

FY 1992/1993 Biennial RDT&E Descriptive Summary

Program Element: #0602225D
PE Title: Concept Evaluation

Project Number:
Budget Activity: 1-
Technology Base

A. (U) RESOURCES ($ in thousands)

Project Title: Concept Evaluation

Popular Name	FY1990	FY1991	FY1992	FY1993	Total
ConceptEval	Actual	Actual	Estimate	Estimate	Program
	-0-	-0-	100,000	100,000	Continuing

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES:
These funds will be used by the Director of Defense Research and Engineering to ensure that a full range of technology alternatives are considered prior to initiating a new acquisition program, to support rapid exploitation of new technology opportunities and promote technology policy initiatives. It fulfills the requirements of the Defense Management Review and Defense Acquisition Directive to study promising alternative concepts that could satisfy an identified mission need prior to commiting to a new start acquisition program. Efforts undertaken will be of a level of risk and payoff beyond that specified by the Military Departments in new programs.

C. (U) PROGRAM ACCOMPLISHMENT AND PLAN:

(U) FY 1990 Accomplishments:
- This is a new program that will be initiated in FY 1992.

(U) FY 1991 Plans:
- This is a new program that will be initiated in FY 1992.

(U) FY 1992 Plans:
- Efforts will be focused on developing and evaluating alternative solutions to satisfy mission requirements for programs entering the concept definition stage of the acquisition process.
- Concept evaluation studies will be conducted to determine if materiel requirements may be satisfied through a) use or modification of an existing U.S. military system; b) use or modification of an existing commercially developed or Allied system that fosters a nondevelopmental acquisition strategy; c) a cooperative research and development program with one or more Allied nations; d) a new joint-Service development program; or e) a new Service-unique development program.
- Research and exploratory programs will be initiated or augmented to explore high risk excursions of interest beyond that of current Military Department objectives, to exploit new technology opportunities and promote technology policy initiatives.

(U) FY 1993 Plans:
- Efforts will be similar to FY 1992 but will examine additional opportunities on an iterative basis.

(U) Program Plan to Completion: This is a continuing program.

D. (U) WORK PERFORMED BY:
Performers will be decided on a competitive, peer-reviewed process based on analysis of in-house and extra-mural proposals.

E. (U) COMPARISON WITH FY 1991 DESCRIPTIVE SUMMARY:
No Descriptive Summary was submitted in FY 1991.

F. (U) PROGRAM DOCUMENTATION: To be developed.

G. (U) RELATED ACTIVITIES: None

H. (U) OTHER APPROPRIATION FUNDS: None

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None

J. (U) MILESTONE SCHEDULE:
- Projects will be identified as a normal part of the PPBS process.
- Milestones for approved projects will be reported in future Descriptive Summaries.

FY 1992/1993 Biennial RDT&E Descriptive Summary

Program Element : #0602227D
PE Title: Medical Free Electron Laser

Project Number: Pxxx
Budget Activity: 1- Technology Base

A. (U) RESOURCES ($ in thousands)

Project Title: Medical Free Electron Laser

Popular Name	FY1990	FY1991	FY1992	FY1993	Total
	Actual	Actual	Estimate	Estimate	Program
Medical Free Electron Laser	-0-	20,000	20,000	20,000	60,000

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: The Medical Free Electron Laser (MFEL) program seeks to develop and enhance free electron laser technology and to assess how the unique characteristics of FELs may be exploited for applications in medical, biophysical, and materials science research. This program was formerly included in PE 0603223C, Systems Analysis and Battle Management, Project No. 4305, Medical Technology.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLAN:

(U) FY90 Accomplishments:
- Conducted peer review of MFEL proposals, selecting seven sites for MFEL Medical Research Centers. Selected four HBCU/MIs to work on MFEL related technology.
- Enhanced medical research using MFELs in areas of photodynamic therapy, osteology, laser angioplasty, light irradiation of viruses, treatment of glaucoma, laser resection, tissue rejection, and the treatment of skin disorders.

(U) FY 1991 Plans:
- Seven established medical research centers will continue MFEL related research in an effort to translate the outcome of the work to clinical applications throughout the medical field. Selected HBCU/MIs will continue related work.

(U) FY 1992 Plans:
- The MFEL program efforts will continue to be focused on developing applications of free electron laser technology in medicine, photobiology, surgery, and materials science. Selected HBCU/MIs will continue related work.

Program Element : #0602227D
PE Title: Medical Free Electron Laser
Project Number: Pxxx
Budget Activity: 1- Technology Base

(U) FY 1993 Plans:
- FEL procurement will be completed with beam operations conducted in early FY93 followed by research initiation. Program will be transitioned to non-DoD sponsorship.

D. (U) WORK PERFORMED BY:

- Massachusetts General Hospital, Boston, MA
- University of Utah, Salt Lake City, UT
- Baylor Research Foundation, Dallas, TX
- University of California, Irvine, CA
- Duke University, Durham, NC
- Stanford University, Palo Alto, CA
- Vanderbilt University, Nashville, TN
- Virginia State University, Petersburg, VA
- Howard University, Washington, DC
- Meharry Medical College, Nashville, TN
- Tuskegee University, Tuskegee, AL

E. (U) COMPARISON WITH FY 1991 DESCRIPTIVE SUMMARY:

1. Technical Changes: None.
2. Schedule Changes: None.
3. Cost Changes: None.

F. (U) PROGRAM DOCUMENTATION: To be developed.

G. (U) RELATED ACTIVITIES:
- PE No. 0603221C; PMA 1301, Free Electron Laser.

There is no unnecessary duplication of effort within DoD.

H. (U) OTHER APPROPRIATION FUNDS: None

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None

J. (U) MILESTONE SCHEDULE:

- Completion of the MFEL Program FY93

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: # 0603225D
PE Title: Joint DoD/DOE Munitions Technology Development
Budget Activity: 2 Advanced Technology Development

A. (U) RESOURCES ($ in Thousands):

Project Number & Title	FY 1990 Actual	FY 1991 Actual	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
P225 Joint DoD/DOE Munitions Technology Development	13,357	18,000	10,260	19,795	Continuing	

B. (U) BRIEF DESCRIPTION OF ELEMENT: This program is a cooperative, jointly funded effort of R&D with DOE to prosecute new and innovative warhead, explosive, and fuze technologies in order to bring about major improvements in non-nuclear munitions. Through our funding arrangement with DOE, DoD resources are matched through the first $15M. More importantly, the small DoD contribution effectively taps the annual billion-dollar DOE RDT&E investment.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS: This effort exploits the extensive and highly developed technology base resident in the National Laboratories relevant to achieving the goal of developing capable, cost-effective smart munitions. The current program supports 33 projects in warhead technology, energetic materials, component development, and computer simulations.

(U) FY 1990 Accomplishments:

- (U) Component development and systems design were completed which enable all solid-state safing and arming (S&A) devices for conventional weapons. S&A designs for Patriot and AMRAAM missiles based on this work, were completed this year.
- (U) Two different second generation 3D, hydrodynamic simulation codes, developed by DOE, have been transferred to the Army Ballistic Research Laboratory (BRL) for use in predicting the performance of new chemical energy and kinetic energy warheads.
- (U) A computer code for design of slapper detonators was provided to the Naval Surface Weapons Center. This Navy laboratory used the code to incorporate slapper detonators into the design of a new warhead for the Standard Missile.
- (U) Component development for the High Power Microwave Weapon demonstration has continued to meet all project milestones.
- (U) Investigations confirmed existence of a unique Carbon/Hydrogen material that has a significantly higher energy density than conventional high explosives. Experiments have demonstrated that this material can be used as part of an ultra-safe explosive system.

(U) FY1991 PLANS:

- (U) Continue development of all solid-state safing and arm devices for conventional weapons. Designs for utilization by specific systems will be implemented as service requirements are generated.
- (U) Expand development activity in the Arbitrary Lagrangian-Eulerian (ALE) hydrodynamic simulation code with activities directed toward the solution of conventional weapons applications.

- (U) Investigate TNZ (a new energetic material molecule) as a possible addition to the current family of explosives available for use in conventional weapons.
- (U) Continue investigations of new high energy density materials. Theoretically these materials can have energies that are several orders of magnitude higher that current explosives.
- (U) Continue development and scale-up activities on the CL-20 explosive molecule. This material shows promise for providing higher energy and enhanced safety when compared to current explosives.

(U) FY1992 PLANS:

- (U) Continue development of all solid-state safing and arm devices for conventional weapons. Designs for utilization by specific systems will be implemented as service requirements are generated.
- (U) Continue investigations of new high energy density materials. Theoretically these materials can have energies that are several orders of magnitude higher that current explosives.
- (U) Transition CL-20 activities to a DoD Laboratory..
- (U) Transfer the ALE hydrodynamic code to the BRL for use in simulation of conventional munitions target interactions.

(U) FY1993 PLANS:

- (U) Continue investigations into application of advanced technologies that exist in the DOE Laboratories to the solution of conventional munitions problems.
- (U) Continue support of the dynamic computer simulation codes that have been transitioned to the DoD Laboratories.
- (U) Continue development of all solid-state safing and arm devices for conventional weapons. Designs for utilization by specific systems will be implemented as service requirements are generated.
- (U) Continue investigations of new high energy density materials. Theoretically these materials can have energies that are several orders of magnitude higher that current explosives.

(U) Work Performed By: Lawrence Livermore, Los Alamos, and Sandia National Laboratories.

(U) Related Activities: Not Applicable.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.

FY 1992-1993 BIENNIAL DESCRIPTIVE SUMMARY

Program Element: #0603228D
PE Title: DoD Physical Security Equipment Budget Activity: 4

A. (U) RESOURCES ($ in Thousands)

Project Number & Title P228	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY1993 Estimate	TO Complete	TOTAL Program
TOTAL FOR PE	32,372	33,828	39,926	28,300	Continuing	N/A

B. (U) BRIEF DESCRIPTION OF ELEMENT: The purpose of this program is to develop physical security equipment (PSE) systems and to safeguard DoD acquisition information for all DOD components. This program supports the protection of Nuclear Weapons, tactical and nuclear weapons systems, DOD personnel and DoD weapon system in the acquisition process. This Program element is the sole source of funding for the DOD RDT&E for a physical security program of 84,000 military and civilian personnel with expenditures exceeding $2.3 Billion annually. Funding for critical RDT&E security improvements within service channels has fluctuated widely over the years and prompted the consolidation of the Services and Defense Nuclear Agency (DNA) PSE RDT&E funds into the single OSD controlled program element. This program element is subject to the 1.25% tax for Small Business Innovation Research (SBIR) required by Public Laws 97-219 and 99-443.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS: This program was originally formed by the Congressional consolidation of the three military departments and the DNA RDT&E physical equipment security budget submissions for FY 1989. The funds are currently being used to provide PSE RDT&E for individual service and joint PSE requirements. The funds will be directly employed in support of the DNA exploratory development PSE effort for the protection of nuclear weapons by expanding technology and techniques (through proof-of-concept) to improve nuclear security. This program element supports the Army's advanced and engineering development of Interior Detection, Security Lighting, Security Barriers and Security Display Units. In a like manner, the program element also supports the Air Force's PSE RDT&E effort in the area of Exterior Detection, Exterior Surveillance, Entry Control and Airborne Intrusion. And finally, the program will support Navy RDT&E efforts in the areas of Shipboard Security, Waterside Security, Explosive Detection, Locks and anti-compromise/emergency destruction of classified material equipment. Recent concerns regarding the protection of DoD weapon systems acquisition information at DoD RDT&E facilities has lead to an expanded role for this Program Element. In the future this Program Element will help to support a coordinated effort to provide safeguards for systems/programs in the DoD acquisition process.

(U) FY 1990 Accomplishments:

- Completed research for the identification and selection of the Integrated Commercial Intrusion Detection System (ICIDS); initiated the Joint Service Interior Intrusion Detection System Procurement Improvement Program utilizing commercial components to address parts obsolescence problems.

- Completed the exploratory research on Underground Storage Initiative, Sticky Foam Technology, Security Overpack Container, Tactical Intrusion Detection System,

Mobile Intrusion Detection and Assessment System and Maintenance and Assembly Secure Storate. All of the programs will be transferred to the appropriate Service for advanced development. Studied requirements for the Portable Reconfigurable Line Sensor.

- o Continued work under the Secure Structures Ashore (SSA) Program; completed design and installation specifications for the secure magazine door and internal locking system and converted the Security Assessment Model (SAM) to a PC based system.

- o Completed limited production and development of the Security and Force Protection Enhancement Resources (SAFER), a PSE package assigned to address the Low Intensity Threat, such as in Honduras and Panama. Completed the Advanced Entry Control System specification.

- o Completed the exploratory development phase of the Underwater Security Vehicle program and conducted operational tests and evaluations of the Magazine Security Systems (MSS) MK 1 aboard the USS Blakely. Started program Management Responsibility Transfer (PMRT) of the Co-Axil Sensor System.

- o Completed the Insider Vulnerabilities program, Recapture/Recovery program and the Stand-Off Attack program for ATSD(AE) and USEUCOM.

(U) FY 1991 Plans:

- o Continue the advanced development of the DNA Maintenance and Assembly Secure Storage program, exploratory development for Barriers for Underground Storage program and a SAFER full scale production In-Progress Review (IPR).

- o Continue development of the Active Detection/Denial program and addressing nuclear weapons security requirements through exterior active protection systems and mobile intrusion detection systems.

- o Field the Integrated Commercial Intrusion Detection System (ICIDS) package and commence demonstration and operational tests and evaluation of the Waterside Security Systems (WSS). Perform requirements and mission analysis for the Dispersal Integrated Security System (DISS)

- o Continue the Secure Storate Area (SSA) effort: test the low and high security window barriers, complete vehicle barrier design evaluation guide and conduct reliability tests of secure personnel doors. Conclude PMRT activities for the AF Small Annunciator Program.

- o Initiate efforts for improved security of DoD weapons acquisition information including, surveying, planning and implementing security improvements at RDT&E facilities.

(U) FY 1992 Plans:

- o Continue development of the Shipboard Physical Security Program and continue waterside security RDT&E.

- o Complete all remaining SAA tasks, field SAFER full scale production sets, continue Active Denial exploratory research and conduct a Sticky Foam

Dispensing System production IPR. Continue FSD on the Portable Reconfigurable Line Sensor (PRLS) and begin on DISS.

- o Provide RDT&E support for the Pre-Planned Product Improvement Program (P^3I) for upgrading and replacing sensor systems, many of which are 1960's and early 1970's technology and have exceeded their design life.
- o Finalize a plan to improve security at DoD RDT&E facilities.
- o Continue support to waterside security RDT&E for a second generation of equipment - sonar, radar and barrier systems and software to integrated sensor systems.

(U) FY 1993 Plans:

- o Continue RDT&E on Active Denial, Advanced Sensor Technology and Security Storage and Transport systems. Continue the upgrade of RDT&E for Shipboard Physical Security Program and the Waterside Security RDT&E effort. Continue DISS Program effort.
- o Continue research into the Secure Storage Area and improve the security of the weapon sites. Continue the PRLS Program.
- o Implement a plan to improve security at DoD RDT&E facilities.

(U) Work Performed By: The RDT&E effort is executed by the three military departments and the Defense Nuclear Agency. The actual RDT&E work is accomplishment in service laboratories, in US Government agencies, and to a lesser degree, through commercial contractors. A selection of these are: Analytical Systems Engineering Corp, E-Systems, Computing Services Co. of Canada, Magnavox, Teledyne Controls Corps., Sanders Associates, ISC Corp., SAIC, B-K Dynamics, Westinghouse, General Electric Field Services, Computer Sciences Corp., Plessey Marine Systems, BDM Corp., Diversified Data Corp., Tetra Tech Inc., Canadian Commercial Corp., and other contractors that are currently in the bid and proposal cycle.

(U) Related Activities: There are no related activities within the DOD to develop physical security equipment. However, there are related programs within other government agencies in which the DOD is working to establish commonality in requirements and specifications. The services are improving security at RDT&E facilities.

(U) Other Appropriated Funds: None.

(U) International Cooperative Agreements: None.

(U) This document is not releasable to non-DoD personnel without approval of the originating office.

FY 1992/1993 RDT&E DESCRIPTIVE SUMMARY

Program Element: #0603704D Budget Activity: #2 Advanced Technology Development
PE Title: Special Technology Support
Project: P-0704, Special Technology Support to Intelligence
P- , Special Technology Support for Light Forces

A. (U) RESOURCES ($ In Thousands)

Project Title Popular Name	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
Special Technology Support to Intelligence						
P-0704	10,955	11,127	10,184	9,690	Continuing	Continuing
Special Technology Support for Light Forces						
P-	13,719	0	0	0		
Total	24,674	11,127	10,184	9,690		

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES:

By Congressional direction for FY 1990 and beyond, this program combines two projects previously funded under other program elements: the Counter-Insurgency Special Technology Program which was part of the Force Enhancement-Active Program (PE 1110011D); and a portion of the Equipment Upgrade Program (PE 0203745A). Both projects are intelligence related. The Special Technology Support to Intelligence Program will emphasize the rapid development of equipment and hardware to satisfy world-wide intelligence technology and secure communications requirements. The Special Technology Support for Light Forces is a Congressional initiative and information will be provided on a need-to-know basis.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1990 Program. Development/demonstration of:

- Databases for Unique Mission Applications
- Improved High Frequency Transceiver
- Deployable Intelligence Support Package
- Precise Geopositioning Capability for Small Crafts
- Korean Intelligence Support System Upgrade
- Counter-Intelligence Screening System
- Target Materials Workstation
- Intelligence-Terrain Interface System
- Automatic Direction-Finding/Position System

Program Element: #0603704D Budget Activity: #2 Advanced Technology Development
PE Title: Special Technology Support
Project: P-0704, Special Technology Support to Intelligence
P- , Special Technology Support for Light Forces

FY 1991 Program. Planned development/demonstration of:

- Automatic Civilian Air Flight Monitoring System
- Secondary Imagery Dissemination System
- Laser Acoustic Surveillance System
- Digital Imagery Connectivity System
- Pacific Island National Communications Connectivity
- Direction Finding Kit with Frequency Hopping Burst Communications Capability
- Imagery Van Prototype
- Digital Cellular Telephone Intercept System

FY 1992/1993 Planned Program. This is a rapid prototyping program which fields modern technology to meet or partially meet the requirement of the intelligence Community. Projects are nominated by the Community in response to specific criteria established by OASD(C3I). The proposed projects are reviewed for technical feasibility and to ensure there is no duplication of effort.

Program to Completion: This is a continuing program.

D. (U) **WORK PERFORMED BY:** Subprojects/tasks are performed by numerous DoD and other R&D activities (Notably: Stanford Communications, Annapolis, MD; EG&G; Goleta, CA; Southwest Research Institute, San Antonio, TX; Batelle Memorial Labs, Columbus, OH; Air Force Rome Air Development Center, Rome, NY; Naval Research Laboratory, Washington, DC.) The Special Technology Programs Office at the Naval Explosive Ordnance Disposal Technology Center, Indian Head, MD, manages the overall program and provides project/task oversight.

E. (U) **COMPARISON WITH FY 1989/1990 DESCRIPTIVE SUMMARY:** FY 1989/1990 resources and plans are consistent with prior submissions for predecessor Program Elements. More specific correlations between cost and schedule is not applicable for this type of 6.3A program.

F. (U) **PROGRAM DOCUMENTATION:** N/A

G. (U) **RELATED ACTIVITIES:** Program provides a coordinated response to individual intelligence and Service requirements for rapid prototyping of equipment. Individual Services establish follow-on programs for full-scale development, procurement and fielding.

H. (U) **OTHER APPROPRIATED FUNDS:** None

I. (U) **INTERNATIONAL COOPERATIVE AGREEMENTS:** N/A

J. (U) **MILESTONE SCHEDULE:** N/A

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603705D Project: P1475

PE Title: Manufacturing Technology Budget Activity 6

A. (U) Resources ($ thousands)

Project Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	Total Program
Mfg Technology	0	49,716	0	0	49,716

B. (U) Brief Description of Element: Manufacturing technology: information which defines industrial processes and techniques. For the past 25 years, DoD has funded the development of manufacturing technology through PE 0708011* "Industrial Preparedness" in each of the military departments and the Defense Logistics Agency. In FY 1991, Congress funded the other programs but also created this new program element within the Office of the Secretary of Defense. Congress directed OSD to develop a national defense manufacturing technology plan and then, to use these funds to fund potential investments identified in that plan. This program will develop advanced manufacturing technology to produce needed DoD materiel "better, cheaper and faster." Investments are expected to eventually lead to a "factory floor" application of the technology developed. This technology will provide benefits such as: improved industrial productivity, improved product quality, shortened lead times, and better shop floor management and inventory control.

C. (U) Program Accomplishments and Plans:

(U) FY 1990: Funding in Services

(U) FY 1991:

- o Analytical/technical studies to develop a national manufacturing technology plan.
- o Development of manufacturing technologies identified in the above plan. In all probability these technologies

will be related/similar to processes such as: fabrication, repair of systems, inspection, factory integration, control of equipment, product assembly, welding, packaging, machining, chemical processes, or cleaning. They will impact weapons systems/components such as: airframes, electro-optics, engines, metal parts, individual soldier equipment, ships, optics, ordnance, and micro-electronics. Funds will be transferred to the military departments and Defense Logistics Agency for program execution.

(U) FY 1992: Funding in Services

D. (U) Work Performed By: The work will be performed by a variety of organizations yet to be determined -- DoD elements, commercial firms, academe, not-for-profit organizations, Federally Funded Research Centers, or others.

E. (U) Program Documentation: Not Applicable

F. (U) Related Activities: Historically, development of manufacturing technology has been funded under PE 0708011* "Industrial Preparedness" in each of the military departments and the Defense Logistics Agency. The six technical subcommittees of the Manufacturing Technology Advisory Group is a principal means of providing inter- and intra-organization coordination.

G. (U) Other Appropriated Funds: Other manufacturing technology efforts are funded under PE 0708011* "Industrial Preparedness" in each of the military departments and the Defense Logistics Agency.

H. (U) International Cooperative Agreements: None

I. (U) Milestone Schedule: Not applicable

Program Element: #0603708D
PE Title: Integrated Diagnostics

Project Number: P708
Budget Activity: #6 Defense Mission Wide Support

D. (U) WORK PERFORMED BY: Funds will be provided to the Army, Navy and Air Force for performance of the specific projects described above.

E. (U) COMPARISON WITH FY 1990/1991 DESCRIPTIVE SUMMARY: This program was introduced as a new start in FY 1990, but due to budget constraints was delayed a year and has been restructured to better reflect technology development and transition requirements. Therefore, demonstrations scheduled for FY90-91 have been delayed and reprioritized to comply with funding restrictions.

F. (U) RELATED ACTIVITIES: Not Applicable

G. (U) OTHER APPROPRIATION FUNDS: Not Applicable

H. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: Not Applicable

I. (U) MILESTONE SCHEDULE: Not Applicable

Rev 8/15/90

FY 1992-1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0603708D
PE Title: Integrated Diagnostics

Project Number: P708
Budget Activity: #6 Defense Mission Wide Support

A. (U) RESOURCES ($ in Thousands)

Project Title / Popular Name	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
Integrated Diagnostics Technology Demonstration Program	0	3977	10751	13206	Ongoing	Ongoing

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENTS AND SYSTEM CAPABILITIES:
Today, an estimated 25 to 35% of fielded system ownership costs are attributable to maintenance. Future missions require versatility and speed which cannot be supported with our current reliance on voluminous, vulnerable logistics "tails" for deployment and excessive numbers of highly skilled technicians. There are many technology developments which already exist, or are in-work which could directly address these maintenance and support burdens. This program element accelerates transition of high leverage technology developments into operational maintenance products by providing seed funding to existing Service R&D projects. The demonstration objectives are: (1) show technology that can be applied and is ready for field use, (2) demonstrate products and concepts which can quickly be applied to fielded systems for near-term payoffs, and (3) establish technical approaches which will set standards for new/modified system designs. Technologies selected for funding under this program element will be applied to field demonstrations on major weapon systems that are managed by the weapon program manager. Strong Service user involvement in the planning and execution of the demonstration, a plan to transition to operational use, and identifiable payoffs are also conditions for selecting demonstration projects. The candidate projects apply such technology applications as intelligent, guided troubleshooting/fault analysis; new architectures and products for on-board testing, performance monitoring, and failure prediction; microelectronics for down-sized test; paperless user interfaces; and transparent data collection/analysis. Individual demonstrations: are of sufficiently mature technology and in a development phase so that the risk is known and is moderate-to-low; serve to demonstrate existing DoD research in technology areas critical for future diagnostics applications; have potential for significant weapon system capability improvements; apply technology generic enough for wider-scale weapon system/Joint Service applications; and also benefit other levels of maintenance.

Program Element: #0603708D
PE Title: Integrated Diagnostics

Project Number: P708
Budget Activity: #6 Defense Mission Wide Support

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1991 ACCOMPLISHMENTS:

The technologies demonstrated in FY 1991 have already shown, in limited demonstrations, the potential to offload a large amount of test equipment, reduce the time required to find and fix maintenance problems by 25-60%, and to streamline the varieties of maintenance skills needed for effective support. A memorandum of Agreement has be signed by the Army PEO and detailed technical plans have been put in place as commitment to incorporate into the weapon system when successful demonstration is completed. The demonstration initiated in FY 1991 shows promise for improving diagnostics accuracy or reducing the need for diagnostics equipment completely. This includes expert systems, electronic manuals developed for specific skill levels, and computerized maintenance feedback and analysis as well as equipment characterization. The demonstration incorporates these technologies in M1 weapon system platform together with existing diagnostics capabilities, and links these capabilities to provide an integrated capability.

PLANNED 1992 - 1993 PROGRAM:

- Continuance and completion of M1 demonstration project initiated in FY 1991. Most are one to two year projects which are scheduled to complete in FY 1992.

- Identification of new efforts which meet the criteria discussed above. In addition, initiation of demonstration projects for emerging technologies including maintenance aiding devices and prognostic materials (e.g. materials that give indication of failure before failure has occurred). Focus on technologies which demonstrate expert systems, portable maintenance aids. To take this a step further, this will include micro sensors which analyze the environmental, as well as the electronic and mechanical health of the systems.

- Expansion of the effort beyond integrating field level maintenance aids to include integrating depot maintenance capabilities and design tool outputs. Standardize hardware self test control, and modules included also will be electronic representation and transfer of design, as well as computer aided design (CAD)/Computer Aided Software Engineering (CASE) for test.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0603709D

PE Title: Joint Robotics Program Budget Activity: #4

A. (U) RESOURCES: ($ in Thousand)

Popular Name	FY1990 Actual	FY1991 Est.	FY1992 Est.	FY1993 Est.	TO Complete	TOTAL Prog.
Joint Robotics Program (Unmanned Ground Vehicles)	20,816	21,875	20,740	20,655	Cont	Cont

B. (U) BRIEF DESCRIPTION OF ELEMENT: This program element was established by Congress starting FY90, consolidating DoD robotics programs on unmanned ground systems and related robotics technologies, in order to increase focus of the Services robotics programs on operational requirement. The program is directed to demonstrate maturity of robotics technologies for their application to the formal acquisition process of land systems and subsystems. Emphasis is on the development of robotics technologies that are amenable to multi-service applications, provide capability in high hazard environments, provide improved battlefield efficiency through supervised autonomous operational capability, reduce or enhance force manpower and support, and are affordable. This PE consolidates the DoD robotics program for unmanned ground vehicles (UGV) into two groups of activities: advancement of UGV concepts into FSD and enhancement and exploitation of robotic technologies to provide the critical robotic technologies for todays and future UGV acquisition requirements. Three UGV projects that have Service commitment and POM funds for FSD are being pursued: (1) the Tactical Unmanned Ground Vehicle (TUGV) - a joint Army/Marine Corps effort to develop a telerobotic UGV for the forward observer mission, scheduled to go into FSD in 1993 and into production in 1998; (2) the Rapid Runway Repair (RRR) UGV - an Air Force effort to develop a tele-supervised robotic capability to survey and repair runway damage quickly without exposing human resources to hazardous environments. FSD is scheduled for FY94 and production in 1997; and (3) the Remote Ordnance Neutralization Device (ROND) - a Navy effort to develop an ordnance neutralization device that performs explosive ordnance disposal (EOD) tasks robotically and by teleoperations in chemical, radiation and explosive environments.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY 1990 Accomplishments

- (U) The Joint Unmanned Ground Vehicle Program Office was established at MICOM, Huntsville, Alabama in April 1990 for the acquisition of TUGV. Army and Marine Corps user requirement documents (the operational and organizational plan (O&O) and the initial statement of requirement (ISOR)) have been approved. Trade-off determinations and analyses have been accomplished. A contract for advanced development of teleoperated TUGV has been released to Robotic Systems Technology, Inc.

- (U) Feasibility demonstration of robotic manipulator functions for removing debris, break and remove upheaved pavement, backfill, compact backfill materials, and level grade has been completed for the RRR. Program plan for RRR acquisition and design specifications have been established.

- (U) The DoD robotic UGV technology programs have been consolidated into one coordinated package that is focused on critical components technology maturations by 1992 for TUGV, RRR, and ROND.

- (U) Advanced development of a ROND with robotic tool selection capability is on going.

- (U) Field tests of experimental UGVs have been conducted at Camp Pendelton and MCRDAC, Quantico, VA. These test data have been used to refine the UGV program.

(U) FY 1991 Plans:

- (U) Completion of Joint Service Operational Requirement (JSOR); continuation of advanced development of the teleoperated UGV; determination of best technical approach for FSD.

- (U) Continuation of advanced development of RRR and EOD UGVs.

- (U) Technology maturation demonstration of UGV components for low data rate communication, improved navigation including computer aided remote driving and retrotraverse, enhanced peripheral, stereo, and night visions, and observer mission module, using HMMWVs modified for telerobotic driving. Field tests will be carried out with the Joint Unmanned Ground Vehicle Program Office.

(U) FY 1992 Plans:

- o (U) Early user tests and evaluation of UGV surrogates; start of COEA; development of TUGV employment concepts; completion of design requirements, and testing and evaluation of technology base developed components for UGV improvement/new capability.

- o (U) Completion of RRR design and fabrication of RRR demonstrators.

- o (U) Integration of demonstration UGV components technologies with stereo navigation and DARPA's advanced processor on one TUGV robotic vehicle.

- o (U) Hardening of fiber optic cable for use in land applications.

- o (U) Continue development of EOD venicles.

(U) FY 1993 Plans:

- o (U) Continue acquisition of TUGV with MSII in 4Q FY93. Completion of the accelerated technology integration, providing the telerobotic technology enhancements required for the FSD.

- o (U) Test and evaluation of brassboard RRR design and establishment of specifications for FSD, with FSD starting in 4Q FY94.

- o (U) Completion of advanced development of EOD UGV, with FSD starting in FY94.

- o (U) Continue technology development towards supervised autonomous UGVs,with significantly reduced operator burden.

D. (U) Work performed by: In-house efforts are carried out by MCRDAC, Quantico, VA; NOSC, Honolulu, HI; TACOM, Warren, MI; MICOM, Huntsville, AL; LABCOM, Adelphi, MD; CECOM, Ft. Monmouth, NJ; PM-Trade, Orlando, FL; AFESC/RDCP, Tyndall AFB, FL; DARPA, Arlington, VA. Primary contractual efforts are conducted by: Battelle, Columbus, OH; FMC, Santa Clara and San Jose, CA; Engineering Technology, Orlando, FL; OAO Corp., Greenbelt, MD; Hughes Res. Lab, Malibu, CA; AT&T Lightware Applications, Greensboro, NC; SAIC, San Diego, CA; Tension Member Technology, Los Angeles, CA; Universal Fiber Optics, VA; JPL, Pasadena, CA; AAI, Baltimore, MD; Odetics, Anaheim, CA; Carnegy Mellon University; University of Massachusetts; Martin Marrietta, Baltimore, MD; MKI, Dumfries, VA; Honeywell Inc; Edina, MN; NIST, Gaithersburg, MD.

E. Comparison with FY 1990 Descriptive Summary:

1. Technical Changes - None
2. Schedule Changes - None
3. Cost Changes - None

F. (U) Program Design:

ROND	RRR	TUGV	TECH BASE
OR 4/87	SON 6/79	O&O 11/90	MASTER PLAN 4/90
TEMP 6/91	TEMP 8/91	ISOR 12/90	

G. (U) Related Activities:

PE# 0306514ID (Joint Unmanned Aerial Vehicle).

Program is closely coordinated with UAV joint program office, NIST and DOE'S national laboratories to ensure maximum government resource utilization, standardization and interoperability.

H. (U) Other Appropriations Funds: ($ in 000) Not applicable.

I. (U) International Cooperative Agreement: DEAs with Germany and UK are in effect.

J. MILESTONE SCHEDULE:

ROND	RRR	TUGV	TECH BASE
FY90 Initiation	FY90 Initiation	FY93 MSI/II	FY92 DEMO I
FY94 MSII	FY94 MSII	FY96 OT&E	FY94 DEMO II
FY96 OT&E	FY96 OT&E	FY97 MSIII	
FY97 MSIII	FY97 MSIII		

FY1992/1993 Biennial RDT&E Descriptive Summary

Program Element: *0603710D
PE Title: Classified Program - C3I

Project: P1711
Budget Activity: 4
Tactical Programs

Project Title: Milstar
Popular Name: Milstar

A. SCHEDULE/BUDGET INFORMATION ($ in Thousands):

BUDGET ($000)	FY 1990	FY 1991	FY 1992	FY 1993	To Complete
Major Contract	0	670,254	0	0	Continuing
Support Contract	0	31,367	0	0	Continuing
In-House Support	0	9,948	0	0	Continuing
GFE/ Other	0	48,431	0	0	Continuing
Total Milstar	0	760,000*	0	0	Continuing
Classified Project	35,665	9,570	5,300	2,000	Continuing
Total	35,665	769,570	5,300	2,000	Continuing

Appropriated at OSD level for FY 91. Prior years and future year funds in AF Program Element 0303603F. Specific details are located in that PE.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0603714D
PE Title: Non-Acoustic Anti-Submarine Warfare (NAASW)
Project Number: P714
Budget Activity: Tactical Programs

A. (U) RESOURCES ($ in Thousands)

Project Title	FY 1990 Actual	FY 1991 Actual	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
NAASW	19.607	29.433	0.	0.	Cont.	Cont.

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: Congress directed establishment of a coherent NAASW program, to be directed by OUSD(A)/TWP, and made available FY 1990 funds for implementation. The purpose of this program is to ensure that NAASW concepts are properly evaluated, focused and exploited. (Additional classified information on this topic is available upon request to originating office.)

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS: Program Plan was submitted to Congress in May 1990.
(Additional classified information on this topic is available upon request to originating office.)

D. (U) WORK PERFORMED BY: Navy Laboratories, DOE Laboratories, University Laboratories, and contractors. Includes collaborative programs with NATO allies.

E. (U) COMPARISON WITH FY 1990 DESCRIPTIVE SUMMARY:

NARRATIVE DESCRIPTION OF CHANGES

1. TECHNICAL CHANGES:

Reduced scope of sensor tasks - deleted one sensor
(Additional classified information is available on this topic upon request to originating office.)

2. SCHEDULE CHANGES:

Perform mods to testbed - 4QFY91
Continued sensor development - 2QFY91
Postponed some data reduction from test - 3QFY91
(Additional classified information is available on this topic upon request to originating office.)

F. (U) PROGRAM DOCUMENTATION: 101st Congressional DOD Appropriations Bill, Report 101-345. NAASW Program Plan approved May 1990. 101st Congressional DOD Appropriations Bill, Report 101-521. 102nd Congressional Dire Emergency Supplemental Appropriations Bill, Report 102-24.

Program Element: #0603714D
PE Title: Non-Acoustic Anti-Submarine Warfare (NAASW)
Project Number: P714
Budget Activity: Tactical Programs

G. (U) RELATED ACTIVITIES: This program is coordinated and administered by OUSD(A)/TWP. The program is complementary to DOD research and is non-duplicative. (Additional classified information is available on related activities upon request to originating office.)

H. (U) OTHER APPROPRIATION FUNDS: Not Applicable.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: Cooperative programs in selected areas with U.K., Norway, Germany, and France.

J. (U) MILESTONE SCHEDULE:

(Milestones for the NAASW program are classified. Data available upon request to originating office.)

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603715D

Title: AIM-9 Consolidated Program

Budget Activity: 4 Tactical Programs

A. (U) Resources ($ Thousands)
Project Title

Popular Name	FY90 Actual	FY91 Estimate	FY92 Estimate	FY93 Estimate	To Complete	Total Program
P 473 AIM-9 (Sidewinder) Consolidated Program						
	0	29,829	43,781	29,929	0	103,539

B. (U) BRIEF DESCRIPTION OF ELEMENT:

This program consolidates all Navy and Air Force AIM-9 Sidewinder modification efforts for 1991 as directed by Congress.

C. (U) PROGRAM ACCOMPLISHMENTS:

The 1991 funds will be used to continue full-scale development of the AIM-9R modification program and to study other alternatives for potential modification of the remaining AIM-9M inventory. The program is under the direction of the Navy as a joint short-range missile program defined by the August 1990 Memorandum of Agreement between the Navy and Air Force. The 1992/1993 funds under this PE are not expected to be needed since the program is funded jointly by both Navy and Air Force PEs (0604354N and 0207161F). This PE funding will be adjusted in future budget submissions.

D. (U) WORK PERFORMED BY: Prime contractor for the AIM-9R modification is Loral Aeronutronic (Newport Beach, CA). Other work is being conducted by the Naval Weapons Center, China Lake, CA.

E. (U) COMPARISON WITH FY 1990 DESCRIPTIVE SUMMARY: N/A

F. (U) PROGRAM DOCUMENTATION: N/A

G. (U) RELATED ACTIVITIES: None.

H. (U) OTHER APPROPRIATION FUNDS ($ Thousands):

	FY 90 Actual	FY 91 Estimate	FY 92 Estimate	FY 93 Estimate	To Complete
Navy WPN/#32	0	0	47,800	76,800	Cont.
AF 3020/#23	0	0	900	30,800	Cont.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: N/A

J. (U) MILESTONE SCHEDULE: None for FY 91.

FY 1992/1993 Biennial RDT&E Descriptive Summary

Program Element: #0603716D
PE Title: Strategic Environmental Research and Development

Project Number:
Budget Activity: 2- Advanced Technology Dev.

A. (U) RESOURCES ($ in thousands)

Project Title: Strategic Environmental Research and Development

Popular Name	FY1990	FY1991	FY1992	FY1993	Total
	Actual	Actual	Estimate	Estimate	Program
SERDP	-0-	19,147	-0-	-0-	19,147

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: The Strategic Environmental Research and Development Program (SERDP) seeks to develop new technologies to address environmental matters of concern to the DoD and DoE. Support for basic and applied research will enhance the capabilities of the departments to meet their environmental obligations.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLAN:

(U) FY90 Accomplishments:
- o This is a new program that will be initiated in FY 1991.

(U) FY 1991 Plans:
- o The program will address issues in environmental protection/compliance; pollution prevention; environmental restoration; global change and data analysis; hazard assessment; technology transfer; natural resource management; and energy. Specific projects will be reviewed by the SERDP Scientific Advisory Board, and approved by the SERDP Council, both of which are mandated by Section XVIII of Public Law 101-510.

(U) FY 1992 Plans:
- o None; this is a single-year program

(U) FY 1993 Plans:
- o None; this is a single-year program

(U) Program Plan to Completion: The program plan will be decided by the SERDP Council after receiving advice from the Scientific Advisory Board.

D. (U) WORK PERFORMED BY:
- o Performers will be decided by SERDP Council after receiving advice of SERDP Scientific Advisory Board.

E. (U) COMPARISON WITH FY 1991 DESCRIPTIVE SUMMARY:
No Descriptive Summary was submitted in FY 1991

F. (U) PROGRAM DOCUMENTATION: To be developed.

G. (U) RELATED ACTIVITIES:
- o PE No. 0602720A Environmental Quality Technology
- o PE No. 0603721N Environmental Protection
- o PE No. 0602206F Civil Engineering and Environmental Quality

There is no unnecessary duplication of effort within DoD.

H. (U) OTHER APPROPRIATION FUNDS: None

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None

J. (U) MILESTONE SCHEDULE:
- o Completion of the SERDP Program FY91

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0603717D
PE Title: Excimer Laser Technology
Budget Activity: #1

A. (U) RESOURCES: ($ in Thousands)

Program Element Number & Title	FY1990 Actual	FY1991 Actual	FY 1992 Estimate	FY 1993 Estimate	Total Program
Excimer Laser Technology					
PE TOTAL	0	15,000	0	0	15,000

B. (U) BRIEF DESCRIPTION OF ELEMENT: The Soviet Union maintains large constellations of satellites capable of monitoring, identifying, communicating the status and targeting US and friendly forces. The Joint Chiefs of Staff have a validated US Space Command Multi-Command Required Operational Capability (MROC) for space control. For effective space control identification, communication of enemy status and the capability to engage targets are all required. This program element encompasses the research into the feasibility of excimer lasers for active imaging for identification, communication and attack assessment. Research will be conducted on the feasibility of high energy excimer lasers for tactical applications.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLAN:

(U) FY 1990 Accomplishments: None. (This is a new Element, but similar work was conducted 2 years ago in Air Force Program Element 0603605F.)

(U) FY 1991 Planned Program: The concept will be designed and evaluated to determine the feasibility utilizing excimer laser sources for weapon effect validation, communication and imaging. Maximum use of existing hardware and equipment is required because of the short duration of this effort. The Military Services have already completed some of the objectives with excimer lasers at a smaller scale.

(U) FY 1992/FY 1993 Planned Program: None. If the concepts are demonstrated to be useful then the Military Departments will continue the work in other program elements.

D. (U) WORK PERFORMED BY: US Air Force Phillips Laboratory and/or Office of Naval Research will probably award potential contracts to those with excimer laser capabilities: AVCO/ITEK, Everett, Ma or TTC Corp, San Diego, CA.

E. (U) COMPARISON WITH FY 1991 DESCRIPTIVE SUMMARY: None.

F. (U) PROGRAM DOCUMENTATION: To be Developed.

G. (U) RELATED ACTIVITIES:

(U) PE #0603605F, USAF, Advanced Weapons, which conducted the last excimer laser research. Current research being conducted on small excimer lasers, but not duplicative.

H. (U) OTHER APPROPRIATION FUNDS: ($ in Thousands) Not applicable.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None.

J. (U) MILESTONE SCHEDULE: Completion of Excimer Laser Program.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603736D
PE Title: Computer-aided Acquisition and Logistic Support (CALS)
Project: #457
Budget Activity: 2

Project Title: Computer-aided Acquisition and Logistic Support

A. RESOURCES ($ in Thousands):

Popular Name	FY 1990	FY 1991	FY 1992	FY 1993	To Completion
CALS	12,706	15,689	10,475	11,700	Continuing

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: The purpose of CALS is to transition DoD's current paper-intensive weapon support processes to a highly automated and integrated mode of operation in the 1990's. The transition will result in a fundamental change in the way DoD and industry use and distribute technical information, improving the quality and productivity of weapon system development and support. The CALS program will result in the integration of new supportability design tools into industry's computer-aided design (CAD) process; increase the use of advanced automation technologies to produce engineering, manufacturing and logistic data products; and rapidly increase the ability of DoD to receive, distribute and use logistic technical information in digital form. Projected benefits are increased readiness and mission effectiveness through improved reliability of weapon systems; improved timeliness, accuracy and cost of technical data; and reduced lead times for both weapon systems and spares procurement. This program element is to (1) develop and test standards that will provide a common interface for exchange of technical information among government and industry systems; (2) conduct demonstrations of advanced automation technologies and data exchange standards used to improve design, manufacturing and logistic functions; and (3) develop integration plans, contractual approaches, architectural guidelines, validation routines, and test bed programs to support acquisition and exchange of digital technical information. These activities are required to achieve compatibility of ongoing ADP modernization efforts in industry and DoD.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS

1. FY 1990 Program Accomplishments

The final increment of the Core Standards Package (MIL-HDBK-59A, MIL-STD-1840B, MIL-STD-1388-2B, MIL-D-28000, MIL-S-28001A, MIL-R-28002, MIL-D-28003) for the near term development sequence of CALS was completed. Development of application guidance continued. Conformance testing of vendor products by NIST-accredited laboratories was initiated and user-application testing by the CALS Test Network continued. A preliminary tri-service architecture for automation of technical manuals was developed and a tri-service development plan was coordinated. Information collection for a broader technical information integration architecture was completed. Several demonstration/technology insertion tasks were completed. Development of the

mid-term development sequence of CALS continued with completion of a preliminary functional specification for a Contractor Integrated Technical Information Services (CITIS) contract line item for technical data support in lieu of discrete item deliverables. A technology validation model of the Product Data Exchange Specification (PDES) was demonstrated. A national PDES test bed was established and an operational philosophy and plan were written.

2. FY 1991 Program Plan

Development of application guidance and enhancements for the near term sequence of CALS Core Standards will continue. A CALS RFP Preparation Guide will be released for review by industry. Review and correction of the Core Standards Package in response to user inputs will take place as needed. CALS Test Network user-application testing and conformance testing of vendor products at testing laboratories will take place on a routine basis. Finalization of the near term information management architecture will take place. Formal plans for the transition of responsibility of the CALS Core Standards from the development activity to functional organizations will be coordinated. Mid-term development activities will continue with the release of a final draft functional specification for the CITIS. PDES development will continue with initial proof of concept testing at the PDES national test bed. Work to release a level 1 and 2 implementation of PDES in FY 1992 will continue. Initial findings on several implementation issues such as rights in data, and data protection and security will be concluded. A initial architectural framework for enterprise automation and integration to accomplish the transition to mid and far term CALS concepts will be completed and reviewed by industry and government personnel. A process improvement architecture for concurrent engineering of electronic warfare products using design automation technologies will be developed.

3. 1992 - 1993 Planned Program

The CALS Core Standard Package will be fully matured and transitioned to the functional organizations in preparation for full implementation of near term CALS in FY 1994 with routine delivery of digital technical information. The CALS RFP Preparation Guide will be completed in FY 1992 and formally coordinated in FY 1993 so that all processes and procedures for inclusion of CALS requirements as integral contractual elements will be in place. Near term, tri-service information management architectures for technical manual automation and technical data repository will be finalized and ready for initial implementation in FY 1994. Final draft specification for the CITIS will be released for extensive community review in FY 1992, anticipating formal coordination in FY 1993 and initial implementation in FY 1994. Levels 1 and 2 implementations of PDES will be released and demonstrated in FY 1992 and updated in FY 1993. Development of levels 3 and 4 of PDES will continue. Development, verification and conformance testing of PDES will continue throughout. Development of the architectural framework for enterprise automation and integration will be updated in preparation for formal coordination in FY 1994. The process improvement architecture for concurrent engineering of electronic warfare products using design automation technologies will be finalized in FY 1992 for demonstration in FY 1993 and industry implementation in FY1994.

D. (U) WORK PERFORMED BY: Funds are provided to the National Institute of Standards and Technology; Transportation Systems Center (DOT); DoD/Government organization/laboratories; Federally funded research and development centers; and defense contractors.

E. (U) PROGRAM DOCUMENTATION: Not applicable.

F. (U) RELATED ACTIVITIES: Demonstration of selected technologies applicable to CALS is planned in each Military Service and the Defense Logistics Agency under a variety of program elements. A senior DoD CALS Steering Group and OSD CALS Office ensure integration of these efforts and prevent unnecessary duplication of effort.

G. (U) OTHER APPROPRIATION FUNDS: None.

H. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None.

I. (U) MILESTONE SCHEDULE: Not applicable.

Not releasable to non-DoD personnel without approval of the originating office

FY 1992-1993 Biennial RDT&E Descriptive Summary

Program Element: #0603737D
PE Title: Balanced Technology Initiative
Project Number: P 463
Budget Activity: 2-Advanced Technology Development

A. (U) RESOURCES ($ in Thousands)

Project Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	Total Program
BALANCED TECHNOLOGY INITIATIVE	194,270	164,552	167,568	172,595	Continues

B. (U) BRIEF DESCRIPTION OF ELEMENT:

The BTI Program addresses obvious gaps in our conventional defense through the application of leapfrog technologies. The purpose of the program is to speed the application of technologies that can provide greatly improved capabilities for U.S. conventional forces.

C. (U) JUSTIFICATION FOR FY 1992 and FY 1993:

(U) P 463, BALANCED TECHNOLOGY INITIATIVE:

The Balanced Technology Initiative (BTI) was established by Congress in FY 1987. A detailed BTI program plan was subsequently developed to "make a difference" in a few technology areas critical to conventional defense missions. The program was restructured in FY 1990 to focus on developing and demonstrating system concepts with leapfrog potential, and now includes work in the categories below:

- Advanced Armament, will demonstrate guns and munitions with immediate application to solve current military problems. The goals of this thrust area include the development of an energy storage system that will enable electrothermal guns and a guided hypervelocity projectile capable of defeating future tanks at ranges up to 4 km. Also included are a man-portable anti-tank weapon system, and a remotely controlled smart mine system to destroy enemy helicopters;
- Target Acquisition, will develop a multi-sensor suite, processors and displays that can greatly increase the situation awareness and the target acquisition rate of ground fighting vehicles and small forces. One project is evaluating concepts for a Battalion Targeting System and will demonstrate the preferred concept. The goals of this thrust area include an integrated system that will give our ground fighting vehicles a distinct advantage in finding and destroying enemy vehicles before the enemy can destroy ours;
- Smart Weapons, will provide significant improvements in target sensing and destruction capabilities applicable to a broad range of munitions. The BTI program has already demonstrated seekers for both large fixed targets and moving vehicles, and fiber optic data links for use with air-to-surface weapons. A current project seeks to lower the cost of smart submunitions by a factor of two, and a new project will demonstrate an infrared smart seeker using new technology that provides accurate tracking even in high clutter conditions. The goals of this thrust area include improving the survivability and effectiveness of our air, land and sea forces by providing standoff munitions with great precision and providing infrared countermeasures,

Program Element: #0603737D
PE Title: Balanced Technology Initiative

Project Number: P 463
Budget Activity: 2-Advanced Technology Development

- Battle Management-C3I, will demonstrate that a force using information combined from all the sensors on a group of vehicles can be far more effective than a force that must maneuver and fight by using maps and voice communications. The goals of this thrust area include the application of advanced internetting of ground vehicles with advanced sensors and the demonstration of an advanced image and data processing systems. Projects have already demonstrated means to increase the throughput of intelligence systems by machine processing of both images and text for fusion and target acquisition. A new project will insert the latest technology into a digital tactical radio;
- Special Operations/Low Intensity Combat, will demonstrate greatly improved capabilities for nighttime and covert operations by developing low cost night vision devices, by improving low altitude evasive aircraft flight capabilities, and by exploiting the advanced technology of swimmer delivery vehicles. Covert operations and night operations are particularly important to our Special Operations Force;
- High Power Microwaves (HPM), demonstrates how ultra-wide bandwidth technology and light-activated high power microwave technology can provide important new capabilities in radar and countermeasures. This technology potentially can yield extremely fine range resolution, possibly enabling detection of targets in cover;
- Program Planning and Technical Assessment, intended for independent review and technical assessment of the BTI program and proposed new concepts, as well as management of the program.

(U) FY 1990 Accomplishments: A detailed review and restructuring of the BTI program was conducted and only those projects which focus on developing and demonstrating system concepts with leapfrog potential were continued. As a consequence, only 43% of the FY 1989 projects were continued. The BTI Program is now focused on meeting our most pressing operational needs. Descriptions of the projects were provided in the FY 1990 report to Congress. The restructured BTI program was agreed to by Congressional Staff. During FY 1990 the Image Exploitation System completed Cycle I, demonstrating the principle of machine support for photo interpretation. Captive carry tests showed a MMW seeker can provide autonomous lock on to tactical targets, both moving and stationary.

(U) FY 1991 Plans and Accomplishments: Ongoing demonstration and validation activities will be continued as warranted by technical progress and by Service plans to transition the activity to full scale development. As part of the continuing assessment of mission requirements and potential payoffs, operational inputs from the CINCs will be solicited to better address current needs. Specific accomplishments include the Artificial Intelligence Module is deployed to Saudi Arabia to generate intelligence reports; Quiet Knight has been very successful at applying technology to lower the vulnerability of large aircraft; a dual band fire direction radar will be tested for use against sea skimmers. Two air-to-surface seeker projects will also be completed. Two new projects will be incorporated into the BTI Program in FY 1991, a project to demonstrate technology insertion in a tactical radio, and a robust infrared seeker for use against helicopter and other targets in high clutter.

Program Element: #0603737D
PE Title: Balanced Technology Initiative

Project Number: P 463
Budget Activity: 2-Advanced Technology Development

(U) FY 1992 Plans: Ongoing demonstration and validation activities will be continued as warranted by technical progress and by Service plans to transition the activity to full scale development. As part of the continuing assessment of mission requirements and potential payoffs, operational inputs from the CINCs will be solicited to better address current needs. New starts will be developed to address the changing threats. The Aladdin miniature processor will be demonstrated, ready for transition to the Army LN helicopter and other applications. The Marine Short Range Attack Weapon will be demonstrated, providing a man-portable capability against future tanks, and will enter FSD in FY 1993. The Follow Through Torpedo Warhead, and the Anti-Helicopter Mine demonstrations will transition to Service programs. Also, the demonstration of a directional infrared countermeasure will provide a near term capability to counter infrared missiles fired at helicopters.

(U) FY 1993 Plans: Ongoing demonstration and validation activities will be continued as warranted by technical progress and by Service plans to transition the activity to full scale development. As part of the continuing assessment of mission requirements and potential payoffs, operational inputs from the CINCs will be solicited to better address current needs. New starts will be developed to address the changing threats. Demonstration of an enhanced kinetic energy weapon, to greatly improve our capability against future tanks, will complete. Development of a laser based infrared countermeasure will transition to a Service FSD program, demonstration of uncooled focal plane arrays, and the automation of imagery data will complete in FY 1993. The Navy swimmer delivery vehicle prototype will also be demonstrated.

D. (U) WORK PERFORMED BY:

This work is managed by the Director, Balanced Technology Initiative, through the Director, Defense Research and Engineering (DDR&E). Contracting and technical monitoring agents are provided by the Services and DARPA. The following list is not all inclusive but is a representative sampling of organizations currently performing work on BTI projects: Army Research Development and Engineering Center, Picatinny Arsenal, NJ; Center for Night Vision and Electro-Optics, Ft. Belvoir, VA; Naval Research Laboratory, Washington, DC; Naval Surface Weapons Center, White Oak, MD; Eglin Air Force Base, Ft. Walton Beach, FL; Wright Patterson Air Force Base, Dayton, OH; Texas Instruments, Dallas, TX; Martin Marietta Corp., Orlando, Florida; Hughes Aircraft Company, Canoga Park, CA; Honeywell Inc., Minneapolis, MN; Westinghouse Corporation, Baltimore, Maryland;

(U) Related Activities:

The Balanced Technology Initiative program activities are integrated with many other ongoing R&D programs within the Department of Defense to ensure no unnecessary duplication. Related program elements for individual BTI projects are identified in the project Implementation Plans.

Program Element: #0603737D
PE Title: Balanced Technology Initiative

Project Number: P 463
Budget Activity: 2-Advanced Technology Development

(U) Other Appropriation Funds: None

(U) INTERNATIONAL COOPERATIVE AGREEMENTS:

The BTI/Army project "Combat Vehicle Command and Control (CVC2)" involves U.S. cooperation with West Germany to promote interoperability between the M1A1 and Leopard II tanks through incorporation of CVC2 modules in both vehicles. An MOU provides for the information exchange needed to achieve interoperability.

(U) MILESTONE SCHEDULE:

Detailed milestones for the BTI projects are included in the project Implementation Plans and discussed in the FY 1990 BTI report to Congress.

FY 1992/1993 Biennial RDT&E Descriptive Summary

Program Element : #0603738D
PE Title: Cooperative DoD/VA Medical Research

Project Number: P464
Budget Activity: 2- Advanced Technology Development

A. (U) RESOURCES ($ in thousands)

Project Title: Cooperative DoD/VA Medical Research

Popular Name	FY1990	FY1991	FY1992	FY1993	Total
	Actual	Actual	Estimate	Estimate	Program
DoD/VA Medical Research	20,000	19,886	-0-	-0-	91,886

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: Congress directed establishment of a program of DoD/VA cooperative medical research and made available Defense Agency funds for program implementation. Funding supports projects conducted in VA medical centers with relevance to the DoD biomedical research mission and DoD/VA joint projects. Capabilities include all major fields of medical research.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLAN: Funding in each year supports VA-administered biomedical research in basic and clinical sciences. The program is coordinated with the military Services, the Armed Forces Radiobiology Research Institute, and the Uniformed Services University of the Health Sciences.

D. (U) WORK PERFORMED BY: Department of Veterans Affairs, in collaboration with Service laboratories.

E. (U) COMPARISON WITH FY 1990 DESCRIPTIVE SUMMARY: This descriptive Summary is consistent with previously submitted summaries. The difference between FY 1992/1993 and earlier FYs reflect the fact that this is a Congressionally directed program and is not included in the President's budget.

F. (U) PROGRAM DOCUMENTATION: None for FY 1991, FY 1992 ,or FY 1993 as of JAN 1991.

G. (U) RELATED ACTIVITIES: This cooperative program is administered by the Medical Research Service of the Department of Veterans Affairs. Coordination within DoD is effected by the Environmental and Life Sciences Directorate. This program is complementary to DoD research and is non-duplicative.

H. (U) OTHER APPROPRIATION FUNDS: Not applicable.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: Not applicable.

J. (U) MILESTONE SCHEDULE: Not applicable.

FY1992-1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0603741D

Budget Activity: Strategic Programs

Project Title: Air Defense Initiative

A. RESOURCES ($ in thousands)

Project Number & Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate
TOTAL	139,875	139,219	91,000	41,000

B. BRIEF DESCRIPTION OF ELEMENT:

ADI is a program of interrelated research and development projects with emphasis on developing technologies for strategic air defense of North America against the threat posed by stealthy bombers, cruise-missile capable submarines, and cruise missiles. The program is structured to support full-scale development (FSD) decisions in the mid-1990s in order to assure that required defensive capabilities are available into the 21st century. The ADI program will also provide architecture options for more robust air defenses if the air-breathing threat is significantly increased following a possible reduction of the ballistic missile threat due to the deployment of ballistic missile defenses and/or arms control agreements. ADI effort includes advanced undersea surveillance concepts against quiet Soviet cruise missile-carrying submarines, as well as the development of technologies for advanced engagement systems against the threat.

While developing the technologies that address the above mission areas, the ADI program will, to the extent feasible, also address the requirements for the third world, low-intensity conflicts, and drug interdiction surveillance. In this way, the ADI program will keep pace with the overall DoD goals and objectives as they evolve in the present era of rapidly changing defense prioritities.

The dollar estimates submitted for this program are the result of an administrative error. The Department remains committed to ADI and is actively pursuing a budget adjustment to provide required program funding across the Future Year Defense Plan (FYDP).

PBD: #216

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603756D
Title: Consolidated DoD Software Initiative

Budget Activity: 2 - Advanced Technology Development

A. (U) RESOURCES ($ in Thousands)

Project Number & Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
P452 Ada Language System Navy ALS/N	6,452	7,500	2,363	3,515	Continuing	Continuing
P453 DoD Common Programming Language (Ada)	4,670	9,032	4,569	4,893	Continuing	Continuing
P454 Ada Technology Insertion (ATIP)	0	6,000**	0	1,000	Continuing	Continuing
TOTAL	11,122	22,532*	6,932***	9,408	Continuing	Continuing

* 1.25% SBIR reduction not yet subtracted
** 3,400 may be held for FY 92 to cover cuts caused by PBD 634
*** reduced by PBD 634, original request 10,332

B. (U) BRIEF DESCRIPTION OF ELEMENT AND MISSION NEED: This Science and Technology program is part of the total DoD effort to introduce and implement life-cycle support for Ada, the DoD common high order programming language for mission critical computers. It provides resources to meet those language support requirements which are common to the DoD Services and Agencies. It provides for configuration control of the Ada language, enforcement of standardization via compiler validation, education/promotion, and development of Ada Programming Support Environment (APSE) technologies. Project 452, ALS/N implements Ada on the Navy's standard embedded computers (AN/UYK-43, AN/UYK-44 and AN/AYK-14). Project 453, Ada is part of the total DoD effort to introduce and implement life-cycle support for Ada. Project 454, ATIP was initiated in FY 1988, to provide risk reduction for accelerated use of Ada technology in DoD systems. These projects include funding for travel by OSD and Service personnel in support of the management and technical objectives.

C. (U) JUSTIFICATION FOR PROJECTS LESS THAN $10.0 MILLION IN BOTH FY 1992 AND 1993

(U) Project #452, Ada Language System Navy (ALS/N): This project implements Ada on the Navy's standard embedded computers (AN/UYK-43, AN/UYK-44 and AN/AYK-14). Support software tools being developed include compilers, runtime executives, runtime libraries, debuggers, linkers, and exporters. Maximum use is being made of Ada-based software developed by other services; new Ada software will be developed to meet unique Navy hardware requirements.

(U) FY 1990 Accomplishments:

- Supported the operational suitability testing of the single/dual CPU AN/UYK-43, single CPU AN/UYK-44, and Pre-Planned Product Improvement (PPPI) single/dual AN/AYK-14.
- Continued work on Ada run-time environments for the AN/UYK-43, AN/UYK-44 and PPPI AN/AYK-14.
- Started enhancements to the Extended Memory Reach (EMR) AN/UYK-43, EMR AN/UYK-44 and VHSIC AN/AYK 14.
- Began Portable Operating System for UNIX (POSIX) rehost

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603756D
Title: Consolidated DoD Software Initiative Budget Activity: 2 - Advanced Technology Development

(U) FY 1991 Plans:
- o Support operational suitability testing of the AN/UYK-43, CPU AN/UYK-44, and PPPI AN/AYK-14.
- o Complete Ada run-time environment for the AN/UYK-43, AN/UYK-44, and PPPI AN/AYK-14.
- o Complete retargets for the EMR AN/UYK-43, EMR AN/UYK-44 and VHSIC AN/AYK-14 computers.
- o Continue the POSIX operating system rehost.

(U) FY 1992 Plans:
- o Complete enhancement to support Enhanced Processor AN/UYK-44.
- o Continue the POSIX operating system rehost.

(U) FY 1993 Plans:
- o Complete enhancement of High Performance Processor AN/UYK-43.
- o Continue the ALS/N rehost to another commercial host computer.

(U) Work Performed By: In-house work, including management and support will be performed by: Office of the Deputy Director, Defense Research and Engineering, Research and Advanced Technology (ODDDR&E (R&AT)) and Department of the Navy at Fleet Combat Direction Systems Support Activity, Dam Neck, VA and San Diego CA. Major contractors are: Control Data Corporation, St. Paul MN; Softech, Waltham, MA; Science Applications International Corporation, San Diego, CA.

(U) Related Activities: The work performed under *Program Element* #0603756D is complementary to the work performed in the program elements below. There is no unnecessary duplication of effort within the Service/Agency or the Department of Defense. Related program elements are:

- o Program Element #0604740F, Computer Resource Management Technology
- o Program Element #0603728F, Advanced Computer Technology
- o Program Element #0603723A, Command and Control
- o Program Element #0602746A, Tactical Automated Data Processing Technology
- o Program Element #0603526N, Advanced Computer Technology

(U) Other Appropriated Funds: None.

(U) International Cooperative Agreements: None.

(U) Project #453, DoD Common Programming Language (Ada): DoD computer software life-cycle costs are measured in the billions of dollars. Transition to this single, modern, high-order language in defense systems will derive significant benefits to DoD in the areas of training, compiler and programming tool availability, software maintainability and reduction of other software development costs. Under this project the Ada Joint Program Office (AJPO) will: (1) ensure the implementation and maintenance of Ada as a consistent unambiguous standard recognized by the DoD and also by the widest possible community; (2) ensure smooth introduction and acceptance of Ada in the Dod as early as possible and consistent with needs of individual components.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603756D
Title: Consolidated DoD Software Initiative Budget Activity: 2 - Advanced Technology Development

(U) FY 1990 Accomplishments:
- o Awarded Ada9X mapping/revision contract
- o Continued to coordinate Ada implementation through the Ada Executive Officials
- o Continued support of NATO and other international efforts
- o Continued Ada Compiler Evaluation Capability development
- o Continued to support work on secondary standards and bindings
- o Continued to support the development of quality military education and training in Ada

(U) FY 1991 Plans:
- o Award Ada9X user/implementation contracts
- o Continue support of NATO and other international efforts
- o Continue work on secondary standards and binding
- o Deliver the Ada Compiler Evaluation Capability to the Ada Validation Facilities

(U) FY 1992 Plans:
- o Complete the Ada9X transition and maintenance plans
- o Continue work on secondary standards and bindings
- o Continue support of NATO and other international efforts

(U) FY 1993 Plans:
- o Complete the Ada9X revision effort with adoption of revised Ada standard
- o Continue work on secondary standards and bindings
- o Continue support of Nato and other international efforts

(U) Work Performed By: In-house work, including management and support will be performed by: Office of the Deputy Director, Defense Research and Engineering, Research and Advanced Technology (ODDDR&E (R&AT)) and Departments of the Army, Navy and Air Force organizations as appropriate. Major contractors are: Softech, Waltham, MA; Illinois Institute of Technology Research, Chicago, Il; The Analytical Sciences Corporation (TASC), Reading, MA; and Boeing Military Airplane Co., Wichita, KA.

(U) Related Activities: The work performed under Program Element #0603756D is complementary to the work performed in the program elements below. There is no unnecessary duplication of effort within the Service/Agency or the Department of Defense. Related program elements are:

- o Program Element #0604740F, Computer Resource Management Technology
- o Program Element #0603728F, Advanced Computer Technology
- o Program Element #0603723A, Command and Control
- o Program Element #0603526N, Advanced Computer Technology

(U) Other Appropriated Funds: None.

(U) International Cooperative Agreements: Memorandum of Understanding (MOU) for the use of Ada with Germany, France, Sweden and United Kingdom and the establishment of Ada validation facilities with Germany, France and United Kingdom.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603756D
Title: Consolidated DoD Software Initiative
Budget Activity: 2 - Advanced Technology Development

(U) Project #454, Ada Technology Insertion Program: This project will reduce the risk associated with accelerating the insertion of Ada technology in DoD weapon systems. Unprogrammed costs and risks exist in a number of programs which did not initially plan for, but could now reasonably convert to Ada. Cost and risk sharing incentives have been established to reduce the initial impact of acquiring Ada compilers, tools, education, and associated items and apply them to new and major upgrades to weapon systems programs. Criteria has been established for selection of programs based on expected overall long term benefits. The project will address all DoD component projects currently developing products in areas such as simulation, avionics, fire control, missiles, command, control, communication, and intelligence (C3I), electronic warfare, undersea Warfare, and land warfare. The project will accelerate the incorporation of Ada and therefore develop a broader Ada technology base for DoD components. In addition productivity data will be collected on each participating program if the collection is determined to be cost effective.

(U) FY 1990 Accomplishments:
- o Reviewed progress on the 16 FY 1989 programs
- o Demonstrated new Ada technology breakthroughs

(U) FY 1991 Plans:
- o Select new efforts for FY 1991
- o Review progress on previous programs
- o Demonstrate new Ada technology breakthroughs

(U) FY 1992 Plans:
- o Select new efforts for FY 1992
- o Review progress on previous programs
- o Demonstrate new Ada technology breakthroughs

(U) FY 1993 Plans:
- o Select new efforts for FY 1993
- o Review progress on previous programs
- o Demonstrate new Ada technology breakthroughs

(U) Work Performed By: Same as Project Number 453. Contractors will vary according to Service programs selected for ATIP.

(U) Related Activities: Same as Project Number 453

(U) Other Appropriated Funds: None.

(U) International Cooperative Agreements: None.

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0603790D Budget Activity: 6. Defensewide Support
PE Title: NATO Cooperative R&D Program

A. (U) RESOURCES ($ in Thousands):

Project Number & Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
P 790 NATO Cooperative R&D Program	103,513	85,272	40,956	86,742	Continuing	Continuing

B. (U)BRIEF DESCRIPTION OF ELEMENT: These funds will be used by the Services and Defense Agencies to initiate international cooperative research and development programs with the NATO and major non-NATO allies. The program was established by Section 1103 of the FY 1986 Defense Authorization Act (Nunn-Roth-Warner Amendment) which expressed three findings of the Congress:
1) For more than a decade the member nations of NATO have collectively provided significantly larger resources for defense than have member nations of the Warsaw Pact; 2) Despite this fact, the Warsaw Pact has produced and deployed many more major combat items such as tanks, armored personnel carriers, artillery pieces and rocket launchers, armed helicopters, and tactical combat aircraft than has NATO; and 3) A major reason for this discouraging performance by NATO is inadequate cooperation among NATO Nations in research, development and proaduction of military end-items of equipment and munitions. Funds are used to initiate and continue cooperative research and development projects with the United States allies. In FY 1987, the program was expanded to include five non-NATO nations (Australia, Israel, Egypt, South Korea, and Japan). The program has resulted in the initiation of Cooperative R&D programs with unprecedented intensity.

C. (U)JUSTIFICATION FOR PROJECTS:
(U)Project Number and Title: P 790 NATO Cooperative R&D Program
(U)Prior Year Accomplishments:

Army:
- Combat Vehicle Command and Control System
- Laser Standoff Chemical Detector
- Electro-optic Countermeasures System
- Multi Mode Seeker Demonstration
- All Agent Bio/Chem Detector
- Hawk Mobility Enhancement

Navy:
- All Agent Bio/Chem Detector
- Surface Ship Torpedo Defense
- AV-8 Radar Upgrade
- MIDs
- Radar Upgrade for Lighter Aircraft
- Cooperative Communication Network

Air Force:
- JSTARS Interoperatility
- F-16 Derivative
- Ducted Rocket
- Advanced Avionics Architecture

Defense Agencies:
Battlefield Information Collection and Exploitation System (BICES)
Post 2000 Tactical Communications
Armor/Anti-armor
C3 Interoperatiliby
Non-acoustic Anti-submarine Warfare
ADA
Digital Chart of the World

(U) FY 1991 thru FY 1993 Plans:
This program will provide continuing opportunities for cooperative research and development projects with the US allies. The US and its allies have eagerly embarked on a new era of cooperative research and development. Twenty-three cooperative programs have been initiated. An additional 25 programs have been identified as possible candidates. Continued cooperation in research and development will lead to greater economies of production scale and the deployment of increased numbers of major combat items. Projects under consideration include:
CONDOR
Electro Thermal Gun Technology
Future Main Tank Armament System
MSAM
E2c Display Software
Closed Loop Degaussing
Super Cockpit Interface

(U)WORK PERFORMED BY:
These funds are utilized by the Services and Defense Agencies for pursuit and initiation of cooperative research and development projects with the NATO and major Non-NATO allies

(U)RELATED ACTIVITIES:
The NATO Cooperative Test (NCT) Program was established as a companion program by the same legislation that initiated the Cooperative R&D Program. Funds for the NCT are in Program Element 0605130D.

(U)OTHER APPROPRIATION FUNDS:
Once each new cooperative project is initiated, outyear funding will transition to program elements of the sponsoring Service or Agency in the appropriate mission areas.

(U)INTERNATIONAL COOPERATIVE AGREEMENTS:
This program establishes the funding for the first years of selected programs with International Cooperative Agreements.

Program Element: 0604702D
Program Element Title: Joint Standoff Weapon (JSOW)
Project Number: P703 Budget Activity: 4
Project Title: Advanced Guidance Evaluation Program

SCHEDULE	FY 1990	FY1991	FY1992	FY1993	To Complete
T&E Milestones		IIR Sensor Demon-stration	SAR Sensor Demon-stration	LADAR Sensor Demon-stration Comparative Flight Test	Complete Guidance & Mission Planning Evaluation
Contract	CONCEPT DEFINITION TRADE STUDIES TECHN'Y DEV SAR LASER RADAR IIR	CONCEPT DEFINITION TRADE STUDIES TECHN'Y DEV SAR LASER RADAR IIR	Techn'y Dev SAR LASER RADAR	Compara-tive Flight Test	TBD

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: This effort converts the earlier Long Range Conventional Standoff Weapon from a Weapon System program to a technology development program for future guidance and mission planning systems. Trade studies which analyze effectiveness, feasibility, current technology, and integration capabilities of future cruise missiles will be completed in 1991. Work will continue in the critical areas of development including mission planning systems (including terrain data conversion, automated reference preparation, and target material specifications) and guidance technologies (including Imaging Infrared, Synthetic Aperture Radar, and Laser Radar).

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1991 Program: Summarize the work performed under the completed LRCSW Concept Definition (CD) contracts. Draft working requirements for the autonomous guidance system of future weapons based on users' operational requirements and the results of the CD studies. Support guidance efforts, including the evaluation of autonomous guidance systems using Imaging Infrared (IIR), Synthetic Aperture Radar (SAR), and Lasar Radar (LADAR) Sensors. Complete the feasibility study for automatically converting intelligence products into reference scenes for guidance system use. Develop a range scoring system to provide accurate field test evaluation of precision guidance systems.

FY 1992-93 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0604702D
Program Element Title: Joint Standoff Weapon (JSOW)
Project Number: P703 Budget Activity: 4
Project Title: Advanced Guidance Evaluation Program

A. (U) RESOURCES (Dollars in Thousands)

Project Number & Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	TOTAL PROGRAM
P 703	Advanced Guidance Evaluation Program previously Long Range Conventional Standoff Weapon (LRCSW)					
	18,590	19,906	20,000	20,000		
Total	18,590	19,906	20,000	20,000	To Continue	To Continue

(U) BUDGET/SCHEDULE

BUDGET ($K)	FY1990	FY1991	FY1992	FY1993	PROGRAM Total
Major Contract	11,126	15,671	15,000	14,500	To Continue
Support Contract	920	500	1,000	1,000	To Continue
In-House Support	6,544	3,735	4,000	4,500	To Continue
	18,590	19,906	20,000	20,000	To Continue

SCHEDULE	FY1990	FY1991	FY1992	FY1993	To Complete
Program Milestones	MS 0	IIR Sensor Demon-stration	SAR Sensor Demon-stration	LADAR Sensor Demon-stration Comparative Flight Test	
Engineering	Concept Def; Technology Evaluation Propulsion Guidance	Guidance & Mission Planning Technology Evaluation	SAME	SAME	Complete Guidance & Mission Planning Evaluation

Program Element: 0604702D
Program Element Title: Joint Standoff Weapon (JSOW)
Project Number: P703 Budget Activity: 4
Project Title: Advanced Guidance Evaluation Program

2. (U) FY 1992 Planned Program: Continue the evaluation of autonomous guidance systems using Imaging Infrared (IIR), Synthetic Aperture Radar (SAR), and Laser Radar (LADAR) Sensors. Evaluate the algorithms and mission planning software associated with the candidate guidance technologies. Prepare the candidate sensors for flight tests in operationally representative environments. Conduct cost, producibility, and reliability and maintainability studies for the guidance technologies.

3. (U) FY 1993 Planned Program: Conduct comparative flight tests of the candidate autonomous guidance systems. Assess the operational suitability for the candidate systems' integration into future weapons.

4. (U) Program to Completion: Complete Guidance and Mission Planning Evaluation and demonstration for integration into future weapon systems.

D. (U) WORK PERFORMED BY: IN-HOUSE: Naval Weapons Center, China Lake, CA; Naval Surface Warfare Center, Dahlgren, VA; Aeronautical Systems Division, Eglin AFB, FL; and Wright Patterson AFB, OH; Naval Avionics Center, Indianapolis, IN; Rome Air Development Center, Griffiss AFB, NY; Sandia National Laboratories, Albuquerque, NM; CONTRACTORS: GUIDANCE TECHNOLOGY DEMONSTRATIONS: General Dynamics/Convair Division, San Diego, CA; McDonnell Douglas Missile Systems Co., St. Louis, MO; Texas Instruments, Lewisville, TX; Loral, Phoenix, AZ; and Raytheon Missile Systems Div., Bedford, MA; Environmental Research Institute of Michigan, Ann Arbor, MI.

E. (U) COMPARISON WITH FY 1991 DESCRIPTIVE SUMMARY: The program has been restructured as a guidance and mission planning technology integration effort. Source selection for further propulsion risk reduction work was discontinued. Emphasis was placed on leveraging on-going guidance risk reduction contracts with the goal of comparatively assessing them in FY 1993.

Due to the restructuring, FY 1991 funding was set at $19.9 million.

F. (U) PROGRAM DOCUMENTATION: Previous LRCSW documentation retains applicability for requirements and are listed below.

1. (U) Navy Tentative Operational Requirement (TOR) - 9 March 1988
2. (U) OSD CAIG Review - 1 December 1988
3. (U) Mission Need Statement (MNS) - 5 December 1988
4. (U) Air Force Statement of Operational Need (SON) - 28 February 1989; Rev 1, 12 January 1990
5. (U) Air Force Draft System Operational Requirements Document - 4 May 1990

Program Element: 0604702D
Program Element Title: Joint Standoff Weapon (JSOW)
Project Number: P703 Budget Activity: 4
Project Title: Advanced Guidance Evaluation Program

6. (U) Acquisition Decision Memorandum (ADM) - 22 April 1989
7. (U) Memorandums of Agreement (MOA) - June 1990 (USN-DARPA), February 1990 (USN-USAF)
8. (U) Cost and Operational Effectiveness Analysis (COEA) - January 1991

G. (U) RELATED ACTIVITIES: Program Elements 0604707/0604367, Theater Mission Planning Center; Program Element 0603601F, Advanced Tactical LADAR seeker (ATLAS), Autonomous Synthetic Aperture Radar Guidance (ASARG), and Hard Target Ordnance Technology; Program Elements 0603737D/0603768F, Autonomous Guidance for Conventional Weapons (AGCW); Program Element 0604351N, Long Range Conventional Cruise Missile (LRCCM).

H. (U) OTHER APPROPRIATION FUNDS: Not Applicable. RDT&E effort only.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: Not applicable.

J. (U) TEST AND EVALUATION DATA: Objectives for the flight tests of FY 1993 will be drafted at the same time in FY 1991 as the working requirements for the autonomous guidance system. Planning for the tests will take place in FY 1992.

FY 1992/1993 Biennial RDT&E Descriptive Summary

Program Element: #0604704D
PE Title: Rocket Motor Demilitarization
Project Number:
Budget Activity: 2- Advanced Technology Dev.

A. (U) RESOURCES ($ in thousands)

Project Title: Rocket Motor Demilitarization

Popular Name	FY1990	FY1991	FY1992	FY1993	Total
	Actual	Actual	Estimate	Estimate	Program
RokMoDemil	-0-	-0-	28,000	17,000	Continuing

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENT AND SYSTEM CAPABILITIES: The Rocket Motor Demilitarization Program seeks to develop new technologies to enable demilitarization of large rocket motors to take place in an environmentally-benign manner. Cost-effective alternatives will be sought to open burning and open detonation of rocket motors.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLAN:

(U) FY90 Accomplishments:
- o This is a new program that will be initiated in FY 1992.

(U) FY 1991 Plans:
- o This is a new program that will be initiated in FY 1992.

(U) FY 1992 Plans:
- o Technology development efforts will be focused on biodegradation, supercritical water oxidation, and critical fluid washout for Class 1.1 propellant
- o Pilot plant efforts will be concerned with contained burning of rocket motors with scrubbing of effluent gases, cryogenic washout, high pressure water washout, and critical fluid washout of Class 1.3 propellant

(U) FY 1993 Plans:
- o Pilot plant efforts will be concerned with biodegradation, supercritical water oxidation, cryogenic washout, and critical fluid washout of Class 1.1 and 1.3 propellant

(U) Program Plan to Completion: This is a continuing program.

D. (U) WORK PERFORMED BY:
- o Performers will be decided by the peer review process following analysis of in-house and extra-mural proposals.

E. (U) COMPARISON WITH FY 1991 DESCRIPTIVE SUMMARY:
No Descriptive Summary was submitted in FY 1991

F. (U) PROGRAM DOCUMENTATION: To be developed.

G. (U) RELATED ACTIVITIES: None

H. (U) OTHER APPROPRIATION FUNDS: None

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None

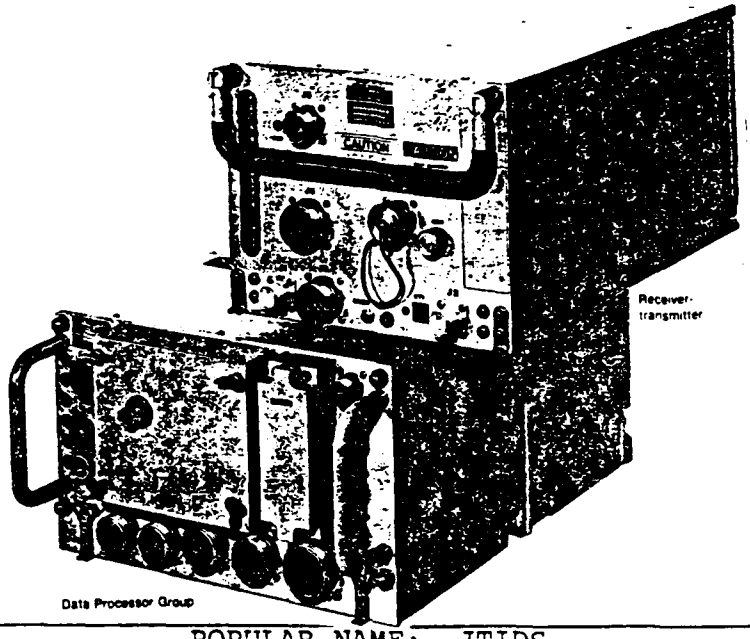
J. (U) MILESTONE SCHEDULE:

o Biodegradation - bench scale process optimization	FY92
o Critical Fluid Washout - demonstration of small motor washout for Class 1.1 propellant	FY92
o High Pressure Washout - establish cutting parameters	FY92
o Supercritical Water Oxidation - draft design for pilot reactor	FY93
o Cryogenic Washout - testing of large scale propellant mixes	FY93

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0604771D
Project Number: P771
Budget Activity: 4

PE Title: Joint Tactical Information Distribution System (JTIDS)
Project Title: Joint Tactical Information Distribution System



POPULAR NAME: JTIDS

A. (U) SCHEDULE/BUDGET INFORMATION ($ in Thousands):

BUDGET (000)	FY 1990	FY 1991	FY 1992	FY 1993	Program Total (To Complete)
Major Contract	59,319	47,152	57,524	25,777	90,460
Support Contract	3,473	9,584	12,981	12,702	39,420
In-House Support	760	1,789	3,822	2,200	7,732
GFE/ Other	5,622	7,330	12,243	6,252	17,951
Total	69,174	65,855	86,570	46,931	155,563

SCHEDULE	FY 1990	FY 1991	FY 1992	FY 1993	To Complete
Program Milestones		NPDM	IIIA CLS 2M NPDM	IIIB CLS 2/2H	IIIB CLS 2M IOC/Army/ Navy/AF
Eng Rel M/S Ver		Army Ter Intg	FCA/PCA		
T&E Milestones	MS-DT-1 AF F-15	OT-II A Navy	MS-OT I/II AF/Navy	OPEVAL Navy	DT/OT Evaluation
Contract lestones	BLK II Navy Lot 1	Lot 2	Lot 3	Lot 4	Prod Unit Army/Navy

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENTS AND SYSTEM CAPABILITIES: The objective of this program is to provide command and control of air defense resources, pilot situational awareness, avoiding fratricide and dual targeting. It is a highly jam resistant, secure, digital information distribution system for use in a tactical combat environment. The Joint Tactical Information Distribution System (JTIDS) is a joint development employing Time Division Multiple Access (TDMA), and spread spectrum techniques. The system will permit rapid and secure exchange of essential command, control and status information among all terminals in the tactical theater.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY90 Program:
   a. Awarded contract for Navy Block II and LRIP Lot 1 contract.
   b. Commenced Navy developmental/operational testing.
   c. Continued development of Army Class 2M.
   d. Designated Depot for common hardware items.
   e. MIDS PMRT to Navy completed 21 Mar 90.
   f. Initiated reliability growth program.

2. (U) FY91 Program:
   a. Joint Service Test and Evaluation Master Plan (TEMP) signed 13 Nov 90.
   b. Conduct AF, Navy and joint service, multi-platform testing.
   c. Continue development of Army Class 2M.
   d. Complete depot designation for all hardware items.
   e. Initiate activation of Class 2/2H/2M depots.
   f. Obtain Navy Program Decision Meeting (NPDM) approval of LRIP Lot 2.
   g. Select Centralized Software Support Activity (CSSA).
   h. Contract for Class 2/2H/2M Preplanned Product Improvement program.
   i. Complete delivery of Navy FSD terminals (Block I).

3. (U) F92 Program:
   a. Conduct further AF, Navy and joint service multi-platform testing.
   b. Deliver Navy Block II and LRIP Lot 1 terminals.
   c. Obtain Milestone IIIA approval for Army Class 2M.
   d. Continue CSSA activation.
   e. Continue depot activation.
   f. Obtain expanded spectrum certification.
   g. Continue Class 2/2H/2M Preplanned Product Improvement program.

4. (U) FY93 Program:
   a. Conduct further AF, Navy and joint service multi-platform testing.
   b. Complete depot activation for Class 2 terminals.
   c. Award contract for Army LRIP terminals.
   d. Complete Navy operational testing (OPEVAL).
   e. Continue depot activation for Class 2H/2M terminals.
   f. Continue CSSA activation.
   g. Continue Class 2/2H/2M Preplanned Product Improvement program.

5. (U) Program to Completion:
   a. Complete joint-service, multi-platform testing.
   b. Obtain Milestone IIIB approval for Army Class 2M.
   c. Award full-rate production contract for Class 2M.
   d. Complete depot activation of Class 2H/2M terminals.
   e. Complete CSSA activation.
   f. Complete Class 2/2H/2M Preplanned Product Improvement program.

D. (U) WORK PERFORMED BY: The Joint Program Office, located at the Electronic Systems Division (ESD), Hanscom AFB, MA. Work is also being done at the Aeronautical System Division (ASD), Wright-Patterson AFB, OH; US Army Communications Electronics Command (CECOM), Fort Monmouth, NJ; and the Electromagnetic Compatibility Analysis Center (ECAC), Annapolis, MD. The major contractors are: Electronic Systems Division and GEC-Marconi Electronic Systems Corp (formerly Plessey Electronic Systems Corp (Class 2 terminal lead developer)), Wayne, NJ; Rockwell-Collins (Class 2 terminal follower), Cedar Rapids, IA; International Business Machines (surface terminal facility), Owego, NY; McDonnell Douglas Aircraft Corp (F-15 integration), St. Louis, MO; and MITRE Corporation (system engineering support), Bedford, MA.

E. (U) COMPARISON WITH FY 90/91 DESCRIPTIVE SUMMARY:

TYPE OF CHANGE	Impact on System Capabilities	Impact on Schedule	FY 1990 Cost
SCHED	None	None	None
COST	None	None	None

NARRATIVE DESCRIPTION OF CHANGE

1. (U) TECHNICAL CHANGES: None

2. (U) SCHEDULE CHANGES: None; baseline will be revised in accordance with FY92 PB.

3. (U) COST CHANGES:

F. (U) PROGRAM DOCUMENTATION:

- MROC 8/89
- Air Force SORD 11/89
- JTIDS Program Baseline 10/89
- Joint ILS plan 7/90
- Milestone IIIA ADM 10/89
- TEMP 11/90

G. (U) RELATED ACTIVITIES:
- Program Element #0205604N, Tactical Command System
- Program Element #0604754F, Joint Tactical Information Dist System
- Program Element #0604702A, Army Data Distribution System
- Program Element #0604719M, Marine Corps C3 Systems (Eng)

JTIDS development is managed by a jointly manned program office with the Air Force as the lead. This Program Element #0604771D funds:

development, prototype fabrication, establish a joint structure to support the ILSP, and testing of terminal equipment for all Service applications. Individual Service program elements fund unique Service platform integration efforts. There are no unnecessary duplication of efforts regarding JTIDS within the Services/Agency or the Department of Defense.

H. (U) OTHER APPROPRIATION FUNDS: ($ In Thousands)

	FY 1990 Estimate	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	Total Program
- APAF F-15	48,000	0	0	0	88,000
- APN (BA1)	0	15,200	10,500	9,500	468,300
- (BA5)	0	7,700	28,400	30,900	142,400
- (BA6)	0	14,130	20,610	16,000	45,000
- OPN (BA2)	0	33,530	39,360	39,640	195,754
- (BA8)	0	6,830	9,080	10,700	75,500
- SCN	0	0	0	2,650	36,200
- OPA (BA2)	0	0	0	14,300	372,400

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: The UK and France have verbally indicated an interest in purchasing JTIDS Terminals beginning in FY 91. A Memorandum of Understanding (MOU) between the UKG and USAG is in effect and is currently under review by both UKG and USAG.

J. (U) TEST AND EVAUATION DATA:

T&E Activity (Past 3 Years)

Event	Date	Results
Pre-DAB DT/OA	1/89 - 5/89	Resolved test issues to support LRIP decision
Post-Dab DT&E	10/89 - 11/90	Completed DT&E of terminal functions not previously tested or identified as deficient
Class 2M Check Test	1/90 - 5/90	Program Manager's verification of Class 2M terminal performance
MS-DT-I	9/90	Demonstrated compatibility of AF & Navy terminals, and limited AF/Navy interoperability
Navy DT-IID	7/90 - 9/90	Initial demonstration of terminal integration in Navy platforms
Navy OT-IIA	10/90	Results pending

T&E Activity (To Complete)

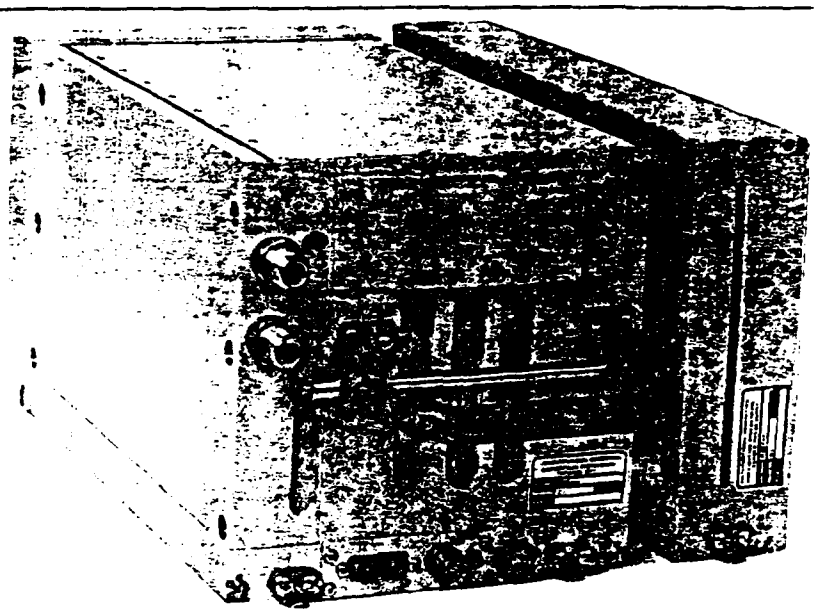
Event	Remarks
MS-DT-II/MS-OT-I	Demonstration of AF/Navy interoperability required to certify Lot 3 Exit Criteria

MS-OT-II	Demonstration of AF/Navy interoperability in an EW environment to support Milestone IIIB
Navy OPEVAL	Navy evaluation of JTIDS performance at the Carrier Battle Group level, to support Milestone IIIB
Class 2M System Tech Test/IOA	Army evaluation of Class 2M performance in the Army Data Distribution System (ADDS) to support Class 2M Milestone IIIA

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0604771D
Project Number: #773
Budget Activity: 4

PE Title: Joint Tactical Information Distribution System
Project Title: Multifunctional Information Distribution System



POPULAR NAME: MIDS

A. (U) SCHEDULE/BUDGET INFORMATION ($ in Thousands):

BUDGET (000)	FY 1990	FY 1991	FY 1992	FY 1993	Program Total (To Complete)
Major Contract	3137	4821	24133	31037	155935 (92365)
Support Contract	1074	3166	3286	3354	25441 (14511)
In-House Support	147	1117	1160	1190	9834 (6220)
GFE/ Other	0	496	3421	3419	27640 (20254)
Total	(4,400)*	(9,600)*	32000	39000	218850 (133350)

SCHEDULE	FY 1990	FY 1991	FY 1992	FY 1993	To Complete
Program Milestones			DAB II 2 QTR		IIIA FY 97 IIIB CLS FY 98
Engineering Milestones				PDR	CDR FY 94
T&E Milestones					DT/OT FY 96
Contract Milestones		FSD RFP 3 QTR	FSD CA 3 QTR		

* FY 90 and FY 91 efforts have been funded in Program Element #0603790D, NATO R&D.

Program Element: #0604771D

Project: #773
Budget Activity: 4

B. (U) BRIEF DESCRIPTION OF MISSION REQUIREMENTS AND SYSTEM CAPABILITIES: MIDS Low-Volume Terminal (LVT) is an international (U.S., France, Germany, Italy, and Spain) cooperative development program to acquire a highly jam-resistant, secure, digital (voice and data) information distribution system providing integrated communications, navigation, and identification for use in a tactical combat environment. The system will provide sufficient connectivity and capacity to permit rapid exchange of command, control and status information among tactical command and control units. MIDS LVT will be interoperable with the U.S. JTIDS Class 2 terminal program, STANAGs 4175 and 5516 apply. This Program Element will fund (in accordance with the U.S. Cost Share) development, prototype fabrication, and test of common terminal equipment, in conjunction with integration schedules for the host platforms.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. Prior Year Accomplishments
   FSD risk reduction activities
2. Current Year Plan
   Sign PMOU/Supplement 1
   Stand Up International Program Office
   Complete FSD risk reduction activities
   Issue FSD RFP
3. Budget Year One Plan
   Sign PMOU/Supplement 2
   Award FSD Contract
4. Budget Year Two Plan
   Continue FSD
   Preliminary Design Review
5. Program Plan to Completion
   Critical Design Review FY 94
   DT/OT FY 96
   Milestone IIIA FY 97
   Milestone IIIB FY 98

D. (U) WORK PERFORMED BY: Space and Naval Warfare Systems Command, Crystal City VA; Multifunctional Information Distribution System Consortium (MIDSCO); Naval Ocean Systems Center, San Diego, CA; Fleet Combat Direction System Support Activity (FCDSSA), Dam Neck, VA; Naval Air Development Center, Warminster PA; GEC-Marconi Electronics System Co., Wayne, NJ; and MITRE Corporation (systems engineering support), Bedford, MA.

E. (U) COMPARISON WITH FY 1990 DESCRIPTIVE SUMMARY:

NARRATIVE DESCRIPTION OF CHANGES

1. TECHNICAL CHANGES: Not Applicable
2. SCHEDULE CHANGES: Not Applicable
3. COST CHANGES: $32.1M increase in FY92 associated with start of funding for program.

F. (U) PROGRAM DOCUMENTATION:

MIDS Mission Needs Statement (MNS) #JORCN-031-90 dated 4/13/90

G. (U) RELATED ACTIVITIES:

Program Elemenet #0603790D, NATO R&D, funded FY 90-91 efforts. Program Element #0205604N, Tactical Command System funds Navy-unique MIDS and JTIDS platform integration and test requirements. Program Element #0604771D funds development, prototype fabrication, and test of common JTIDS terminal equipment.

H. (U) OTHER APPROPRIATION FUNDS: N/A

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: This program is a Nunn Cooperative Development Initiative. A MOU for Concept Definition (Phase 1) was signed by Canada, France, Germany, Italy, Norway, Spain, the U.K. and the U.S. A programme MOU and Supplements 1 (Pre-FSD) and 2 (FSD) will be signed by the participating Nations (France, Germany, Italy, Spain and the U.S.) prior to the start of FSD.

J. (U) TEST AND EVAUATION DATA: None available.

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0604771D Budget Activity: 4
Project Title: Joint Tactical Information Distribution System (JTIDS)

A. RESOURCES ($ in thousands)

Project Number & Title	FY 1990 Actual	FY 1991 Actual	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
P771 JTIDS	69,174	65,855	86,570	46,931	CONTINUING	CONTINUING
P773 MIDS	(4,400)*	(9,600)*	32,000	39,000	133,350	218,850
TOTAL	69,174	65,855	118,570	85,931	CONTINUING	CONTINUING

*PE 0603790D Funds

B. BRIEF DESCRIPTION OF ELEMENT:

JTIDS is a program to acquire a highly jam-resistant, secure, digital (voice and data) information distribution system providing integrated communications, navigation, and identification for use in a tactical combat environment. The JTIDS Class 2 terminal system will provide sufficient connectivity and capacity to permit rapid exchange of command, control and status information among tactical command and control units.

The MIDS-Low Volume Terminal (MIDS-LVT) is an international (U.S., France, Germany, Italy, and Spain) cooperative development program for space constrained tactical fighter aircraft. MIDS-LVT is functionally identical to the JTIDS Class 2 terminal, but through use of VHSIC and MMIC technology is one-half the weight and one-third the size of the Class 2 terminal. MIDS-LVT will be interoperable with the U.S. JTIDS program as the ratified STANAGS 4175 and 5516 apply.

C. JUSTIFICATION FOR PROJECTS LESS THAN $10.0 MILLION IN BOTH FY 1990 AND FY 1991: N/A

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

A. RESOURCES ($ in thousands)

Project Number & Title		FY 1990 Actual	FY 1991 Actual	FY 1992 Budget	FY 1993 Budget	To Complete	Total Prog
P421	Office of the Under Secretary of Defense (Acquisition)	15,933	13,310	37,577	45,382	Contg	Contg
P440	Joint Staff	3,656	3,080	2,217	2,618	Contg	Contg
P441	CINC Study Support	2,460	1,920	1,382	1,632	Contg	Contg
P610	PE 0605106D General Support for PA&E	1,801	2,509				
P710	PE 0605107D General Support to Policy	5,825	4,182				
P810	PE 0605108D General Support for Net Assessment	3,393	3,793				
P910	PE 0605109D General Support for FM&P	1,366	1,626				
P204	PE 0605110D Critical Technology	2,961	2,981				
P410	PE 0605112D RAND Research Center OSD/TJS	19,537	17,240				
P430	PE 0605116D General Support to C3I	2,267	2,084				
P719	PE 0605119D General Support to P&L	2,664	2,301				
P015	PE 1001015D Technology Security Func	1,506	2,427				
Total		63,369	57,453	41,176	49,632	Contg	Contg

OSD has consolidated OSD support programs into one PE; FY 1991 and prior year funds are shown in this RDDS for display purposes only.

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY (Cont'd)

Program Element: #0605104D
PE Title: Technical Support to OSD
Budget Activity: #6 Defensewide Mission Support

C. JUSTIFICATION FOR PROJECTS IN BOTH FY 1992 AND FY 1993:

P421 The Office of the Under Secretary of Defense (Acquisition): Funds are used to: analyze the technical, economic, and military worth of programs in the acquisition system; develop systems for managing the acquisition process; perform analyses to assist the management of basic and applied research design and engineering, and the development of weapon systems; provide analytical assistance in the management of the science and technology aspects of DOD programs.

Examples of past or ongoing research projects are:

- o Treaty compliance and verification issues;
- o Strategic force modernization alternatives;
- o Strategic defense integration;
- o High temperature superconductivity;
- o DOD laboratory restructuring;
- o Laser protection;
- o B-2 and V-22 program assessment;
- o Arms control initiatives.
- o Specific future studies are largely event-driven.

P440 Joint Staff: As the immediate military staff of the Secretary of Defense, the Joint Staff uses these funds to provide analytical assistance in: providing strategic direction for Armed Forces; reviewing plans, programs and requirements; and developing statements of military requirements and strategic guidance for use in the development of budgets, military aid programs, industrial mobilization plans, and weapons systems acquisition.

Examples of past or ongoing research projects are:

- o Communications security modernization;
- o Methodologies for global force comparisons;
- o Operational test and evaluation of strategic missiles;
- o Force planning support;
- o Cruise missile design for arms control;
- o Issues for follow-on arms negotiations;
- o Chemical weapons requirements.
- o Specific future studies are largely event-driven.

P441 The Commanders-in-Chief Study Support: To assist the CINCs in the accomplishment of military missions assigned to them, these funds are used to perform studies and analyses on critical joint warplanning and warfighting issues. These analyses contribute to the improved integration of war plans among the CINCs and the increase in joint warfighting capabilities of the forces assigned to them.

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY (Cont'd)

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

Examples of past or ongoing research projects are:
- o Reception and onward movement in Europe;
- o Naval warfare interactive simulation system;
- o Application of low-observable technology to special operations;
- o U.S. interests and strategies for the Greater Middle East;
- o Strategic bomber employment options;
- o USLANTCOM C3 masterplan;
- o CINCSO regional security strategy analysis.
- o Specific future studies are largely event-driven.

Below are the PEs that will combine into PE 0605104D in FY 1992. Many Studies will suffer due to the large reduction shown in FY 1992. A FFRDC Program Element for RAND NDRI is being lost and combined into 0605104D. This will greatly impact RAND NDRI.

P610 General Support for PA&E:

Examples of past or ongoing research projects are:
- o Antisubmarine Warfare (ASW) Capability Assessment
- o Antiair Warfare Capabilities of Naval Warship Force Alternatives
- o O&S Cost Estimating Guidelines
- o Force Costing
- o Force Structure Alternatives for the 21st Century
- o Economic Analysis of Defense Manufacturers
- o Evaluating the Funding for Infrastructure
- o Effectiveness of US Strategic Bomber, Cruise Missile & Airborne Tanker Forces
- o TASCFORM

P710 General Support to Policy:
- o Dimensions of the Continuing Soviet Challenge
- o Improving Technology Transfer with Japan
- o Implications of Post-CFE Force Structures
- o Assessment of Changing Security Environment
- o Alternative Organizational Structure for NATO
- o Causes & Consequences of Middle East -South Asia Instability
- o German Reunification & the European Security System
- o Jordanian Security and US Assistance

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY (Cont'd)

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

P810 General Support for Net Assessment:
- o French Naval Planning and Resource Management
- o Soviet Views on Long-Term Consequences of Nuclear War
- o United Germany and Future of Europe
- o Analysis of Soviet Second Economy
- o Nuclear Weapons and Regional Powers
- o Strategic Management for the Defense Department

P910 General Support for FM&P:
- o Technical Support of WARMAPS
- o Programming & Accounting for Non-Unit Military Manpower
- o Study of Federal Classification System for White Collar Employees
- o Experimental Civilian Personnel Office (EXPO)
- o Technical Support of the Wartime Manpower Planning System

P204 Critical Technology:
- o International Decision Support System (IDSS)
- o Critical Technologies Planning
- o Industrial and International Program Support
- o Support for MCTL, COCOM and Foreign Capability

P410 RAND Research Center OSD/TJS:
This program provides research support and policy analysis for the Office of the Secretary of Defense, the Organization of the Joint Chiefs of Staff, and the Defense Advanced Research Projects Agency. The work is performed by the National Defense Research Institute (NDRI) which is a Federally-Funded Research and Development Center (FFRDC) within the RAND Corporation. The broad objectives of the program are to: (1) ensure access by all OSD components to independent interdisciplinary expert research capabilities covering a broad range of relevant specialties; (2) institutionalize capabilities for analysis of major research objectives that cut across the responsibilities of individual OSD components; and (3) ensure that sponsors will continue to have available the benefit of these long-term programs and capabilities in the most productive and useful way. The program is approved and reviewed annually by the Defense Advisory Group which is made up of the principals of the ten sponsoring offices.

This program will provide continuing and newly defined research and analytical support in the following areas:

Prior Accomplishments:
- o Assessment for the Under Secretary of Defense for Policy relating to regional areas and implications to US defense policy.

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY (Cont'd)

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

PE 1001015D Technology Security Func:
- o International Planning Service Subscription
- o Export Analysis and Control System Automation
- o High Technology Market Research Services
- o DELTA Requirements and Implementation
- o Technical Information Retrieval System

Work Performed By: Federally-Funded Research and Development Centers (FFRDCs) such as MITRE Corporation; Lawrence Livermore Laboratory; Los Alamos National Laboratory; Sandia National Laboratory; The Institute for Defense Analyses; RAND Corporation; Logistics Management Institute; and by other technical analysis organizations such as Booz-Allen & Hamilton; Analytical Services, Inc.; the BDM Corporation; Science Applications, Inc.; and others.

Related Activities: There are other Program Elements providing studies and analysis support to various OSD offices. Each has specific focus. Duplication is guarded against by central review of all efforts by the OSD Study Coordinator.

Other Appropriation Funds: None

International Cooperative Agreements: None

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

B. BRIEF DESCRIPTION OF ELEMENT: This program element funds studies and analysis support efforts related to the research, development, evaluation, operation, and support of military forces. Specific projects address a variety of complex issues and dynamic problems facing the Under Secretary of Defense for Acquisition (USD(A)), the Joint Staff, and the Commanders-in-Chief of the Unified and Specified Commands (CINCs): examining and assessing the implications and consequences of current and alternative policies, plans, operations, strategies and budgets; understanding and gaining insight into the complex multi-faceted technological, economic, military, and acquisition environments in which defense decisions and opportunities will be considered. Beginning in FY 1992, nine other PEs will be combined into PE 0605104D. These include: 0605106D, 0605107D, 0605108D, 0605109D, 0605110D, 0605112D, 0605116D, 0605119D, and 1001015D. In addition to being combined this program was reduced by about 28%. A tremendously costly reduction. The technical support provided through these funds constitutes an essential tool in assisting the USD(A), the JS, the CINCs, PA&E, Policy, Net Assessment, FM&P, Critical Technology, C3I, P&L, and the Technology Security Function in the performance of their functions and responsibilities. Especially critical in today's changing world environment.

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY (Cont'd)

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

- o Studies for the Assistant Secretary of Defense for Command, Control, Communications and Intelligence on electromagnetic capability and national command architecture.
- o Continuation of the analyses for the Joint Staff on joint strategic command and control, combined logistics, and battle management.
- o Continued development of the RAND Strategy Assessment System under the sponsorship of the Director, Net Assessment.
- o Economic and costing research for the Assistant Secretary of Defense, Program Analysis and Evaluation.
- o Studies to improve and streamline the acquisition process for Assistant Secretary of Defense, Production and Logistics.
- o Analyses on military personnel recruiting, retention, and attrition for the Assistant Secretaries of Defense, Force Management and Personnel, and Reserve Affairs.

Planned Research:

- o Applied Science and Technology;
- o Defense Manpower Research;
- o Information Processing System;
- o International Economic Policy;
- o Strategy Planning and Assessment;
- o Military Forces Employment;
- o International Security and Defense Policy;
- o Acquisition and Support Policy;
- o Specific Future Studies can be Event-Driven.

P430 General Support to C3I:

- o Intelligence Architecture Studies
- o C3I Interoperability for Counter-Narcotics Mission
- o Intelligence Courseware Authoring Tools (ICAT)
- o Harmonization of National & DOD Intelligence Resource
- o Secure, Interoperable, Networking for Mobile Command Centers
- o DOD Electronic Warfare Plan

P719 General Support to P&L:

- o Logistics Research
- o Environmental & Energy Choices that Impact Security of Future Petroleum Supplies of Military Importance.
- o Electronic Processing of Transportation Vouchers
- o Concept for Accessing NATO Central Computer Data Base
- o Integrated Diagnostics for Weapons and Support System
- o Automated Information Systems (AIS) Readiness and Improvement
- o Concurrent Engineering

FY 1992/FY 1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY (Cont'd)

Program Element: #0605104D
PE Title: Technical Support to OSD

Budget Activity: #6 Defensewide Mission Support

PE 1001015D Technology Security Func:

- o International Planning Service Subscription
- o Export Analysis and Control System Automation
- o High Technology Market Research Services
- o DELTA Requirements and Implementation
- o Technical Information Retrieval System

Work Performed By: Federally-Funded Research and Development Centers (FFRDCs) such as MITRE Corporation; Lawrence Livermore Laboratory; Los Alamos National Laboratory; Sandia National Laboratory; The Institute for Defense Analyses; RAND Corporation; Logistics Management Institute; and by other technical analysis organizations such as Booz-Allen & Hamilton; Analytical Services, Inc.; the BDM Corporation; Science Applications, Inc.; and others.

Related Activities: There are other Program Elements providing studies and analysis support to various OSD offices. Each has specific focus. Duplication is guarded against by central review of all efforts by the OSD Study Coordinator.

Other Appropriation Funds: None

International Cooperative Agreements: None

FY 1992/1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: 0605117D

Title: Foreign Materiel Acquisition & Exploitation

Budget Activity: 5 Intelligence and Communications

A. (U) Resources ($ in Thousands)
Project Title

Popular Name	FY90 Actual	FY91 Estimate	FY92 Estimate	FY93 Estimate	To Complete	Total Program
P 411 Foreign Materiel Acquisition and Exploitation						
	10,516	11,031	10,612	12,106	Continuing	Continuing

B. (U) BRIEF DESCRIPTION OF ELEMENT:

This program is involved in the acquisition and exploitation of foreign materiel.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

The FY 1990/1993 and outyear programs include special classified programs for which information will be provided only on a "need-to-know" basis to authorized personnel. Funds have been and will be used to acquire high-priority foreign materiel as it becomes available.

D. (U) WORK PERFORMED BY: Work on this program will be performed by various elements of the U.S. Government.

E. (U) COMPARISON WITH FY 1990 DESCRIPTIVE SUMMARY: There is no change from the FY 1990 Descriptive Summary.

F. (U) PROGRAM DOCUMENTATION: DoD Directive S-3325.1 (Foreign Materiel Program)

G. (U) RELATED ACTIVITIES: None

H. (U) OTHER APPROPRIATION FUNDS: None

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: Not applicable

J. (U) MILESTONE SCHEDULE:

Although specific dates cannot be precisely established, the Foreign Materiel Program Review Board (FMPRB) has approved a Foreign Materiel Acquisition (FMA) list that targets high-priority foreign military materiel that is attainable and potentially acquirable. As targets of opportunity become available, materiel acquisition actions will be handled with real-time responsiveness and obligation of funds.

FY 1992/FY 1993 BIENNIAL DESCRIPTIVE SUMMARY

Program Element: 0605135D
PE Title: Environmental Center

Budget Activity: 6
Defensewide Mission Support

A. (U) RESOURCES ($ in Thousands)

Project Number	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 1993 Estimate	To Complete	Total Program
P1467	0	4972	0	0	4972	4972

B. (U) BRIEF DESCRIPTION OF ELEMENT

These funds will support the National Defense Center for Environmental Excellence.

C. (U) JUSTIFICATION FOR PROJECTS LESS THEN $10 MILLION IN FY 1992/1993.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

(U) FY 1990 Accomplishments
N/A

(U) FY 1991 Plans
All funding will be provided to the National Defense Center for Environmental Excellence to support their efforts on environmental concerns.

(U) FY 1992 Plans
N/A

(U) FY 1993 Plans
N/A

(U) WORK PERFORMED BY:
The National Defense Center for Environmental Excellence

(U) RELATED ACTIVITIES:
N/A

(U) OTHER APPROPRIATION FUNDS:
N/A

(U) INTERNATIONAL COOPERATIVE AGREEMENTS:
N/A

FY 1992/FY1993 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: # 0605872D
PE Title: Productivity Investment Fund Budget Activity: 6

A. (U) RESOURCES ($ in Thousands)

Project Number & Title	FY 1990 Actual	FY 1991 Estimate	FY 1992 Estimate	FY 19 Estimate	To Complete	Total Program
Ion Beam Testing for Space Based Asset	0	0	600	0	0	600
Total	0	0	600	0	0	600

B. (U) BRIEF DESCRIPTION OF ELEMENT:
Install ion beam testing capability in a DNA facility to simulate the effects of soft x-rays on space system components. Ion beam testing capability reduces testing costs to customers from $600K to $60K ($540K per year) and streamlines the development cycle to reduces associated procurement costs.

C. (U) JUSTIFICATION FOR PROJECTS LESS THAN $10.0 MILLION IN BOTH FY 1992 AND 1993.
(U) Project Number and Title: 0605872D Ion Beam Testing for Space Based Assets.

Install ion beam testing capability in a DNA facility to simulate the effects of soft x-rays on space system components. Ion beam testing is required to ensure space based weapon systems meet nuclear hardness and survivability requirements. Assets benefiting from this reduced testing cost include: C3I, satellites, SDI assets, missiles, postboost vehicles, re-entry vehicles, and other weapon system components. Ion beam testing capability reduces testing costs to customers from $600K to $60K and streamlines the development cycle to reduces associated procurement costs.

This project implements Executive Order 12637 "Productivity Improvement Program for the Federal Government" by funding a project that generates a budgetary return on investment of 5.4 to one.

(U) Work Performed by: Physics International Company, San Leandro, CA at the DNA PITHON facility.

(U) Related Activities: DNA is conducting E-beam testing at their 10 Terawatt PITHON facility with Physics International Company as the facility operator.

(U) Other Appropriation Funds: As part of the DoD Productivity Enhancement Capital Investment (PECI) program this project competed against other projects requiring Other Procurement, Operation and Maintenance, Military Construction and RDT&E funding. If this project is rejected, for any reason, request it be replaced with another PECI project(s).

(U) International Cooperative Agreement: No international cooperative agreements were presented with the project submission.