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Department of Defense FY 1998/1999 Biennial Budget Estimates
February 1997

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, DEFENSE-WIDE
Volume 4 - All Other Agencies
DEVELOPMENTAL TEST AND EVALUATION, DEFENSE
OPERATIONAL TEST AND EVALUATION, DEFENSE

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Defensewide
FY 1998/1999 R D T & E Program

Exhibit R-1

Summary

Date: FEB 1997

	Thousands of Dollars			
	FY 1996	FY 1997	FY 1998	FY 1999
Summary Recap of Defensewide				
Defense Mapping Agency	71,685			
Special Operations Command	147,002	142,265	118,543	116,340
Chemical and Biological Defense Program	253,491	302,602	320,846	312,552
National Imagery And Mapping Agency				
Ballistic Missile Defense Organization	3,045,181	3,373,391	2,581,944	2,272,589
Office of Secretary/Defense	1,745,197	1,564,779	1,804,816	1,665,898
Defense Advanced Research Projects Agcy	2,269,202	2,140,436	2,206,403	2,271,934
National Security Agency				
Defense Special Weapons Agency	259,628	217,783	295,341	271,934
Defense Support Project Office	54,769	78,280	49,403	41,854
Joint Chiefs of Staff	5,526	35,836	67,189	59,924
Defense Information Systems Agency	60,630	65,802	55,845	57,980
Defense Intelligence Agency				
Central Imagery Office				
Defense Logistics Agency	74,479	83,848	102,166	89,157
Defense Investigative Service	402	412	419	418
Total Research Development Test & Eval Defwide	9,192,442	9,438,171	9,069,680	8,689,353

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CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM

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Chemical and Biological Defense Program
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999	Sec
				Thousands of Dollars				
6	0601384BP	Chemical and Biological Defense Program	1	26,528	29,325	25,190	26,018	U
		Basic Research		26,528	29,325	25,190	26,018	
15	0602384BP	Chemical and Biological Defense Program	2	68,565	67,852	60,023	58,360	U
		Applied Research		68,565	67,852	60,023	58,360	
33	0603384BP	Chemical and Biological Defense Program - Advanced Development	3	26,896	43,092	41,223	40,581	U
		Advanced Technology Development		26,896	43,092	41,223	40,581	
83	0603884BP	Chemical and Biological Defense Program - Dem/Val	4	34,889	48,492	55,145	61,910	U
		Demonstration and Validation		34,889	48,492	55,145	61,910	
87	0604384BP	Chemical and Biological Defense Program - EMD	5	89,606	97,476	120,535	108,006	U
		Engineering and Manufacturing Development		89,606	97,476	120,535	108,006	
105	0605384BP	Chemical and Biological Defense Program	6	7,007	16,365	18,730	17,677	U
		RDT&E Management Support		7,007	16,365	18,730	17,677	
Total		Chemical and Biological Defense Program		253,491	302,602	320,846	312,552	

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COMBATING TERRORISM FUNDING SUMMARY

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, DEFENSE-WIDE
(Dollars in Millions)

ATSD(NCB)

ID	Subactivity Description	FY1996	FY1997	FY1998	FY1999
0605384BP	Chemical/Biological Defense				
BUDGET ACTIVITY 6: MANAGEMENT SUPPORT					
AT6	Anti-Terrorism	0	0	3.688	3.010
TOTAL COMPONENT		**0**	**0**	**3.688**	**3.010**

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

COST (*In Thousands*)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	26528	29325	25190	26018	26710	27341	29062	29360	Continuing	Continuing
511	Science Base/Med Chem Defense	7878	0	0	0	0	0	0	0	0	7878
512	Science Base/Med Bio Defense	14053	0	0	0	0	0	0	0	0	14053
71A	Non-Medical Chem/Bio Defense	4597	0	0	0	0	0	0	0	0	4597
CB1	Chemical/Biological Defense (Non-Medical)	0	8051	2301	2450	2546	2671	3865	3573	Continuing	Continuing
TB1	Medical Biological Defense	0	13802	14756	15299	15688	16018	16360	16743	Continuing	Continuing
TC1	Medical Chemical Defense	0	7472	8133	8269	8476	8652	8837	9044	Continuing	Continuing

Mission Description and Budget Item Justification: This Program Element funds the Joint Service core research program for Chemical and Biological (CB) defense. The basic research program aims to improve the operational performance of present and future DoD components by expanding knowledge in militarily relevant fields for CB defense. Moreover, basic research supports a joint force concept of a lethal, integrated, supportable, highly mobile force with enhanced performance by the individual soldier, sailor, airman or marine. Specifically, the program promotes theoretical and experimental research in the chemical, biological and medical sciences. Research areas are determined and prioritized in order to meet joint service needs as stated in mission area analyses and joint operations requirements, and to take advantage of scientific opportunities. Basic research is executed by academia, including Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs), and industry. Other programs include inter-disciplinary research performed under the University Research Initiative (URI) program, and the In-House Laboratory Independent Research program. Funds directed to these laboratories and research organizations capitalize on scientific talent, specialized facilities and technological breakthroughs.

The work in this program element is consistent with the Joint Service Modernization plan. Management of funding resources leads to expeditious transition of the resulting knowledge and technology to the appropriate applied research (PE 0602384BP) and advanced technology development (PE 0603384BP) activities. This project also covers the conduct of basic research efforts in the areas of real-time sensing and immediate biological countermeasures. The projects in this PE include basic research efforts directed toward providing fundamental knowledge for the solution of military problems and therefore are correctly placed in Budget Activity 1.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: 511

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
511 Science Base/Med Chem Defense	7878	0	0	0	0	0	0	0	0	7878

A. Mission Description and Budget Item Justification:

Project 511 - Science Base/Medical Chemical Defense: This project emphasizes understanding of the basic mechanisms of action of nerve, blister (vesicating), blood, and respiratory agents. Basic studies are performed to delineate mechanisms and site of action of identified and emerging chemical threats to generate required information for initial design and synthesis of medical countermeasures. In addition, these studies are further designed to maintain and extend a science base.

FY 1996 Accomplishments:

- 2737 Expanded pathophysiological database on sulfur mustard (HD).
- 1846 Used microdialysis models to fully characterize time course of neurochemical changes in nerve agent seizures.
- 2672 Used "quadromas," fusion products, to produce binding site modification on catalytic antibodies to detoxify nerve agents.
- 395 Identified and produced a reactive component for a topical skin protectant (TSP) to detoxify vesicants and nerve agents.
- 228 Characterized phosgene damage and reliable endpoints for the initiation of therapies and development of an eye model to characterize HD damage.

Total 7878

FY 1997 Planned Program: This project transferred to Project TC1, Medical Chemical Defense.

FY 1998 Planned Program: This project transferred to Project TC1, Medical Chemical Defense.

FY 1999 Planned Program: This project transferred to Project TC1, Medical Chemical Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT 511

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	8143	0	0	0
Appropriated Value	8296			
Adjustments to Appropriated Value	-418			
FY 1998 Pres Bud Request	7878	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: 512

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
512 Science Base/Med Bio Defense	14053	0	0	0	0	0	0	0	0	14053

A. **Mission Description and Budget Item Justification:**

Project 512 -Science Base/Medical Biological Defense: This project funds basic research on the development of vaccines and drugs to provide an effective medical defense against validated biological threat agents including bacteria, toxins, viruses and other agents of biological origin. By employing biotechnology, medical systems will be designed to rapidly identify, diagnose, prevent, and treat disease due to exposure to biological threat agents.

FY 1996 Accomplishments:

- 2578 Determined mode of action of aerosolized ricin and Staphylococcus enterotoxin B.
- 2021 Examined molecular biology, genetics, and pathophysiological mechanisms of anthrax and brucellosis.
- 2185 Determined mechanisms of immunity to plague, and additional bacterial threats (glanders) based on identified basis of pathogenesis.
- 2286 Evaluated immunological and chemotherapeutic approaches to mediate effects of neurotoxins and biomodulators.
- 1397 Characterized molecular pathogenesis and antigenic markers of alphavirus and filovirus threats.
- 773 Evaluated key antigens and genetics of vaccinia virus.
- 1972 Defined pathophysiology and effector mechanisms of clostridium botulinum and clostridium perfringens toxins.
- 841 Examined novel molecular and computer-based modeling methods to elucidate pathogenesis of biological threat agents.

Total 14053

FY 1997 Planned Program: This project transferred to Project TB1, Medical Biological Defense.

FY 1998 Planned Program: This project transferred to Project TB1, Medical Biological Defense.

FY 1999 Planned Program: This project transferred to Project TB1, Medical Biological Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT 512

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	14525	0	0	0
Appropriated Value	14797			
Adjustments to Appropriated Value	-744			
FY 1998 Pres Bud Request	14053	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: 71A

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
71A Non-Medical Chem/Bio Defense	4597	0	0	0	0	0	0	0	0	4597

A. Mission Description and Budget Item Justification

Project 71A - Non-Medical Chemical/Biological Defense: The purpose of this project is to obtain, through basic research in chemistry, physics and life sciences, fundamental information in support of: new and improved defensive systems for biological agents and toxins; new and improved defensive systems for chemical threat agents; new concepts in decontamination and aerosol studies; and, determinations of the environmental fate and impact of militarily unique processes.

FY 1996 Accomplishments:

•	1395	Conducted a coordinated and consolidated mass spectrometric study of biomarkers having potential utility in a future mass spectrometry-based biodetector. Studies focused on comparing electro spray and matrix assisted laser desorption sampling techniques.
•	279	Investigated catalytic and reactive properties of "starburst" dendrimers as adsorbents materials for application in military systems for detection and decontamination of toxic materials.
•	186	Investigated use of a silicon microphysiometer to measure cell inhibition as a predictor of toxicity. Ultimate objective of the project is to develop a tool for human toxicity prediction without resorting to animal testing.
•	652	Investigated mechanisms of chemical detoxification of Chemical Warfare (CW) agents.
•	665	Evaluated individual warrior tasks performance by assessing extensive mask wear performance tests.
•	694	Investigated pathogen detection via intermolecular interactions.
•	465	Investigated ultra violet (UV) scattering for single biological particles.
•	261	Investigated techniques for generic detection of microbial toxins.
Total	4597	

FY 1997 Planned Program: This project transferred to Project CB1, Chemical/Biological Defense (Non-Medical).

FY 1998 Planned Program: This project transferred to Project CB1, Chemical/Biological Defense (Non-Medical).

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT 71A

FY 1999 Planned Program: This project transferred to Project CB1, Chemical/Biological Defense (Non-Medical).

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	4813	0	0	0
Appropriated Value	4903			
Adjustments to Appropriated Value	-306			
FY 1998 Pres Bud Request	4597	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: CB1

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CB1 Chemical/Biological Defense (Non-Medical)	0	8051	2301	2450	2546	2671	3865	3573	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CB1 Chemical/Biological Defense (Non-Medical): This project funds basic research in chemistry, physics, mathematics and life sciences, fundamental information in support of: new and improved detection systems for biological agents and toxins; new and improved detection systems for chemical threat agents; advanced concepts in individual and collective protection, new concepts in decontamination and information on the chemistry and toxicology of threat agents and related compounds.

FY 1996 Accomplishments : This project funded in Project 71A.

FY 1997 Planned Program:

•	665	Continue mass spectrometric study of biomarkers potentially useful for a mass spectrometry based bio-agent detector. Make another down-selection of marker/sampling method combinations in preparation for a recommendation next year. Begin study of glycosylated calixarares as novel agent capture molecules.
•	404	Continue investigation of optical properties of aerosol particles and mathematical solutions to the inversion problem leading to enormous simplification of the data reduction problem and making possible the remote imaging of bio-aerosols in near real time.
•	979	Conduct in-house evaluation of dendritic polymers prepared last year and functionalized with monoethanolamine. Complete initial toxicology evaluation of VX using human liver cells and the cytosensor. Begin screen of a new set of dehyrohalogenases as an approach to a mild HD decontaminant and begin study of catalytic hydrolysis of VX at controlled pH.
•	1200	Capitalize on new start initiatives begun last year as a result of the directed plus-ups in new approaches for identification of pathogens on the basis of antibiotic resistance and determining the feasibility of targeting regulatory genes as a marker for virulence. Expand upon last year's successes in new approaches to generic toxin recognition and demonstrate a model of the impact of various respirator components/design features on wearer performance in terms of battlefield capabilities.
•	4663	Develop prototype of single molecule/agent detection system; demonstrate feasibility in cell culture of programming transfected stem cells to produce and release gene products (e.g. vaccines or their analogs); establish preliminary approach for stem cell surface or other receptors to detect specific pathogens or biological simulants (DARPA).
•	140	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	8051	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT CB1

FY 1998 Planned Program:

•	681	Complete mass spectrometric study of biomarkers for detection of biological agents. Transition a proposed technology for the identification of threat materials, including sample handling procedures and techniques to be used to the core applied research program.
•	600	Build a prototype instrument to detect the scattering from complex biological aerosol particles and begin collecting and analyzing data that demonstrates the utility and computational power of the theoretical solutions finalized last year.
•	1020	Complete the comparisons between liquid phase decontamination reactions and the corresponding/liquid/solid phase reactions on dedritic polymers. Complete work on cytological screen of VX, HD and important degradation products using the human keratinocyte, neuronal and liver. Continue screen of potential mustard degrading enzymes and of ways to control the hydrolitic cleavage of VX.
Total	2301	

FY 1999 Planned Program:

•	800	Complete the cytotoxicity screen for the remaining threat materials and degradation products. Transition the screen to the core applied research program for use in future toxicity studies. Complete study of hydrolysis of VX. Initiate study of methods for sensitive equipment decon.
•	600	Conduct biomimetic study of the active site of the most active of the nerve agent degrading enzymes developed under the North Atlantic Treaty Organization (NATO) project.
•	525	Resume study of the relationship of surface protein binding on pathogens to pathogenesis as a potential mechanism for the development of a rapid pathogen detection method.
•	525	Complete the studies on the prototype instrument to detect scattering from biological aerosols. Transition the investigation to the applied research program and begin investigations on an improved method.
Total	2450	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: CB1

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	7019	7113	3865
Appropriated Value		8051		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	8051	2301	2450

Change Summary Explanation:

Funding: FY1997: Funding changes due to Congressional increase for biological warfare countermeasures and SBIR/other economic adjustments.

FY1998/99: Realigned funding to DARPA appropriations per FY97 National Defense Authorization Act.

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: TB1

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
TB1 Medical Biological Defense	0	13802	14756	15299	15688	16018	16360	16743	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TB1 - Medical Biological Defense: This project funds basic research on the development of vaccines and drugs to provide an effective medical defense against validated biological threat agents including bacteria, toxins, viruses and other agents of biological origin. Also, by employing biotechnology, this project funds basic research to rapidly identify, diagnose, prevent, and treat disease due to exposure to biological threat agents.

FY 1996 Accomplishments: This project funded in Project 512.

FY 1997 Planned Program:

•	2359	Evaluate additional recombinant vaccine constructs, perform antigenic mapping, and complete computer modeling studies for clostridium botulinum and clostridium perfringens toxins.
•	1933	Conduct studies to identify and counteract potential genetically-engineered delivered threats and develop further *in vitro* models for validated agents.
•	1800	Define bacterial gene products that stimulate protective immune responses to define bio-engineered vaccine candidates for plague and glanders.
•	1274	Identify key antigenic and genetic components for development of alternative vaccine candidates for brucella.
•	2126	Define pathogenesis mechanisms of staphylococcus enterotoxin B.
•	1089	Evaluate nucleic-acid based ligands for ricin toxin binding and further characterize cellular pathogenesis of ricin toxin.
•	1527	Identify and refine molecular constructs for vaccine approaches and immunodiagnostic reagents for alphaviruses and filoviruses.
•	1450	Develop vaccine approaches and determine underlying pathology for physiologically active compounds and peptide ionophores.
•	244	SBIR/STTR
Total	13802	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT TB1

FY 1998 Planned Program:

•	1255	Conclude evaluation of potential adjuvants for use with Plague vaccine candidate.
•	1344	Identify,clone and sequence virulence genes/plasmids for brucella diagnostics and vaccines.
•	1940	Identify,clone and sequence virulence genes/plasmids for diagnostics and vaccines for glanders and typhus.
•	1306	Screen pharmacologic agents to evaluate for treatment for peptide ionophores.
•	2447	Perform computer simulation of structure/activity relationships for physiologically active compounds, venoms, and toxins of clostridium perfringens.
•	1640	Initiate entire genome sequencing of selected high priority bacterial and viral agents for screening of genetically engineered microbes.
•	2227	Construct genetic libraries of staphylococcal enterotoxin producing genes and develop synthetic peptides, monoclonal antibodies and diagnostic probes.
•	1075	Design computer and *in-vitro* model systems for design of post-exposure therapeutics for ricin.
•	1522	Continue sequence evaluation of enzootic strains of equine encephalitis viruses for multivalent vaccine and perform epitope mapping of filovirus antigens.
Total	14756	

FY 1999 Planned Program:

•	1360	Test adjuvants for mucosal immunity to brucellae and evaluate expression system for multivalent Brucella vaccine.
•	2599	Evaluate expression systems for newly cloned glanders and typhus virulence factors.
•	1212	Evaluate non-mammalian model systems for venoms.
•	3685	Identify efficacy of protection from identified physiologically active compounds of promising huperzine analogs in animal model and develop computer models of interaction between peptide ionophores and cellular targets.
•	1941	Continue full genome sequencing of biological threat agents and begin gene bank search for general virulence factor sequence information.
•	2235	Determine role of cellular enzymes in mechanism of action of Staphyloccocus enterotoxin induced shock and evaluate inhibitors of these mechanisms.
•	1068	Complete screening of potential drugs for post-exposure therapies against ricin using *in vitro* model system.
•	1199	Begin evaluation of potential antiviral compounds for filoviruses using *in vitro* models.
Total	15299	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT TB1

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	14091	14828	15398
Appropriated Value		13802		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	13802	14756	15299

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 1 - Basic Research

PE NUMBER AND TITLE: 0601384BP Chemical/Biological Defense (Basic Research)

PROJECT: TC1

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
TC1 Medical Chemical Defense	0	7472	8133	8269	8476	8652	8837	9044	Continuing	Continuing

A. Mission Description and Budget Item Justification: .

Project TC1 - Medical Chemical Defense: This project emphasizes understanding of the basic mechanisms of action of nerve, blister (vesicating), blood, and respiratory agents. Basic studies are performed to delineate mechanisms and site of action of identified and emerging chemical threats to generate required information for initial design and synthesis of medical countermeasures. In addition, these studies are further designed to maintain and extend a science base.

FY 1996 Accomplishments: This project funded in Project 511.

FY 1997 Planned Program:

•	2369	Improve sensitivity of assays to quantify deoxyribonucleic acid (DNA) repair activity, define effects of HD on metabolic substrates.
•	733	Use micro dialysis to determine relative potency of leading pharmaceutical entities blocking neurochemical changes in Nerve Agent Seizures (NAS).
•	2097	Characterize second generation enzyme molecules for detoxification of chemical agents and improve their specificity through the application of molecular modeling and biotechnology.
•	676	Develop *in vitro* and *in vivo* model systems to evaluate the possible effects of low dose or chronic exposures to chemical warfare (CW) agents.
•	1465	Use the weanling pig model to follow the course of pathology and evaluate the candidate reactive topical skin protectant.
•	132	SBIR/STTR
Total	7472	

FY 1998 Planned Program:

•	3786	Elucidate immunological response to vesicants and screen analytic procedures useful for quantitating vesicant-induced inflammation.
•	352	Synthesize and screen butyrylcholinesterase altered by site directed mutations guided by computer assisted design.
•	1410	Explore mechanisms of action of aqueous wound decontaminant materials effective at neutralizing chemical warfare agents in wounds.
•	1410	Design and create protective active moieties for a reactive TSP.
•	1175	Develop sensitive biomarkers of low dose exposures to CW agents.
Total	8133	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 1 - Basic Research	PE NUMBER AND TITLE 0601384BP Chemical/Biological Defense (Basic Research)
	PROJECT TC1

FY 1999 Planned Program:

•	3874	Screen drugs from principal classes of interest for viable post-exposure therapy of blister agents.
•	549	Use crystal structure of human enzymes along with site directed mutagenesis to develop recombinant enzyme with catalytic function for nerve agent and resistance to aging by nerve agents.
•	989	Evaluate novel temporary wound dressing or skin graft approaches as accelerators of healing for mustard induced wounds.
•	879	Synthesize catalytic reactive moieties for topical skin protectant.
•	1978	Characterize pharmacokinetic parameters of low dose or chronic exposures to include possible long-lived metabolites that may contribute to toxicity or aid in diagnosis.
Total	8269	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	7629	8173	8322
Appropriated Value		7472		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	7472	8133	8269

Change Summary Explanation:

Funding:

Schedule:

Technical:

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

	COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	68565	67852	60023	58360	58722	60791	66302	66507	Continuing	Continuing
313	Shipboard Chem/Bio Technology	2425	0	0	0	0	0	0	0	0	2425
553	Non-Medical Chem/Bio Defense & Gen Invest	29767	0	0	0	0	0	0	0	0	29767
871	Medical Biological Defense	10658	0	0	0	0	0	0	0	0	10658
872	Medical Chemical Defense	11951	0	0	0	0	0	0	0	0	11951
P01	Counterproliferation Support	8085	0	0	0	0	0	0	0	0	8085
CB2	Chemical/Biological Defense	1756	44073	35133	31500	32194	33696	38627	38186	Continuing	Continuing
SB2	Small Business Innovative Research (SBIR)	3923	0	0	0	0	0	0	0	0	3923
TB2	Medical Biological Defense	0	11020	11474	12386	12211	12509	12776	13075	Continuing	Continuing
TC2	Medical Chemical Defense	0	12759	13416	14474	14317	14586	14899	15246	Continuing	Continuing

Mission Description and Budget Item Justification: The use of weapons of mass destruction (WMD) in future conflicts is a steadily increasing threat. Funding under this PE sustains a robust defense which both reduces the danger of a CB attack and enables U.S. forces to survive, and continue operations in a CB environment. The medical program focuses on development of antidotes and drug treatments and on casualty diagnosis, decontamination and medical management. In the non-medical area, the emphasis is on continuing improvements in CB defense materiel, including contamination avoidance, decontamination, and protection systems. Maintaining state-of-the-art CB defensive systems is critical for force protection and CB weapons deterrence. This project also provides for conduct of applied research in the areas of real-time sensing and immediate biological countermeasures. The work in this program element is consistent with the Joint Service Modernization Plan. Efforts under this PE transition to and provide risk reduction for Advanced Technology Development (PE 0603384BP), Demonstration/Validation (PE 0603884BP) and Engineering/Manufacturing Development (PE 0604384BP). This project includes non-system specific development pointed toward specific military needs and therefore is appropriate to Budget Activity 2.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: 313

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
313 Shipboard Chem/Bio Technology	2425	0	0	0	0	0	0	0	0	2425

A. Mission Description and Budget Item Justification

Project 313 - Shipboard Chemical/Biological Technology: This project funds technologies to improve protection to the fleet, including technologies that will: reduce the severe heat burden created by the protective overgarment; reduce the extensive and expensive carbon filter change out procedures and disposal required by the current collective system; reduce the size, complexity and false alarm rate of the current chemical detectors; develop a credible biological detector system; improve communications and operations in protective ensembles; define the interaction of an agent cloud with the complex structure of a ship and incorporate the CB impact on Flag/Fleet operations into realistic wargames.

FY 1996 Accomplishments:

- 101 Continued efforts in biological particle sampler/sizer capable of discrimination between biological and non-biological particles.
- 163 Completed design of hood/blower mask for flightdeck crew and initiate physiological testing and field trials.
- 395 Leveraged efforts in Counterproliferation Support Program for development of biosensors using optic waveguide for shipboard use.
- 931 Continued modeling, simulation and wargaming of chemical and biological shipboard attack profiles with distribution of Vapor, Liquid and Solid Tracking (VLSTRACK) version 2.0. Continue to provide support to all Services for VLSTRACK including updated version/improvements as available.
- 335 Micromachined and conducted field trial proximal probe device for shipboard use.
- 200 In conjunction with Special Operations Command, modified selected swimmer weapon garments to include microencapsulated phase change material (MicroPCM).
- 200 Conducted laboratory demonstration of electroactive polymers for shipboard chemical detection.
- 100 Leveraged the Counterproliferation Support Program for shipboard demonstration of surface acoustic waveguide (SAW) chemical sensor.

Total 2425

FY 1997 Planned Program: This project transferred to Project CB2, Chemical Biological Defense.

FY 1998 Planned Program: This project transferred to Project CB2, Chemical Biological Defense.

FY 1999 Planned Program: This project transferred to Project CB2, Chemical Biological Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 2 - Applied Research	PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense — PROJECT: 313

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2507	0	0	0
Appropriated Value	2554			
Adjustments to Appropriated Value	-129			
FY 1998 Pres Bud Request	2425	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: 553

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
553 Non-Medical Chem/Bio Defense & Gen Invest	29767	0	0	0	0	0	0	0	0	29767

A. Mission Description and Budget Item Justification

Project 553 - Non-Medical Chemical/Biological Defense and General Investigations: This project addresses the urgent need to provide all Services with: defensive materiel to protect individuals and groups from threat chemical-biological agents in the areas of detection, identification and warning; contamination avoidance through reconnaissance; individual and collective protection and decontamination. It also provides for special investigations into CB defense technology to include CB threat agents, operational sciences, CB simulants, and nuclear, biological, chemical (NBC) survivability. This project also addresses support to Program Executive Offices focusing on horizontal integration of CB defensive technologies across the armored force.

FY 1996 Accomplishments:

- 8070 Evaluated Bio Agent local warning detection technologies such as deoxyribonucleic acid (DNA) probes, electrospray mass spectrometry, planar wave guides and flow cytometry and technologies for early warning of bio agents. Field tested breadboard of tunable ultraviolet laser standoff detector. Early warning biodetection technologies leveraged the Counterproliferation Support Program funded in Project P01.
- 1003 Completed antibody development concepts for detector kits and sensors.
- 1555 Tested, in realistic field trials, small, lightweight (< 1 lb.), prototype Chemical Detector for the individual service member.
- 1624 Demonstrated the ability to evaluate operational performance of representative CB detector systems using a virtual model in the distributive interactive simulation.
- 1674 Investigated enhanced protection technologies for masks, continued integration of advanced mask concepts into 21st century soldier system; continued development of models to assess performance degradation; continued development of bio-protection test methods, and updated performance rating tables.
- 240 Investigated enzymatic technology to accomplish chemical decontamination.
- 3232 Investigated advanced concepts for regenerable filtration including layered Pressure Swing Adsorption Beds and segmented catalysts for combat vehicles.
- 4348 Evaluated novel technologies for chemical images, CB antiterrorism, early warning chemical detection; developed standardized test methodologies for CB evaluation.
- 254 Investigated technologies for a light-weight, extended wear half-face mask for Biological Warfare (BW) with a protective factor of 100-1000.
- 7767 Evaluated novel sensor suite for real-time detection, identification, and quantification of CW battlefield agents which is a first time National capability. (SAFEGUARD)

Total 29767

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 2 - Applied Research	PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense — PROJECT: 553

FY 1997 Planned Program: This project transferred to Project CB2, Chemical/Biological Defense.

FY 1998 Planned Program: This project transferred to Project CB2, Chemical/Biological Defense.

FY 1999 Planned Program: This project transferred to Project CB2, Chemical/Biological Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	29882	0	0	0
Appropriated Value	30445			
Adjustments to Appropriated Value	-678			
FY 1998 Pres Bud Request	29767	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: 871

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
871 Medical Biological Defense	10658	0	0	0	0	0	0	0	0	10658

A. Mission Description and Budget Item Justification:

Project 871 - Medical Biological Defense: This project funds applied research on the development of vaccines and drugs to provide an effective medical defense against validated biological threat agents including bacteria, toxins, viruses and other agents of biological origin. Also, by employing biotechnology, this project funds applied research on medical systems to rapidly identify, diagnose, prevent and treat disease due to exposure to biological threat agents.

FY 1996 Accomplishments:

- 2437 Determined optimal expression systems for multivalent vaccine candidates for the staphylococcal enterotoxins.
- 2303 Evaluated pharmacological and immunological prophylaxes for candidate therapeutic selections for botulinum toxins.
- 1748 Evaluated appropriate animal aerosol models, evaluated protective immune responses, and defined drug resistance mechanisms for bacterial agents (plague and brucellosis).
- 1268 Investigated vaccine delivery systems and screened drug candidates for treatments of ricin and other toxins.
- 1198 Produced and configured diagnostic reagents required to augment the forward deployable diagnostic assay with Venezuelan Equine Encephalitis (VEE) and botulinum toxin capability.
- 966 Identified additional pathogenic markers of anthrax and cloned/expressed for use as vaccine candidates.
- 738 Initiated cloning studies on Western Equine Encephalitis (WEE) and Eastern Equine Encephailitis (EEE) virus, demonstrated expression of viable vaccine candidates, and evaluated expression products as vaccine candidates for filoviruses in animal models.

Total 10658

FY 1997 Planned Program: This project transferred to Project TB2, Medical Biological Defense.

FY 1998 Planned Program: This project transferred to Project TB2, Medical Biological Defense.

FY 1999 Planned Program: This project transferred to Project TB2, Medical Biological Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	0602384BP Chemical/Biological Defense	871

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	11015	0	0	0
Appropriated Value	11223			
Adjustments to Appropriated Value	-565			
FY 1998 Pres Bud Request	10658	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: 872

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
872 Medical Chemical Defense	11951	0	0	0	0	0	0	0	0	11951

A. Mission Description and Budget Item Justification:

Project 872 - Medical Chemical Defense: This project funds medical chemical defense applied research, and emphasizes the prevention and minimization of chemical casualties through application of pharmaceuticals for prevention and treatment of the toxic effects of nerve, blister, respiratory, and blood agents. This project supports applied research of prophylaxes, pretreatments, antidotes, skin decontaminants, and therapeutic compounds that will counteract the lethal, physical, and behavioral toxicities of chemical agents. It also supports development of medical chemical defense material that insures adequate patient care, field resuscitation, and patient management procedures.

FY 1996 Accomplishments:

- 1545 Determined efficacy of calcium chelators to protect against sulfur mustard (HD), and the effects of HD on intracellular calcium.
- 1882 Developed new DNA assays to quantitate extent of DNA damage by HD.
- 1580 Determined long-term effect of HD on adenosine tri-phosphate (ATP) levels in lymphocytes in presence/absence of poly-adenosine di-phosphate-ribose polymerase (PADPRP).
- 1919 Established methods for exposure of human skin explants to HD to characterize the cross-reactivities of new monoclonal antibodies.
- 1824 Continued to screen leading pharmaceuticals and implementation of monitoring procedures to evaluate advanced anticonvulsant antidotes to nerve agent intoxication.
- 2290 Developed a pharmokinetic model for predicting the toxicity of chemical warfare agents in humans in order to transition products through the FDA.
- 721 Obtained active reagents that prevent or delay transmission of chemical agents and render them non-toxic.
- 190 Established plan for the evaluation of a methemoglobin monitor.

Total 11951

FY 1997 Planned Program: This project transferred to Project TC2, Medical Chemical Defense.

FY 1998 Planned Program: This project transferred to Project TC2, Medical Chemical Defense.

FY 1999 Planned Program: This project transferred to Project TC2, Medical Chemical Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 2 - Applied Research	PE NUMBER AND TITLE 0602384BP Chemical/Biological Defense
	PROJECT 872

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	13594	0	0	0
Appropriated Value	13850			
Adjustments to Appropriated Value	-1899			
FY 1998 Pres Bud Request	11951	0	0	0

Change Summary Explanation:

Funding: FY 1996: Funding reprogrammed to other high priority CBDP efforts ($-1643K).

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: P01

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
P01 Counterproliferation Support	8085	0	0	0	0	0	0	0	0	8085

A. Mission Description and Budget Item Justification

Project P01 - Counterproliferation Support: This project funds applied research of technologies in support of the Counterproliferation Support program. Technologies funded in this project specifically address the shortfalls in passive defense counterproliferation capabilities and are responsive to critical needs. The passive defense area is supported by technologies for biological warfare (BW) agent early warning detection/characterization and local warning and technologies for mounting such systems on selected platforms such as the unmanned aerial vehicle (UAV).

FY 1996 Accomplishments.:

- 3800 Developed technologies and spectroscopy databases for multispectral ultraviolet fluorescence spectroscopy for battlefield detection and discrimination of biological warfare agents in the presence of natural and man-made interferents. Completed spectroscopy on over 200 samples. Demonstrated discrimination of binary mixtures of bacteria and bacteria/backgrounds.
- 950 Small Unit Biological Detector (SUBD): Prototyped a man-portable, integrated and fully automated biodetection warning system capable of detecting and identifying specific and non-specific agents. Supported Marine Corps requirement for small, lightweight biodetection systems for rapid response to biological agent threats/attacks. Improved the sample concentration of the biological interial collector/concentrator by more than a factor of two. Improved the detection sensitivity of the biorefractometer.
- 675 Demonstrated an automated, miniaturized Fiber Optic Wave Guide (FOWG) biological agent detection and identification prototype for man-portable or remote, airborne operation. Demonstrated automated fluidics unit and automated BW assay. Integrated the FOWG biodetector, automated fluidics and air sampler in 10 pound package. Demonstrated assay performance during airborne operations. Performed extended use tests on fluidics subsystem.
- 570 NERVE: Investigated the use of biological cells as sensor elements for BW toxin detection. Determined environmental conditions for three month viability of NG108-15 cells. Determined sensitivity of NG108-15 cells to 16 biological agents. Completed benchtop assembly of all major components necessary for the acquisition and control subsystems of a neural cell based biodetection prototype.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 2 - Applied Research	PE NUMBER AND TITLE 0602384BP Chemical/Biological Defense
	PROJECT P01

•	1425	Completed optimized design of a low cost, airobotic platform (LCAP) for the purpose of carrying biodetection systems for near real-time battlefield detection of BW agents. Fabricated miniaturized cyclone and jet aerosol samplers for integration with the LCAP and biodetector payload. Flight test of FOWG biodetector payload on a generic LCAP in progress.
•	665	Initiated integration of upconverting phosphor technology with FOWG biodetector to investigate multiplexing capabilities. Antibodies successfully attached to phosphor particles.
Total	8085	

FY 1997 Planned Program: This project transferred to Project CB2, Chemical Biological Defense.

FY 1998 Planned Program: This project transferred to Project CB2, Chemical Biological Defense.

FY 1999 Planned Program: This project transferred to Project CB2, Chemical Biological Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	8951	0	0	0
Appropriated Value	9300			
Adjustments to Appropriated Value	-1215			
FY 1998 Pres Bud Request	8085	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: CB2

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CB2 Chemical/Biological Defense	1756	44073	35133	31500	32194	33696	38627	38186	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CB2 - Chemical Biological Defense: This project addresses the urgent need to provide all services with defensive materiel to protect individuals and groups from threat chemical-biological agents in the areas of: detection, identification and warning; contamination avoidance through reconnaissance; individual and collective protection and decontamination. It also provides for special investigations into CB defense technology to include CB threat agents, operational sciences, modeling, CB simulants, and nuclear, biological, chemical (NBC) survivability. This project addresses support to Program Executive Offices focusing on horizontal integration of CB defensive technologies across the armored force.

FY 1996 Accomplishments: This project also funded in DoD PE 0602384BP, Projects 553, 313 and P01.

- 700 Conducted Modeling and Simulation of Fixed Base Operations.
- 556 Investigated the compatability of Joint Service CB Defense technologies to AF operations.
- 300 Investigated Biological Agent detection technologies for drinking water.
- 200 Investigated use of computer aided automatic microscope for biodetection.

Total 1756

FY 1997 Planned Program:

- 450 Determine optimum platform configurations using existing LIDARs. Initiate the development of an advanced laser transmitter for optimum interference rejection for the Joint Service Chemical Warning and Identification LIDAR Detector (JSCWILD).
- 450 Continue development and characterization of at least one candidate material for next generation CB protective clothing.
- 800 Investigate the formulation of available G- and V- agent enzymes into potential decontamination systems. Enzymes stability and efficiencies and solubilization of the agents will be evaluated and optimized.
- 758 Investigate and screen 20 carbon and non-carbonaceous adsorption materials for single pass and regenerative filtration applications.
- 7706 Continue aggressive applied research program on emerging bio point detection technologies including antibody mass spec and surface optical approaches. Initiate 2nd generation biodetection technology for Joint Chemical Biological Universal Detector (JCBUD). Explore airborne and shipboard bio point detection alternatives.
- 2820 Continue development of small lightweight early warning biodetector using Ultraviolet Laser-induced Fluorescence (UVLIF). Continue UV database compilation. Explore multiple scattering and Mueller Matrix aerosol characterization techniques for advanced early warning concepts.
- 1794 Investigate recombinant techniques to develop materials for the detection and identification of biological agents. Develop bio process flow designs to scale up production of bio materials using bacterial fermentation and various cell cultures.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 2 - Applied Research	PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense — PROJECT: CB2

•	2686	Investigate the use of super critical carbon dioxide and ozone as part of a procedure to decontaminate sensitive equipment. Expand investigation of mustard hydrolysis/bio degradation process to remediation of contaminated soil.
•	3200	Upgrade wargames and distributed interactive simulation (DIS) capabilities to include evaluation of virtual prototypes of Joint Service CB Defense equipment. Continue simulation and wargaming of chemical and biological attack profiles with distribution of vapor, liquid and solid tracking (VLSTRACK) version 2.0.
•	6432	Down select technologies for miniature environmental bio air to fluid samplers and continue development; develop non-PCR, iso-thermal nuclei acid gene detection technology; develop analytical methods for chemotaxonomy of vegetative and spore bacteria and viruses; develop library and database for simulants to allow a tiny time-of-flight mass spectrometer to participate in field trials; complete database for operational systems for tiny time-of-flight mass spectrometer; develop airborne; vapor and aqueous sampler for tiny time-of-flight mass spectrometer; develop power system, data acquisition and control including data telemetry electronics; define experimental animal protocols and effectiveness criteria for the use of red blood cells to eliminate BW pathogens from circulation (DARPA).
•	2495	Investigate technology to detect and identify contaminants in water. Continue efforts in detecting and identifying contaminants on surfaces (vehicles, ground, etc.). Continue efforts in developing new simulants and characterizations of new identified threats.
•	5290	Continue effort to develop a high speed interferometer for use as a real-time imaging system. Develop new technology in data handling and processing and the elimination of moving parts in scanner and interferometer components. Complete testing and evaluation of the brassboard Safeguard prototype chemical agent detection instrumentation.
•	4794	Conduct study on findings relative to industrial vapor filtration and assessment of Surface Acoustic Wave (SAW) sensors for filter residual life indication. Continue testing and evaluation of existing adsorption technology against CW agents to develop improved adsorbents for future collective protection filters and regenerative filtration beds. Continue investigation of regenerative particle filtration concepts.
•	2260	Continue investigation of novel stretchable materials for CB undergarments, gloves and socks. Continue efforts focusing on advanced concept prototyping and technology developments of filter design, lens design and new materials for next generation respiratory protection systems.
•	994	Complete identification and screening of candidate materials for low resistance, low profile moldable filter and particulate media. Down select media for final prototyping of Joint Service General Purpose Mask (JSGPM).
•	367	Conduct applied research on an improved Joint Warning and Reporting Network (JWARN) which will not only provide NBC warning and reporting but will provide directional prewarning to all joint combat elements. Concepts include self organizing detector arrays and advanced expert system software and display systems which are all integrated into this Global Command and Control System.
•	777	SBIR/STTR
Total	44073	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 2 - Applied Research	PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense — PROJECT: CB2

FY 1998 Planned Program:

•	1000	Evaluate feasibility of improving mustard detection sensitivity. Complete development of advanced detection algorithms. Initiate transition of advanced laser transmitter to detector for the JSCWILD program.
•	450	Develop and characterize second candidate material for next generation CB protective clothing. Transition first candidate material to Joint Service Lightweight Integrated Suit Technology (JSLIST) P3I.
•	800	Investigate enzymatic systems for the decon of mustard (HD). Evaluate efficiencies and compatibility of nerve agent enzymes in a single formulation.
•	1030	Continue studies and initiate performance optimization of selected carbonaceous and non-carbonaceous adsorption materials for regenerative and single pass filtration applications.
•	7540	Evaluate, test and transition best applied research bio point detectors concepts to 6.3 ATD. Continue 2nd generation biodetection concepts for JCBUD. Continue airborne and shipboard bio point detection alternatives.
•	3857	Test, evaluate and transition small lightweight early warning biodetection system to advance technology development using UVLIF technology. Continue UV database compilation. Select advanced light scattering approach for improved selectivity and sampling.
•	1999	Continue program in genetic technology to support future generation bio detection with a rapid agent specific detection capability.
•	2610	Continue efforts on evaluating supercritical carbon dioxide and ozone as decon for sensitive equipment design neutralization system to be used in conjunction with super critical fluid process and initiate material compatibility studies.
•	700	Continue effort on integration of off-the-shelf hardware with in-house technologies to develop an inexpensive sensor link system. Continue effort in developing appliques to interface between sensors and global command and control system.
•	865	Complete prototype testing and evaluation of low profile, low resistance moldable filter for FY99 transition to Joint Service General Purpose Mask (JSGPM).
•	2385	Continue efforts in developing technology for detecting and identifying contaminants in water. Begin integration design of biological and chemical capabilities into a single system for water monitors. Begin integration and minimalization efforts for detecting and identifying contaminants on surfaces.
•	1901	Continue efforts on developing next generation passive imaging system. Conduct laboratory evaluation of breadboard on sensitivity and integration of parallel data processing. Initiate integration and minimalization of imaging system for platform use.
•	2488	Continue efforts on technology developments of filter designs, lens design and new materials for next generation respiratory protection systems. Initiate investigation of agent reactive materials for self detoxifying clothing. Continue efforts on technology developments of filter designs, lens design and new materials for next generation respiratory protection systems. Investigate agent reactive materials for self detoxifying clothing.
•	2400	Upgrade wargames and distributed interactive simulation (DIS) capabilities to include evaluation of virtual prototypes of Joint Service CB defense equipment. Continue simulation and wargaming of chemical and biological attach profiles with distribution of vapor, liquid and solid tracking (VLSTRACK) version 2.0.
•	5108	Complete studies on industrial vapor filtration. Continue assessment of candidate filter residual life indicators. Continue development of advanced air purification processes and regenerative filter bed optimization. Complete investigation of regenerative particulate filtration concepts.
Total	35133	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 2 - Applied Research	PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense — PROJECT: CB2

FY 1999 Planned Program:

•	750	Complete transition of technology of advanced laser transmitter to initiate brassboard build for a multi-use detector with enhanced potential capabilities for improved mustard and/or aerosol detection for the JSCWILD program.
•	500	Complete development and characterization of second candidate material for next generation CB protective clothing.
•	1062	Conduct laboratory testing on breadboard single pass and regenerative filtration systems utilizing optimized non-carbonaceous adsorption material.
•	6528	Using information from ATD, improve selected bio point detectors and retest. Select approach for 2nd generation generic bio detector. Select best alternative technologies for airborne and shipboard use.
•	5063	Upgrade small early warning UV detector based on ATD test and conduct retest. Complete UV data base. Initiate applied research program on light scattering detector for generic detection and smart sampling.
•	1246	Continue program in genetic technology to support future generation bio detection with a rapid agent specific detection capability.
•	700	Test and demonstrate detection technology through the use of a simulated tactical network system via the Internet and transition to mature development.
•	2350	Continue efforts on integration bio and chemical capabilities for detecting and identifying contaminants in water. Demonstrate technology for detecting and identifying chemical contaminants in water. Begin brassboard design for surface contaminant detector.
•	1300	Complete integration and minimization of imaging system. Laboratory and field test of advanced breadboard for sensitivity and interference's rejection. Begin brassboard design.
•	2331	Complete technology developments on filter designs, lens designs and new materials for respiratory protection systems and transition advancements to JSGPM. Continue investigation of agent reactive materials for self detoxifying clothing.
•	2400	Upgrade wargames and distributed interactive simulation (DIS) capabilities to include evaluation of virtual prototypes of Joint Service CB Defense equipment. Continue simulation and wargaming of chemical and biological attack profiles with distribution of vapor, liquid and solid tracking (VLSTRACK) version 2.0.
•	4760	Complete residual life indicator assessment. Continue development of advanced air purification processes. Assess integration of regenerative particle filtration concept.
•	800	Continue investigation of enzymatic systems for the decon of mustard (HD). Complete evaluation of efficiencies and compatibility of nerve agent enzymes in a single formulation.
•	1710	Design prototype field portable supercritical fluid extraction system. Initiate testing with chemical warfare agents.
Total	31500	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 2 - Applied Research	PE NUMBER AND TITLE 0602384BP Chemical/Biological Defense
	PROJECT CB2

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1734	40996	43505	37201
Appropriated Value	0	44073		
Adjustments to Appropriated Value	1756	0		
FY 1998 Pres Bud Request	1756	44073	35133	31500

Change Summary Explanation:

Funding: FY 1996: Funding reprogrammed from Air Force appropriation to CB Defense program.

FY1998/99: Realigned funding to DARPA appropriations per FY97 National Defense Authorization Act.

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: TB2

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
TB2 Medical Biological Defense	0	11020	11474	12386	12211	12509	12776	13075	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project TB2 - Medical Biological Defense: This project funds applied research on the development of vaccines and drugs to provide an effective medical defense against validated biological threat agents including bacteria, toxins, viruses and other agents of biological origin. By employing biotechnology, medical system will be designed to rapidly identify, diagnose, prevent and treat disease due to exposure to biological threat agents.

FY 1996 Accomplishments: Project funded in Project 871.

FY 1997 Planned Program:

•	1090	Perform *in vivo* and *in vitro* testing of vaccine formulations for multivalent and monovalent brucella vaccine candidates.
•	1309	Identify strategies and candidates for second generation vaccine and for drug therapies for multiple strains of plague bacilli.
•	500	Develop appropriate aerosol animal models for glanders and typhus and begin testing vaccine candidates.
•	1067	Optimize vaccine formulations for Western and Eastern equine encephalitis vaccines and further characterize protective efficacy of candidate vaccines for filoviruses.
•	2408	Conduct candidate selection process for approaches to multivalent staphylococcal enterotoxin B (SEB) vaccine.
•	2271	Determine efficacy of subunit vaccine approach for multiple serotype botulinum vaccine and identify surrogate markers of protective immunity.
•	1090	Evaluate novel vaccine approaches, such as nucleic acid-based products, for ricin, and finalize drug and vaccine delivery methods.
•	1090	Develop immunoassay reagents and configure forward deployable diagnostic assay for filovirus and cholera toxin capability.
•	195	SBIR/STTR
Total	11020	

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BUDGET ACTIVITY 2 - Applied Research	PE NUMBER AND TITLE 0602384BP Chemical/Biological Defense
PROJECT TB2	

FY 1998 Planned Program:

•	1154	Conclude evaluation of potential adjuvants for use with plague vaccine candidate.
•	982	Determine in a mouse model the virulence/protective efficacy of live attenuated brucellae containing multiple gene deletions.
•	1633	Determine immunogenicity of potential glanders and typhus vaccine candidates in animal models and prepare diagnostic reagents.
•	1382	Prepare immunological and nucleic acid reagents for emerging diagnostic technologies and test with pre-clinical specimens.
•	2463	Determine synergistic combination of drugs which block SEB-induced effects *in vitro* and test subsequently in mouse model.
•	1057	Test intranasal liposomal ricin A chain subunit vaccine in animal models.
•	2035	Perform final studies on growth kinetics and immunogenicity of candidate vaccine constructs for WEE and EEE and recombinant filoviruses and initiate animal studies to screen antiviral compounds for post-exposure treatment of smallpox.
•	768	Investigate potential modes of treatment which block or reverse the effects of sodium channel neurotoxins and/or the toxins for clostridium perfringens.
Total	11474	

FY 1999 Planned Program:

•	636	Evaluate virulence and protective efficacy of live attenuated brucellae mutant vaccines in animal model.
•	4202	Identify adjuvants to enhance immunogenicity of glanders vaccine candidates and construct recombinant vaccine candidates and evaluate mechanisms for attenuating the agent for typhus vaccine development.
•	2769	Evaluate mechanisms for increased shelf life of immunological and nucleic acid diagnostic reagents for field use.
•	2234	Test long-term efficacy of SEB vaccine candidates.
•	856	Conduct safety pre-clinical trials of intranasal immunization in non-human primates for ricin A-chain.
•	1689	Screen potential antiviral compounds for activity against filovirus in animal model of infection.
Total	12386	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	11251	11530	12465
Appropriated Value		11020		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	11020	11474	12386

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 2 - Applied Research

PE NUMBER AND TITLE: 0602384BP Chemical/Biological Defense

PROJECT: TC2

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
TC2 Medical Chemical Defense	0	12759	13416	14474	14317	14586	14899	15246	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project TC2 - Medical Chemical Defense: This project funds medical chemical defense applied research, and emphasizes the prevention of chemical casualties through application of pharmaceuticals for prevention and treatment of the toxic effects of nerve, blister, respiratory, and blood agents. This project supports applied research of prophylaxes, pretreatments, antidotes, skin decontaminants, and therapeutic compounds that will counteract the lethal, physical, and behavioral toxicities of chemical agents. It also supports development of medical chemical defense materiel that ensures adequate patient care, field resuscitation, and patient management procedures.

FY 1996 Accomplishments: Project funded in Project 872.

FY 1997 Planned Program:

•	1761	Establish correlation between Human Epidermal Keratinocyte (HEK) and skin explant changes following *in vitro* exposure to HD.
•	1896	Identify proteolytic basis of histone cleavage, determine frequency of occurrence of fluid-filled blisters and determine effects of histamine release parameters in human skin, mouse ear and other animal models following exposure to HD.
•	2442	Identify the molecular changes involved following inhibition of protein phosphatase 2A by HD, correlate bio-markers and pharmacological interventions in resting and dividing cells in both short and long term cultures.
•	1761	Complete screening of anticonvulsant pharmaceuticals in small animal studies, such as guinea pigs, with prioritization of leading effective compounds.
•	948	Develop model for inhalation of soman and a method of inducing secretion of and purification of bioscavenger for nerve agents from liver cells and continue research to isolate catalytic antibodies to soman.
•	813	Investigate binding antibodies to detect soman in urine using simplified Enzyme Linked Immunosorbent Assay (ELISA) procedures.
•	204	Evaluate methemoglobin monitor *in vivo*.
•	1354	Investigate potential modes of treatment or diagnosis for low dose exposure to chemical warfare (CW) agents.
•	1354	Characterize the mode of action of the active reagents of candidate reactive topical skin protectants.
•	226	SBIR/STTR
Total	12759	

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BUDGET ACTIVITY 2 - Applied Research	PE NUMBER AND TITLE 0602384BP Chemical/Biological Defense
	PROJECT TC2

FY 1998 Planned Program:

•	4957	Characterize effects of HD on multiple points of metabolic disruption.
•	1454	Complete development of appropriate *in vitro* and *in vivo* model systems for screening nerve agent countermeasures.
•	2643	Evaluate the existing skin decontamination methods for use in wound decontamination for vesicant agents.
•	396	Develop early prognostic indicators for successful treatment of pulmonary injury to aid in early return to duty of casualties. Identify available therapies for treatment of nerve agent ocular effects.
•	1190	Develop a system to analyze products of reaction in the decontamination process for candidate reactive topical skin protectants.
•	661	Evaluate use of cloned human carboxylesterases as nerve agent scavengers.
•	2115	Define a model system to compare and analyze potential modes of treatment for and/or diagnosis of low dose or chronic exposure to CW agents.
Total	13416	

FY 1999 Planned Program:

•	3381	Evaluate promising analytical procedures for vesicant-induced inflammation to levels useful in diagnosis and dosimetry.
•	1951	Continue to characterize alterations of the active-site gorge of acetylcholinesterase resulting from nerve agent inhibition.
•	4590	Continue to evaluate skin graft and antimicrobial wound dressing and treatments for blister agents.
•	520	Develop far-forward, rapid diagnostic tests for blister and nerve agents for real time analysis of clinical samples on the battlefield.
•	1041	Define and characterize the reaction kinetics of leading compounds for reactive topical skin protectants.
•	2991	Develop metrics to monitor long-term effects of low dose or chronic exposure to CW agents in a model system.
Total	14474	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	13026	13482	14566
Appropriated Value		12759		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	12759	13416	14474

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development)

	COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	34219	43092	41223	40581	33788	34323	39204	41820	Continuing	Continuing
807	Industrial Base/ Med Bio Def Vac	10588	0	0	0	0	0	0	0	0	10588
995	Med Chem Def Life Support Mat	9786	0	0	0	0	0	0	0	0	9786
E83	Chemical/Biological Defense Advanced Tech	11565	0	0	0	0	0	0	0	0	11565
P02	Counterproliferation Support (Advanced Tech Dev)	2280	0	0	0	0	0	0	0	0	2280
CB3	Chemical/Biological Defense (Advanced Technology Dev)	0	16893	9845	10075	5351	5497	7287	9283	Continuing	Continuing
TB3	Medical Biological Defense (Industrial Base)	0	10037	13860	14397	14453	14639	14952	15303	Continuing	Continuing
TC3	Medical Chemical Defense (Life Spt)	0	8443	9673	10034	10013	10219	10438	10683	Continuing	Continuing
CP3	Counterproliferation Support	0	7719	7845	6075	3971	3968	6527	6551	Continuing	Continuing

***Note:** The R-1 total for this PE shows an error because the funds were expensed in the wrong PE. This R-2 reflects the correct distribution and expenditure of funding.

Mission Description and Budget Item Justification: This program element provides demonstration of technologies to enhance U.S. forces' ability to deter, defend against, and survive chemical and biological (CB) warfare. This PE funds advanced technology development for Joint Service and Service specific requirements in both medical and non-medical CB defense areas. The medical program aims to produce drugs, vaccines, and medical devices as countermeasures against CB threat agents. Specific areas of medical investigation include: prophylaxes, pretreatment, antidotes and therapeutics, personnel and patient decontamination and medical management of casualties. In the non-medical area, the focus is on demonstrations of CB defense technologies, including biological detection, chemical detection and decontamination. These demonstrations, conducted in an operational environment with active user and developer participation, integrate diverse technologies to improve DoD Chemical Biological Warfare (CBW) defense and deterrence. These demonstrations are leveraged by the Counterproliferation Support Program and include remote Biological Detection. Work conducted under this PE transitions to and provides risk reduction for Demonstration/Validation (PE 0603884BP) and Engineering/Manufacturing Development (PE 0604384BP) activities.

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)

The work in this program element is consistent with the Joint Service Modernization plan. This project also provides for the conduct of advanced technology development in the areas of real-time sensing and accelerated BW operational awareness. This program is dedicated to conducting proof of principal field demonstrations and tests of system-specific technologies to meet specific military needs and is therefore correctly placed in Budget Activity 3.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development)

PROJECT: 807

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
807 Industrial Base/ Med Bio Def Vac	10588	0	0	0	0	0	0	0	0	10588

A. Mission Description and Budget Item Justification:

Project 807 - Industrial Base/Medical Biological Defense Vaccines: This project funds research on pre-clinical development of safe and effective prophylaxis and therapy (vaccines and drugs for exposure to biological threat agents). This project also supports the advanced technology development of kits to rapidly diagnose exposure to biological agents in clinical samples. To complete the defensive effort, a broad range of technologies involved in the targeting and delivery of prophylactic and therapeutic medical countermeasures is evaluated to ensure the protection of US forces.

FY 1996 Accomplishments:

- 1250 Conducted pre-clinical testing of improved anthrax vaccine for Milestone I transition.
- 1512 Investigated safety and efficacy of vaccine candidates (for brucella and plague) in animal models.
- 892 Evaluated Venezuelan Equine Encephalitis (VEE) infectious clone vaccine candidate in animal models and prepared data package for Milestone I transition.
- 1905 Demonstrated efficacy of subunit vaccine candidates for ricin toxin using *in vivo* models and determined appropriate surrogate markers of protective immunity.
- 1832 Conducted pre-clinical testing of the Staphylococcus Enterotoxin B (SEB) toxoid vaccine candidate and evaluated second generation vaccine candidates against lethal and incapacitating effects from the toxin.
- 2185 Evaluated pharmacological prophylaxis and developed vaccine candidate expression system, and a Good Manufacturing Practice (GMP) level product for botulinum toxins.
- 1012 Evaluated candidate systems for sensitive and specific confirmatory diagnosis of replication BW agents in clinical samples.

Total 10588

FY 1997 Planned Program: This project transferred to Project TB3, Medical Biological Defense.

FY 1998 Planned Program: This project transferred to Project TB3, Medical Biological Defense.

FY 1999 Planned Program: This project transferred to Project TB3, Medical Biological Defense.

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development) PROJECT 807

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9894	0	0	0
Appropriated Value	10079			
Adjustments to Appropriated Value	509			
FY 1998 Pres Bud Request	10588	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT 995

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
995 Med Chem Def Life Support Mat	9786	0	0	0	0	0	0	0	0	9786

A. Mission Description and Budget Item Justification:

Project 995 - Medical Chemical Defense Life Support Materiel: This project supports the investigation of new medical countermeasures to include antidotes, pretreatment drugs, and topical skin protectants to protect U.S. forces against known and emerging chemical warfare (CW) threat agents. Capabilities are maintained for reformulation, formulation, and scale-up of candidate compounds using current good laboratory practices (CGLP). Analytical stability studies and safety and efficacy screening, in addition to pre-clinical toxicology studies, are performed prior to full scale development on promising pretreatment or treatment compounds.

FY 1996 Accomplishments:

•	1770	Screened 40 candidate antivesicant compounds in cell viability assays.
•	2399	Screened approximately 30 candidate compounds in the nicotinamide adenine dinucleotide (NAD+) depletion assay.
•	2270	Finalized animal models to support advanced screening requirements for candidate antivesicant compounds.
•	1382	Finalized new animal models for cutaneous vapor exposure to screen candidate antivesicant compounds.
•	620	Refined assessment of drug efficacy in blocking or reducing nerve agent seizures (NAS).
•	545	Examined anti-soman monoclonal antibodies with good binding affinity for catalytic activity.
•	300	Optimized the procedure for evaluating candidate formulation in the test system with nonlabeled neat HD.
•	500	Developed model to evaluate FDA approved therapies *in vivo* in the treatment of ocular HD exposure.
Total	9786	

FY 1997 Planned Program: This project transferred to Project TC3, Medical Chemical Defense.

FY 1998 Planned Program: This project transferred to Project TC3, Medical Chemical Defense.

FY 1999 Planned Program: This project transferred to Project TC3, Medical Chemical Defense.

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT 995

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	10115	0	0	0
Appropriated Value	10306			
Adjustments to Appropriated Value	-520			
FY 1998 Pres Bud Request	9786	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT E83

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
E83 Chemical/Biological Defense Advanced Tech	11565	0	0	0	0	0	0	0	0	11565

A. Mission Description and Budget Item Justification

Project E83 - Chemical/Biological Defense Advanced Technology Development: This project demonstrates technology advancements for Joint Service application in the areas of agent detection and identification which will speed maturing of advanced technologies to reduce risk in system-oriented Demonstration and Validation. This project funds the Integrated Biodetection Advanced Technology Demonstration (ATD). This ATD will fabricate, demonstrate and integrate advanced early and local warning biodetection technologies. This project is the only DoD program demonstrating new technologies to counter biological warfare threats and improving current developmental biodetection systems.

FY 1996 Accomplishments:

- 500 Prepared Integrated Biodetection ATD plan.
- 1800 Demonstrated local warning biosensor prototypes that enhanced the detection of bio threat materials; automated operations; added a virus detection capability with low power requirements, limited training requirements and increased sensitivity for the Integrated Biodetection ATD. Leveraged with additional technologies funded under the Counterproliferation Support Program.
- 1417 Initiated testing of breadboard point biosensors for the Integrated Biodetection ATD.
- 2954 Demonstrated technologies in the areas of: wide area detection using chemical imaging sensors; low level atmospheric monitoring using mini Chem/Bio Mass Spectrometer; small lightweight detection using ion mobility spectrometry; and, surface acoustic waveguide (DARPA).
- 302 Demonstrated technologies to neutralize chemical warfare contaminants on/in aircraft.
- 485 Tested and evaluated chemical agent detection technologies for the Joint Services.
- 1400 Enhanced development of Joint Service Bio Warfare transport model.
- 2400 Developed a generic strategy for bio detection utilizing recombinant antibodies and nucleic acid identification.
- 307 Investigated improved bio sampling and collection techniques.

Total 11565

FY 1997 Planned Program: This project transferred to Project CB3, Chemical/Biological Defense.

FY 1998 Planned Program: This project transferred to Project CB3, Chemical/Biological Defense.

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT E83

FY 1999 Planned Program: This project transferred to Project CB3, Chemical/Biological Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	12031	0	0	0
Appropriated Value	12257			
Adjustments to Appropriated Value	-692			
FY 1998 Pres Bud Request	11565	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

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BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development)

PROJECT: P02

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
P02 Counterproliferation Support (Advanced Tech Dev)	2280	0	0	0	0	0	0	0	0	2280

A. Mission Description and Budget Item Justification

Project P02 - Counterproliferation Support: This project funds demonstrations of technologies under the Counterproliferation Support Program. Chemical detection demonstrations funded in this project specifically address passive defense shortfalls and are responsive to critical needs.

FY 1996 Accomplishments:

- 2280 Design, advanced technology development and field testing of an automated, real-time, miniaturized surface acoustic wave (SAW) chemical warfare (CW) agent detection and identification prototype suitable for man-portable or unmanned aerial vehicle (UAV) applications. Four mini-SAW chemical agent monitors prototyped and delivered to the Marine Rapid Response Group for proof-of-principle demonstrations in field exercises. Two SAW chemical agent detectors prototyped for Intelligence Community group; personnel trained in their use.

Total 2280

FY 1997 Planned Program: Project completed in FY 1996. No planned program.

FY 1998 Planned Program: No planned program.

FY 1999 Planned Program: No planned program.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development)

PROJECT: P02

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2309	0	0	0
Appropriated Value	2400			
Adjustments to Appropriated Value	-120			
FY 1998 Pres Bud Request	2280	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development) PROJECT CB3

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CB3 Chemical/Biological Defense (Advanced Technology Dev)	0	16893	9845	10075	5351	5497	7287	9283	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CB3 - Chemical/Biological Defense (Advanced Technology Dev): This project demonstrates technology advancements for Joint Service application in the areas of: agent detection and identification, decontamination, and individual/collective protection which will speed maturing of advanced technologies to reduce risk in system-oriented Demonstration and Validation. This project funds the Integrated Biodetection Advanced Technology Demonstration (ATD). This ATD will fabricate, demonstrate and integrate advanced point and standoff biodetection technologies. This project is the only DoD program demonstrating new technologies to counter biological warfare threats and improving current developmental biodetection systems.

FY 1996 Accomplishments: This project funded in Project E83.

FY 1997 Planned Program:

•	7231	Build a phase II-brassboard of an automated DNA Diagnostic using chip based polymerase chain reaction (PCR). Develop an automated DNA Diagnostic (ADD) technology to increase bio point detection capability as part of the Integrated Biodetection ATD. Demonstrate the capability of a remotely-deployed network to provide area warning capability to high value targets as part of the Integrated Biodetection ATD. Leverage with additional efforts funded under the Counterproliferation program. Develop optimum Bio Sensor arrays for infantry brigade, infantry battalion, armor squadron,and armor battalion. Develop tool to realistically simulate array performance against missiles, rockets, artillery and back pack sprayer attacks.
•	8876	Synthesize antibodies to know protein coats of bacterial spores; continue to develop hand held multiplexed Upconverting Phosphors (UCP) biodetector; complete integration and begin laboratory testing of Fiber Optic Wave Guide and UCP in multiplexed biosensor for real-time sensing. Demonstrate smart message server for treatment, detection and protection; integrate quantitative medical readiness training with BW response systems; demonstrate real-time logistical support for BW operational awareness. (DARPA)
•	500	Conduct testing on current masks against Bio agents. Development of an imaging system to evaluate bio threats.
•	286	SBIR/STTR
Total	16893	

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development) PROJECT CB3

FY 1998 Planned Program:

•	7134	Conclude development and demonstrate the capability of a remotely-deployed integrated biodection network to provide an early warning capability to high value targets. Continue development of ADD technology. Develop Bio modules for ATD.
•	1030	Conduct hazard prediction study of contamination on air, land and sea equipment.
•	1681	Demonstrate 360 degree scanning of a fixed site LIDAR defense system capable of detecting and mapping all threat chemical agents in vapor and aerosol form.
Total	9845	

FY 1999 Planned Program:

•	6107	Conduct with user a warfighting experiment demonstrating separately and jointly the bio point ADD and remote early warning technologies as part of the ATD.
•	765	Develop equipment/material data base with scenario related reagents/solution for decontamination.
•	3203	Demonstrate 360 degree scanning capability of fixed site LIDAR technology capable of detecting and mapping all threat chemical agents in vapor and aerosol form.
Total	10075	

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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT CB3

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	14937	17146	17958
Appropriated Value		16393		
Adjustments to Appropriated Value		+500		
FY 1998 Pres Bud Request	0	16893	9845	10075

Change Summary Explanation:

Funding: FY1997: Funding changes due to Congressional increase for biological warfare countermeasures and other economic adjustments. Also $500K reprogrammed from Air Force appropriations.

FY1998/99: Realigned funding to DARPA appropriations per FY97 National Defense Authorization Act.

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development)

PROJECT: TB3

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
TB3 Medical Biological Defense (Industrial Base)	0	10037	13860	14397	14453	14639	14952	15303	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TB3 - Medical Biological Defense (Industrial Base): This project funds pre-clinical development of safe and effective prophylaxis and therapy (vaccines and drugs for exposure to biological threat agents). This project also supports the advanced technology development of kits to rapidly diagnose exposure to biological agents in clinical samples. To complete the defensive effort, a broad range of technologies involved in the targeting and delivery of prophylactic and therapeutic medical countermeasures is evaluated to ensure the protection of US forces.

FY 1996 Accomplishments: Project funded in Project 807.

FY 1997 Planned Program:

•	1783	Determine safety and efficacy of multivalent vaccine candidates to staphylococcal enterotoxins.
•	1726	Finalize process flow of confirmatory diagnostic system and its reagents, and evaluate using relevant pre-clinical specimens.
•	1695	Test selected subunit vaccine candidate for ricin in safety and efficacy trials with non-human primate animal models.
•	1392	Demonstrate efficacy of chemotherapeutic prophylaxis candidate for botulinum toxin and determine safety and efficacy of second generation vaccine candidate.
•	1109	Demonstrate new treatment therapies for plague in animal models and conduct safety, toxicity, and efficacy studies in pre-clinical models of vaccine candidates.
•	1123	Complete analysis of prototype monovalent vaccine for brucella leading to Milestone I transition.
•	1032	Demonstrate safety and efficacy of Eastern and Western equine encephalitis vaccine candidates in animal models and begin *in vivo* and *in vitro* testing of filovirus vaccine candidates.
•	177	SBIR/STTR
Total	10037	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT TB3

FY 1998 Planned Program:

•	1378	Carry out final pre-clinical studies required for transition of plague vaccine to demonstration/validation.
•	1671	Perform final evaluation of efficacy of a polyvalent, live brucella vaccine in animal model system.
•	2144	Perform head-to-head comparison of confirmation for advanced development and test preparation of immunological and nucleic acid based diagnostic reagents to BW threat agents added to diagnostic devices.
•	2189	Prepare final data package for botulinum toxin C-fragment vaccine candidate for advanced development.
•	2852	Determine best adjuvant and dose schedule for recombinant Staphlococcus Enterotoxin B (SEB) vaccine in animal models for lethal and incapacitating effects.
•	2220	Conduct clinical trials of liposomal ricin A subunit vaccine for safety and efficacy and evaluate surrogate markers of protection.
•	1031	Develop nucleic acid probes and primers for multiple orthopox gene regions to use in definitive diagnostic tests and evaluate neurovirulence of vaccine candidates against Western Equine Encephalitis (WEE) and Eastern Equine Encephalitis (EEE) viruses.
•	375	Complete *in vitro* testing of filovirus vaccine candidates.
Total	13860	

FY 1999 Planned Program:

•	3140	Compare protective efficacy of live attenuated vs. subunit vaccines, transition brucella vaccine candidate to advanced development and perform initial safety and efficacy studies for typhus vaccine candidates.
•	2581	Evaluate stability and potential interactions of immunological diagnostic reagents prepared and tested on multiplexed platforms.
•	785	Begin to construct models for multivalent vaccines including use of viral or bacterial-vectored vaccines, or DNA vaccines.
•	3176	Determine toxicity of heteropolyanion drugs and phospholipase inhibitors in mice to evaluate use in treatment of staphylococcal enterotoxin exposure.
•	2104	Continue clinical trials of liposomal ricin A subunit vaccine for safety and efficacy and evaluate surrogate markers of protection.
•	953	Develop data package for Milestone I transition of EEE virus and WEE virus vaccine and construct final early rapid assay and final confirmation-level assay systems for the orthopox viruses to differentiate smallpox.
•	1658	Evaluate the safety and efficacy of filovirus vaccine candidates in animal models.
Total	14397	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1997
BUDGET ACTIVITY: 3 - Advanced Technology Development	PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development) — PROJECT: TB3

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	10247	13928	14488
Appropriated Value		10037		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	10037	13860	14397

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development) PROJECT TC3

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
TC3 Medical Chemical Defense (Life Spt)	0	8443	9673	10034	10013	10219	10438	10683	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TC3 - Medical Chemical Defense (Life Support): This project supports the investigation of new medical countermeasures to include antidotes, pretreatment drugs, and topical skin protectants to protect U.S. Forces against known and emerging chemical warfare (CW) threat agents. Capabilities are maintained for reformulation, formulation, and scale-up of candidate compounds using current good laboratory practices (CGLP). Analytical stability studies and safety and efficacy screening, in addition to pre-clinical toxicology studies, are performed prior to full scale development on promising pretreatment or treatment compounds.

FY 1996 Accomplishments: Project funded in Project 995.

FY 1997 Planned Program:

•	1025	Screen candidate antivesicant compounds in cell viability assays.
•	1025	Screen candidate antivesicant compound in the nicotinamide adenine dinucleotide (NAD+) depletion assay.
•	2491	Incorporate pig, hairless guinea pig, mouse ear assay, and other animal models in advanced screening of antivesicant compounds.
•	1688	Modify decision point approach to screen candidate pharmaceuticals against a broader spectrum of agents producing nerve agent seizures.
•	993	Identify gene for a monoclonal antibody that binds soman.
•	303	Establish routine use of cultured human cells and skin explants in evaluation of therapeutic approaches to the HD injury.
•	769	Develop and validate animal models to evaluate new decontamination procedures.
•	149	SBIR/STTR
Total	8443	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT TC3

FY 1998 Planned Program:

•	5278	Consolidate the testing profiles of candidate vesicant pre-treatments in animal model systems. Perform toxicity and reactogenicity studies.
•	1199	Determine safety and immunologic response in animal models to mutagenized Butyrlcholinesterese (BuChE) nerve agent scavengers.
•	400	Conduct demonstration of cyanomethemoglobin level blood monitor for chemical casualty assessment leading to Milestone 0 transition.
•	1898	Evaluate leading compounds for ability to block nerve agent-induced EEG changes and seizures in non-human primate.
•	898	Formulate candidate reactive moieties for reactive topical skin protectant into an acceptable base.
Total	9673	

FY 1999 Planned Program:

•	5158	Perform efficacy and safety studies in appropriate animal model of candidate treatments for vesicant-induced inflammation leading to down-selection for advanced development.
•	1339	Conduct dose ranging studies and efficacy studies of candidate nerve agent scavengers in non-human primates.
•	478	Develop and demonstrate computer assisted expert system for management of chemical casualties to serve as an adjunct to field diagnostics.
•	2008	Construct final data package for advanced anticonvulsant including clinical toxicity, safety and efficacy data for milestone decision.
•	1051	Perform final reformulation and rank order of candidates in preparation for MS 0 for reactive topical skin protectant.
Total	10034	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	8620	9720	10098
Appropriated Value		8443		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	8443	9673	10034

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603384BP Chemical/Biological Defense (Advanced Technology Development)

PROJECT: CP3

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CP3 Counterproliferation Support	0	7719	7845	6075	3971	3968	6527	6551	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CP3 - Counterproliferation Technology Development - The mission of the Counterproliferation Support Program (CPSP) is to address shortfalls in DoD's deployed capability to defend against and counter the proliferation of weapons of mass destruction (WMD). By focusing on short term results, the CPSP accelerates delivery of new tools, equipment and procedures into the hands of combat forces. Under the passive defense pillar, the CPSP enhances the efforts of the Chemical and Biological Defense Program. This program directly supports the Advanced Concept Technology Development (ACTD) for the Joint Biological Early Warning System (JBREWS). This program will fund a variety of projects to defend our forces against WMD.

FY 1996 Accomplishments: This project funded in Project P02.

FY 1997 Planned Program:

- 930 Initiate development/integration of software/hardware interfaces for biological and chemical detectors and a prototype nuclear, chemical and biological Joint Warning and Reporting Network (JWARN). Demonstrate during Air Base/Port Biological Detection ACTD field trials, 4th Quarter FY1997.
- 432 Complete empirical databases for multi spectral ultraviolet (UV) fluorescence spectroscopy for battlefield detection and discrimination of biological warfare (BW) agents in the presence of natural and man-made interferents.
- 447 Demonstrate advanced materials and technologies for a Miniaturized Environmental Air Sampler and Concentrator for Biological Materials. Development of advanced materials with next-generation aerodynamic filtration efficiencies, greatly enhancing the capability to entrap biological agents, including bacteria and viruses.
- 860 Develop and package an Ultraviolet-Laser-Induced-Fluorescence (UV LIF) point biosensor prototype for JBREWS application.
- 2890 Develop advanced technologies for a high sensitivity, broadband miniaturized mass spectrometer for identification and classification of biological and chemical agents.
- 466 Initiate background aerosol particle and liquid sampling for identification of battlefield interferents at outside the continental United States (OCONUS) fixed site assets.
- 1095 Develop design for incorporating upconverting phosphors in a miniaturized flow cytometer biological agent detection prototype that will have an eight antigen multiplex capability with increased dynamic range and sensitivity.
- 465 Complete development of low cost Fiber Optic Wave Guide (FOWG) biological agent detection prototype.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development) PROJECT CP3

•	134	SBIR/STTR
Total	7719	

FY 1998 Planned Program:

•	1000	JWARN - Complete development/integration of software/hardware interfaces and conduct field test for Air Base/Port Biological Detection ACTD biological and chemical detectors.
•	500	Develop algorithms for battlefield detection of biological warfare (BW) agents using multispectral UV fluorescence spectroscopy.
•	583	Continue advanced materials technologies development for the Miniaturized Environmental Air Sampler and Concentrator for Biological Materials.
•	3662	Continue advanced technologies development for high sensitivity biological/chemical agent detection using broadband, miniaturized mass spectrometer techniques.
•	600	Continue background aerosol particle and liquid sampling for identification of battlefield interferents at OCONUS fixed site assets.
•	1500	Continue upconverting phosphor technology development for miniaturized flow cytometer biological agent detection prototype.
Total	7845	

FY 1999 Planned Program:

•	613	Continue advanced materials technologies development for the Miniaturized Environmental Air Sampler and Concentrator for Biological Materials.
•	3212	Continue advanced technologies development for high sensitivity biological/chemical agent detection using broadband, miniaturized mass spectrometer techniques.
•	750	Continue background aerosol particle and liquid sampling for identification of battlefield interferents at OCONUS fixed site assets.
•	1000	Finalize upconverting phosphor technology development for miniaturized flow cytometer biological agent detection prototype.
•	500	Initiate concept development of Large Area Decontamination with supporting survivabilty and hazard analysis.
Total	6075	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603384BP Chemical/Biological Defense (Advanced Technology Development)
	PROJECT CP3

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	7881	7883	6113
Appropriated Value		7719		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	7719	7845	6075

Change Summary Explanation:

Funding:

Schedule:

Technical:

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	29846	48492	55145	61910	43392	52060	38457	29578	Continuing	Continuing
D601 NBC Contamination Avoidance Systems	7158	0	0	0	0	0	0	0	0	7158
D604 NBC Protection Systems	9284	0	0	0	0	0	0	0	0	9284
DE81 NBC Decontamination Systems	5388	0	0	0	0	0	0	0	0	5388
D993 Medical Chemical Defense	3719	0	0	0	0	0	0	0	0	3719
S205 Navy Shipboard Chem/Bio Defense	1478	0	0	0	0	0	0	0	0	1478
W059 Naval Aviation Chem/Bio Defense	166	0	0	0	0	0	0	0	0	166
C159 Marine NBC Equipment	2653	0	0	0	0	0	0	0	0	2653
BJ4 Biological Defense	0	0	1914	1897	1881	1885	1943	1986	Continuing	Continuing
CA4 Contamination Avoidance	0	6925	145	625	831	8398	9410	0	Continuing	Continuing
CO4 Collective Protection	0	8762	3582	0	1390	1389	0	0	Continuing	Continuing
DE4 Decontamination	0	8289	7045	4550	7116	11062	2379	2580	Continuing	Continuing
IP4 Individual Protection	0	1897	0	0	0	0	0	0	0	1897
MB4 Medical Biological Defense	0	5516	10051	6826	6553	4432	2170	1906	Continuing	Continuing
MC4 Medical Chemical Defense	0	3938	894	2283	2892	2355	2035	2019	Continuing	Continuing
CP4 Counterproliferation Support	0	13165	31514	45729	22729	22539	20520	21087	Continuing	Continuing

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense

***Note:** The R-1 total for this PE shows an error because the funds were expensed in the wrong PE. This R-2 reflects the correct distribution and expenditure of funding.

Mission Description and Budget Item Justification: Operational forces have an immediate need to safely operate, survive and sustain operations in a chemical and biological (CB) agent threat environment across the continuum of global, contingency, special operations/low intensity conflict, counternarcotics, and other high risk missions. This program element supports the Demonstration/Validation (DEMVAL) of CB defensive equipment, both medical and non-medical, and addresses various shortcomings identified in Conduct of the Persian Gulf War: Final Report to Congress, April 1992. These projects have been restructured to consolidate Joint and Service-unique tasks within four commodity areas: contamination avoidance, force protection (individual and collective), decontamination and medical countermeasures. The consolidation provides for development and demonstration testing of equipment for Joint Service as well as Service-unique requirements. This program is enhanced using Counterproliferation Support Program funding.

This DEMVAL program funds for: individual and collective protection equipment such as the Advanced Integrated Collective Protection System (AICPS), the Joint Service Lightweight Integrated Suit Technology (JSLIST) and Naval shipboard collective protection; an array of chemical/biological/toxin detection and warning systems to include the Lightweight Nuclear Biological and Chemical Reconnaissance System (LNBCRS), and the Lightweight Stand-off Chemical Agent Detector; decontamination capabilities to include the sorbent technology and the Modular Decontamination System (MDS); and identification and sampling components for future Joint Point Detection Block and Remote Detection Upgrades. In the medical chemical/biological defense area this DEMVAL program funds improved medical equipment, vaccines, and drugs essential to counteracting lethal and human performance degrading effects of chemical and biological agent threats. Specific items include improvements to nerve agent antidotes, topical skin protectants, anticonvulsants, biological agent diagnostics, and vaccines to protect against botulinum toxin, staphylococcal enterotoxin B, Venezuelan equine encephalitis, ricin, and anthrax.

This program element focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of chemical/biological defense equipment and is correctly placed in Budget Activity 4.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: D601

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D601 NBC Contamination Avoidance Systems	7158	0	0	0	0	0	0	0	0	7158

A. Mission Description and Budget Item Justification

D601 NBC Contamination Avoidance Systems: This project provides Demonstration Validation (DEMVAL) of reconnaissance, detection, and identification (RDI) equipment. Items of equipment in this project are: (1) Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD), which provides chemical agent detection and mapping for chemical agent clouds; and (2) Chemical Biological Mass Spectrometer (CBMS), which identifies chemical and biological agents collected and will be a component of the Nuclear, Biological and Chemical Reconnaissance System (NBCRS) and the Biological Integrated Detection System (BIDS). All of these systems increase existing chemical and biological war fighting capabilities by providing more complete, accurate, and current data describing the battlefield environment.

FY 1996 Accomplishments:

•	1000	CBMS - Conducted chemical profiling for NBCRS.
•	1277	CBMS - Conducted Technical Feasibility Test (TFT).
•	1200	CBMS - Conducted Production Proveout Test (PPT).
•	463	CBMS - Completed technical/logistics Documentation.
•	500	JSLSCAD - Prepared necessary documentation and conducted Milestone II IPR.
•	722	JSLSCAD - Conducted simulant and live agent testing required for Milestone II decision.
•	1596	JSLSCAD - Obtained hardware and software redesigns.
•	400	JSLSCAD - Conducted interface trials with candidate transport systems.
Total	7158	

FY 1997 Planned Program: This project transferred to Project CA4, Contamination Avoidance.

FY 1998 Planned Program: This project transferred to Project CA4, Contamination Avoidance.

FY 1999 Planned Program: This project transferred to Project CA4, Contamination Avoidance.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: D601

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	6767	0	0	0
Appropriated Value	6894			
Adjustments to Appropriated Value	264			
FY 1998 Pres Bud Request	7158	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project CA4, Contamination Avoidance.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBMS - Milestone I/II	X															
CBMS - Fabrication for TFT/LUT			X													
CBMS - TFT/LUT				X												
CBMS - Documentation				X												
CBMS - Production Decision (for BIDS)				X												
JSLSCAD - AMPHIB INTERFACE		X														
JSLSCAD - Hardware/Software Spec		X	X													
JSLSCAD - MSII Preparation		X	X													
JSLSCAD - MS II Testing			X													
JSLSCAD - MSII				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: D604

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D604 NBC Protection Systems	9284	0	0	0	0	0	0	0	0	9284

A. Mission Description and Budget Item Justification

D604 NBC Protection Systems: The project provides for development of the Advanced Integrated Collective Protective System (AICPS). The AICPS will integrate NBC filtration, environmental controls, and power source components in tactical and combat systems and exploit new filtration technology (regenerable filtration, catalytic oxidation or deep bed chromium-free carbon). The effort improves vehicular collective protection applications by providing for reductions in system size, weight, energy and filter change logistics burden. The AICPS can be integrated into multiple configurations to provide protection to different tactical systems. Additionally, the effort provides a system solution for countering future threat agents and alleviating the disposal problems associated with hazardous material chromium impregnated carbon filters.

FY 1996 Accomplishments:

•	2637	AICPS-Completed Engineering Design Review and Test (EDT) on filter.
•	5677	AICPS-Initiated prototype design and fabrication for Pre-Production Qualification Test (PPQT) and Initial Operational Test and Evaluation (IOT&E).
•	470	AICPS-Planned and conducted Milestone I IPR.
•	500	AICPS-Continued User Interface and System Integration.
Total	9284	

FY 1997 Planned Program: This project transferred to Project CO4, Collective Protection.

FY 1998 Planned Program: This project transferred to Project CO4, Collective Protection.

FY 1999 Planned Program: This project transferred to Project CO4, Collective Protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: D604

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9235	0	0	0
Appropriated Value	9408			
Adjustments to Appropriated Value	-124			
FY 1998 Pres Bud Request	9284	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project CO4, Collective Protection.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AICPS - Start EDT				X												
AICPS - Init Proto Design for PPQT/IOT&E				X												
AICPS - Conduct Milestone I IPR				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT DE81

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE81 NBC Decontamination Systems	5388	0	0	0	0	0	0	0	0	5388

A. **Mission Description and Budget Item Justification**

DE81 NBC Decontamination Systems: Funding supports the Modular Decontaminating System (MDS), a more transportable, less labor intensive, and more effective system for applying decontaminating solutions and removing gross contamination from vehicle and equipment surfaces. Lessons learned from Desert Storm validated the need for a deployable and efficient decontamination system. The MDS reduces water usage and equipment processing time with increased water pressure and variable water temperature. The MDS consists of the XM21 Decontaminant Pumper (DP) Module for the application of decontaminants and powered brushing; and the XM22 High Pressure Washer (HPW) Module for removal of gross contamination and rinsing of decontaminants. Funding also supports the Sorbent Technology program, which provides a reactive sorbent for immediate decontamination. It will replace the M295 Kit for personal wipedown procedures and Decontaminating Solution 2 (DS2) in operator spraydown procedures. The Sorbent will be more reactive towards Chemical Warfare (CW) agents than the M295 Kit, therefore, the hazard associated with the spent decontaminant will be reduced. The Sorbent will be more compatible with Mission Oriented Protective Posture (MOPP) and other operational materials than the currently used DS2.

FY 1996 Accomplishments:

•	400	MDS - Completed XM21 DP Prototype Testing.
•	1735	MDS - Modified Non Developmental Item (NDI) and validated through EDT for XM22 hardware.
•	591	MDS - Completed technical data for powered brushes.
•	1000	MDS - Initiated fabrication of XM21 test hardware.
•	870	Sorbent - Awarded AD Contract.
•	400	Sorbent - Initiated material compatibility studies.
•	392	Sorbent - Initiated Program Phase I effectiveness studies.
Total	5388	

FY 1997 Planned Program: This project transferred to Project DE4, Decontamination.

FY 1998 Planned Program: This project transferred to Project DE4, Decontamination.

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BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: DE81

FY 1999 Planned Program: This project transferred to Project DE4 Decontamination.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	6614	0	0	0
Appropriated Value	6738			
Adjustments to Appropriated Value	-1350			
FY 1998 Pres Bud Request	5388	0	0	0

Change Summary Explanation:

Funding: FY 1996: Reprogrammed to Project D601 for JSLSCAD($-611K), to Project D604 for AICPS($-350K), to Project D020 for MICAD ($-50K), and to other high priority requirements($-215K).

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project DE4, Decontamination.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MDS - Modify NDI (XM22) Hdw			X													
MDS - Complete XM21 Prototype Testing				X												
MDS - Fabricate XM21 Test Hdw			X													
Sorbent - Award AD Contract				X												
Sorbent - Initiate Material Comp. Studies				X												
Sorbent - Initiate Program Phase I Effect. Study				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT D993

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D993 Medical Chemical Defense	3719	0	0	0	0	0	0	0	0	3719

A. Mission Description and Budget Item Justification

Project D993-Medical Chemical Defense: This project funds advanced development of countermeasures for chemical agents including life support equipment, pretreatment and therapeutic drugs, and individual/casualty decontamination compounds. A system of medical defense against chemical agents is required to provide individual soldiers protection, to sustain their performance in a chemical environment, and to provide for self-aid and medical treatment of chemical casualties. For approval of a new drug, FDA requires demonstration of safety and efficacy, with multiple studies required for each.

FY 1996 Accomplishments:

•	3719	Demonstrated the human safety and technical performance of the topical skin protectant (TSP) and multichambered autoinjector; conducted animal toxicology studies for cyanide pretreatment; and evaluated stability of these products.
Total	3719	

FY 1997 Planned Program: This project transferred to Project MC4, Medical Chemical Defense.

FY 1998 Planned Program: This project transferred to Project MC4, Medical Chemical Defense.

FY 1999 Planned Program: This project transferred to Project MC4, Medical Chemical Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	4150	0	0	0
Appropriated Value	4228			
Adjustments to Appropriated Value	-509			
FY 1998 Pres Bud Request	3719	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT D993

Change Summary Explanation:

Funding: FY96: Reprogrammed to Project 848($-206K), to Project BD2($-90K), and to higher priority requirements($-135K).

Schedule:

Technical:

C. **Other Program Funding Summary:** Refer to Project MC4, Medical Chemical Defense.

D. **Schedule Profile:**

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Multichambered Autoinjector MS II				X												
Advanced Anticonvulsant MS 0		X														

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: S205

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
S205 Navy Shipboard Chem/Bio Defense	1478	0	0	0	0	0	0	0	0	1478

A. **Mission Description and Budget Item Justification**

Project S205 - Navy Shipboard Chem/Bio Defense: This project conducts DEMVAL of Chemical and Biological (CB) defensive systems for surface ships to support the requirement to sustain operations in a CB threat environment. Systems developed will counter predicted new and novel threats into the next century as validated by Office of Naval Intelligence Chemical, Biological and Radiological (CBR) Threat Assessment.

FY 1996 Accomplishments:

- 699 CARDS - Realigned project as appropriate to join with Lightweight Standoff Chemical Agent Detector (LSCAD). Continued Chemical Agent Remote Detection System (CARDS) Advanced Development Model (ADM) design, testing and acquisition documentation preparation; achieved MS I approval within the LSCAD program.
- 779 Shipboard CPS - Supported shipboard (DDG-51 and LPD-17 ship classes) testing of advanced high pressure Collective Protection System (CPS) fans; continued Improved Collective Protection System (ICPS) shipboard evaluations and technical data package, and initiated CPS amphibious platform backfit program.

Total 1478

FY 1997 Planned Program: This project transferred to CA4, Contamination Avoidance; IP4, Individual Protection; and CO4, Collective Protection.

FY 1998 Planned Program: This project transferred to CA4, Contamination Avoidance; IP4, Individual Protection; and CO4, Collective Protection.

FY 1999 Planned Program: This project transferred to CA4, Contamination Avoidance; IP4, Individual Protection; and CO4, Collective Protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: S205

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2003	0	0	0
Appropriated Value	2040			
Adjustments to Appropriated Value	-562			
FY 1998 Pres Bud Request	1478	0	0	0

Change Summary Explanation:

Funding: FY1996: Funds reprogrammed from CARDS to SALAD, PE 0604384BP, Project 041 ($-460K), and to other high priority requirements ($-65K).

Schedule:

Technical:

C. Other Program Funding Summary Refer to Projects CA4, Contamination Avoidance; IP4, Individual Protection; and CO4, Collective Protection.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CARDS - Program Milestone MS I				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: W059

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
W059 Naval Aviation Chem/Bio Defense	166	0	0	0	0	0	0	0	0	166

A. Mission Description and Budget Item Justification

Project W059 - Naval Aviation Chem/Bio Defense: This project investigates naval aircraft concepts of operations in a chemical and biological contaminated environment. The project includes development of chemical/biological research methodology to define the chemical/biological warfare environment for aircraft and the resulting hazard to aircrews. This project also develops concepts for aircraft decontamination and detection methods. Additionally, this project includes preparation of modifications to naval air technical manuals detailing the most current methods for countering a chemical and biological attack.

FY 1996 Accomplishments:

•	166	Continued development and documentation of naval aviation chem/bio defense concept of operations and initiated concepts for aircraft decontamination and naval aircraft detection methods.
Total	166	

FY 1997 Planned Program: This Project transferred to CA4, Contamination Avoidance.

FY 1998 Planned Program: This Project transferred to CA4, Contamination Avoidance.

FY 1999 Planned Program: This Project transferred to CA4, Contamination Avoidance.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	171	0	0	0
Appropriated Value	174			
Adjustments to Appropriated Value	-8			
FY 1998 Pres Bud Request	166	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT W059

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. **Other Program Funding Summary** Refer to Project CA4, Contamination Avoidance.

D. **Schedule Profile:** Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT C159

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
C159 Marine NBC Equipment	2653	0	0	0	0	0	0	0	0	2653

A. Mission Description and Budget Item Justification

Project C159 - Marine NBC Equipment: The purpose of this project is to complete advanced development of USMC specific CB equipment. This equipment consists of four categories: individual protection; detection, decontamination; and collective protection. Individual protection consists of the items necessary to protect the individual Marine, such as CB suits, gloves, boots, and field protective mask. Detection provides the Marine and /or the unit with the ability to detect CB agents in concentrations that are sub-lethal. Decontamination is the capability to remove CB agents from personnel and /or equipment. Collective protection is the ability to provide filtered air to specified areas that will allow Marines inside to be free of contamination, thus not having to wear special CB equipment for protection. The work in this project allows for continued improvement of the Marine Corps CB defensive posture. Funding is provided for the Light Nuclear, Biological and Chemical Reconnaissance System (LNBCRS), a joint effort between the U.S. Army and Marine Corps (Lead Service). The LNBCRS will improve detection, collection, positioning and marking of NBC contaminated areas on the battlefield.

FY 1996 Accomplishments:

- 2403 LNBCRS - Evaluated candidate vehicles and detection equipment.
- 250 LNBCRS - Initiated and staffed Joint Program Office.

Total 2653

FY 1997 Planned Program: This project transferred to Project CA4, Contamination Avoidance.

FY 1998 Planned Program: This project transferred to Project CA4, Contamination Avoidance.

FY 1999 Planned Program: This project transferred to Project CA4, Contamination Avoidance.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT C159

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3851	0	0	0
Appropriated Value	3923			
Adjustments to Appropriated Value	-1270			
FY 1998 Pres Bud Request	2653	0	0	0

Change Summary Explanation:

Funding: FY 1996: Funds reprogrammed from LNBCRS to JSLIST, PE 0604384BP, Project L40.

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project CA4, Contamination Avoidance.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LNBCRS - DEM/VAL Contract Award			X													
LNBCRS - Program Milestone MS-I					X											

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-2)	DATE February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: BJ4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
BJ4 Biological Defense	0	0	1914	1897	1881	1885	1943	1986	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project BJ4 - Biological Defense: Detection and characterization of biological warfare (BW) agents is #1 on the CINC/JROC Counterproliferation priorities list. DoD Biological Defense mission area requires the detection of biological threat agents to provide early warning capabilities at high value mobile and fixed site locations. The detection system will provide detection, identification, warning and sample collection for verification of large area or point source biological attack. This program supports the Program Definition and Risk Reduction (PDRR) of advanced detection, identification and sampling components for future Joint Biological Point Detection System (JBPDS) Block I/II and Joint Biological Remote Early Warning System (JBREWS) upgrades.

Acquisition Strategy: This program will provide technology upgrades to the JBPDS Block I/II programs as well as the JBREWS. This program will ensure design maturity of the most promising biological detection components (triggers, samplers, detectors, identifiers) for insertion into ongoing JBPDS/JBREWS EMD programs.

FY 1996 Accomplishments: Program funded in projects BD4 and BD5.

FY 1997 Planned Program: Program funded in project BJ5.

FY 1998 Planned Program:

•	300	Conduct abbreviated analysis of potential biological detector components for the JBPDS Blocks I/II and JBREWS.
•	1114	Initiate design of candidate Block I components.
•	500	Conduct chamber/field tests of selected biological detection components.
Total	1914	

FY 1999 Planned Program:

•	330	Conduct abbreviated analysis of potential biological detector components for the JBPDS Blocks II.
•	1017	Continue design of candidate JBPDS Block II components.
•	550	Continue chamber/field tests of selected biological detection components.
Total	1897	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT BJ4

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	1923	1909
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	0	1914	1897

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 5, PE 0604384BP Proj D020 NBC Contamination Avoidance Systems	7405	0	0	0	0	0	0	0	0	7405
RDTE,A Budget Activity 5, PE 0604384BP Proj BJ5, Biological Defense	0	32703	42926	34097	21240	24796	15364	22929	Cont'd	Cont'd
RDTE,D Budget Activity 5,PE 0604384BP Proj BD3, Joint Biological Defense, BIDS	26965	0	0	0	0	0	0	0	0	26965
RDTE,D Budget Activity 5, PE 0604384BP Proj BD4, Joint Biological Defense, IBAD	1680	0	0	0	0	0	0	0		1680
RDTE,D Budget Activity 5, PE 0604384BP Proj BD5,Joint Biological Defense, Stand-Off Detection	12464	0	0	0	0	0	0	0	0	12464
Procurement										

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-2)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: BJ4

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
DA0800 Joint Bio Defense Program	22009	0	0	0	0	0	0	0	0	22009
M93001 Bio Integrated Detector System (BIDS)	0	21055	41341	15511	12621	0	0	0	0	90528
JPO100 Joint Bio Point Detection System	0	0	0	0	68082	61914	66201	65571	Cont'd	Cont'd
JP0200 Joint Bio Rem Early Warning Sys (JBREWS)	0	0	0	0	12919	13911	37812	39915	Cont'd	Cont'd

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JBPDS - Initiate design of Block I/II prototypes									X							
JBPDS - Complete design of Block I/II prototypes												X				
JBPDS - Test Block I/II prototypes												X	X	X	X	X
JBREWS - Initiate design of components prototypes									X							
JBREWS - Complete design of components prototypes																X
JBREWS - Test components prototypes													X	X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT BJ4

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Design and Development			1914	
Test and Evaluation				1897
Total			1914	1897

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: CA4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CA4 Contamination Avoidance	0	6925	145	625	831	8398	9410	0	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CA4 - Contamination Avoidance: This project conducts DEMVAL of reconnaissance, detection, and identification equipment. Items included are: Chemical Agent Remote Detection System (CARDS) for ship platforms; Lightweight Nuclear Biological Chemical Reconnaissance System (LNBCRS), which provides field unit commanders with real-time data that can be used to assess the field for NBC hazards while on-the-move; Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) which provides chemical agent detection and mapping for chemical agent clouds; Joint Chemical Agent Detector (JCAD) technology evaluation to address Naval aviation requirements; and Joint Service Agent Water Monitor (JSAWM), which provides in-line water detection capability for chemical-biological agents.

Acquisition Strategy:

CARDS — In-house studies/market investigation of tech base initiatives and other available technologies. In-house testing of promising technologies focusing on potential for shipboard integration and joint service development. Single contract for fabrication of production quantities for all services.

LNBCRS — In-house design of modular detection/warning suite for vehicle platform. System integrator to build prototypes for testing. Contractor fabrication of production units.

FY 1996 Accomplishments: This Project funded in Projects D601, S205, W059 and C159.

FY 1997 Planned Program:

- 136 JCAD - Initiate development and documentation for naval aviation chem/bio defense requirements and concept of operations for aircraft survivability.
- 2145 CARDS - Continue Advanced Development Model (ADM) design, testing (DT-I) and development and refinement of acquisition documentation. Initiate development of design specifications and other technical data.
- 5 LSCAD - Integrate into LNBCRS.
- 435 LNBCRS - Develop program documentation and accomplish MS-II.
- 979 LNBCRS - Conduct Development Test I.
- 490 LNBCRS - Update Software Development Plan (SDP) for LNBCRS System Interface Unit (SIU).
- 2616 LNBCRS - Award contract option for High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) DEM VAL prototype system development.
- 119 SBIR/STTR

Total 6925

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT CA4

FY 1998 Planned Program:

•	145	JCAD - Continue development and documentation of technology options for Naval aviation chem/bio defense requirement and concept of operations for aircraft survivability.
Total	145	

FY 1999 Planned Program:

•	484	JSAWM - Conduct market/technology survey, perform technology/prototype evaluations.
•	141	JCAD - Continue development and documentation of technology options for Naval aviation chem/bio defense requirement and concept of operations for aircraft survivability.
Total	625	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	7071	10159	14762
Appropriated Value		6925		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	6925	145	625

Change Summary Explanation:

Funding:

FY1998: Funding for Joint Service Chemical Warning and Identification Laser Induced and Ranging (LIDAR) Detector (JSCWILD) program moved to other high priority programs; program to remain in Tech Base two additional years. ($-9593K) Funding for JSLSCAD transferred to PE 0604384BP, Project CA5 to support integration of CARDS program ($-421K).

FY1999: Funding for JSCWILD program moved to other high priority programs($-9493K); Surface Acoustic Wave (SAW) program funding transferred to PE 0604384BP, Project CA5 to support JCAD program ($-4713K), added funding to JSAWM ($73K), and other adjustments ($-4K).

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: CA4

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,D Budget Acitivity 5 PE0604384BP, Proj CA5 Contamination Avoidance	0	52045	48652	45384	61594	24198	12911	5955	Cont'd	Cont'd
RDTE,D Budget Activity 5, PE 0604384BP, Proj S041 Shipboard BR/CW Countermeasures	2418	0	0	0	0	0	0	0	0	2418
RDTE,D Budget Activity 5, PE 0604384BP, Proj W060 Naval Aircrew Chemical/Biological Defense	1008	0	0	0	0	0	0	0	0	1008
Procurement:										
MC0100 Ltwt NBCRS	0	0	0	0	0	43324	56320	57809	Cont'd	Cont'd
N00041 Shipboard Detector Modifications	0	7134	5864	9512	10399	10850	5832	5397	Cont'd	Cont'd
S10801 Ltwt Stand-Off Chem Agt Detector	0	0	0	0	0	9738	9751	9779	Cont'd	Cont'd
S10901 CB Mass Spectrometer	0	0	0	0	0	5885	9751	9779	Cont'd	Cont'd

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CARDS - Developmental Test (DT-I)								X								
LNBCRS - Developmental Test (DT- I)								X								
LNBCRS -Contract Award for Prototype						X										
JSAWM - Analysis/Survey														X		
JCAD - Integration of Naval aviation requirements																X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense	PROJECT CA4

A. **Project Cost Breakdown**

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	0	844	0	45
Software Development	0	495	0	20
Fabrication Hardware	0	2531	0	118
Technical Data/Documentation	0	644	0	12
Developmental Test and Evaluation	0	1140	0	100
Integrated Logistics Support	0	203	0	20
Project Management	0	661	0	105
Contractor Engineering Support	0	149	145	105
Government Engineering Support	0	139	0	100
SBIR/STTR	0	119	0	0
Total	0	6925	145	625

B. **Budget Acquisition History and Planning Information** Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: CO4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CO4 Collective Protection	0	8762	3582	0	1390	1389	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification

CO4 - Collective Protection: The project conducts DEMVAL of CB collective protection systems which are smaller, lighter, less costly and more easily supported logistically at the crew, unit, ship and aircraft level. Items included are: Advanced Integrated Collective Protective System (AICPS) and Shipboard Collective Protection System (CPS). The AICPS will integrate NBC filtration, environmental controls, and power source components in tactical and combat systems and exploit new filtration technology (regenerable filtration, catalytic oxidation or deep bed chromium-free carbon). The effort extends vehicular collective protection applications providing for reductions in system size, weight, energy and filter change logistics burden. The AICPS can be integrated into multiple configurations to provide protection to different tactical systems. Additionally, the effort provides a system solution for countering future threat agents and alleviating the disposal problems associated with hazardous material chromium impregnated carbon filters. The Shipboard CPS will provide a contaminant-free environment within specified zone boundaries of a ship so that mission essential operations and/or stand-down relief are achievable even though the exterior of the ship is contaminated.

Acquisition Strategy:

AICPS	Contractor design and system integration of two configurations for van or shelter platforms. Contractor procurement will be customer system dependent.
Shipboard CPS	In-house/contract design, contractor fabrication of prototypes, in-house testing. Contractor procurement will be customer (ship platform) dependent.

FY 1996 Accomplishments: This Project funded in Projects D604 and S205.

FY 1997 Planned Program:

•	4374	AICPS - Complete prototype redesign and fabrication for PPQT and IOT&E.
•	3480	AICPS - Initiate PPQT and IOT&E.
•	490	AICPS - Continue user interface and system integration.
•	269	Shipboard CPS - Continue refinement of amphibious ship backfit planning; complete shipboard filter evaluations.
•	149	SBIR/STTR
Total	8762	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT CO4

FY 1998 Planned Program:

•	2189	AICPS - Complete PPQT and IOT&E.
•	199	AICPS - Conduct Milestone II/III IPR.
•	498	AICPS - Complete user interface and system integration.
•	696	AICPS - Obtain production performance specifications.
Total	3582	

FY 1999 Planned Program: No planned program.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	8946	7307	854
Appropriated Value		8762		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	8762	3582	0

Change Summary Explanation:

Funding:	FY 1998:	Reduction in AICPS program funding to support higher priority programs ($-3600K). Funds for Shipboard CPS program transferred to Budget Activity 5 ($-107K). Other program adjustments ($-18K).
	FY 1999:	Funds for Shipboard CPS program transferred to Budget Activity 5, to align with Budget Activity 5 activities ($-854K).
Schedule:		
Technical:	FY 1998:	The XM32 will be the only configuration of AICPS to be type classified.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-2)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense

PROJECT CO4

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,D Budget Activity 5 PE 0604384BP Proj D017 NBC Protection Systems	4218	0	0	0	0	0	0	0	0	4218
RDTE,D Budget Activity 5, PE 0604384BP, Proj CO5, Collective Protection	0	0	1169	1272	1176	923	1486	1489	Cont'd	Cont'd

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AICPS - Comp Proto Fab - PPQT/IOT&E							X									
AICPS - Initiate PPQT and IOT&E								X								
AICPS - Complete PPQT and IOT&E											X					
AICPS - Obtain Production Performance Specifications											X					
AICPS - Conduct Milestone II/III IPR												X				
Shipboard CPS - Complete Shipboard Evaluations								X								

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT CO4

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	0	2660	0	0
Fabrication Hardware	0	2660	0	0
Operational Test and Evaluation	0	481	2188	0
Government Engineering Support	0	2812	697	0
Technical Data/Documentation	0	0	697	0
SBIR/STTR	0	149	0	0
Total	0	8762	3582	0

B. Budget Acquisition History and Planning Information Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: DE4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE4 Decontamination	0	8289	7045	4550	7116	11062	2379	2580	Continuing	Continuing

A. Mission Description and Budget Item Justification

DE4 - Decontamination: This project provides DEMVAL of decontamination systems utilizing solutions which will provide operational, logistics, cost, safety and environmental advantages over current decontaminants. Funding supports the Modular Decontaminating System (MDS) – a Joint Service program – a more transportable, less labor intensive, and more effective system for applying decontaminating solutions and removing gross contamination from vehicle and equipment surfaces. Lessons learned from Desert Storm validated the need for a deployable and efficient decontamination system. The MDS reduces water usage and equipment processing time with increased water pressure and variable water temperature. The MDS consists of the XM21 Decontaminant Pumper (DP) Module for the application of decontaminants and powered brushing; and the XM22 High Pressure Washer (HPW) Module for removal of gross contamination and rinsing of decontaminants. The Navy may use the MDS for the decontamination of port facilities. Funding also supports the Sorbent Technology program which provides a reactive Sorbent for immediate decontamination. It will replace the M295 Kit, for personal wipedown procedures and Decontaminating Solution 2 (DS2) in operator spraydown procedures. The Sorbent will be more reactive towards Chemical Warfare (CW) agents than the M295 Kit, therefore, the hazard associated with the spent decontaminant will be reduced. The Sorbent will be more compatible with Mission Oriented Protective Posture (MOPP) and other materials than the currently used DS2.

Acquisition Strategy:

MDS — Due to the low technical risk, the overall MDS is a streamlined, single phase program. In-house/contractor design and prototype fabrication for in-house testing. Contractor fabrication of production units.

Sorbent — In-house/contractor development and testing. Contractor manufacture of production units.

FY 1996 Accomplishments: This project funded in Project DE81.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense
	PROJECT: DE4

FY 1997 Planned Program:

•	306	MDS - Complete fabrication of XM21 test hardware.
•	963	MDS - Complete XM22 Engineering Design Tests.
•	759	MDS - Fabricate XM22 test hardware.
•	1599	MDS - Initiate Pre-Production Qualification Test.
•	1444	Sorbent - Complete Program Phase I Effectiveness Studies.
•	1923	Sorbent - Perform Optimization Studies.
•	1155	Sorbent - Perform Health Hazard and Environmental Assessment.
•	140	SBIR/STTR
Total	8289	

FY 1998 Planned Program:

•	1045	Joint MDS - Complete Development and Fabrication of Test Hardware.
•	1463	Joint MDS - Complete PPQT and IOT&E Tests
•	298	Joint MDS - Prepare Milestone III IPR
•	896	Sorbent - Integrate Sorbent and M295 Kit.
•	1592	Sorbent - Complete Effectiveness Studies
•	1097	Sorbent - Demonstrate Functional Suitability.
•	654	Sorbent - Conduct Producibility Studies
Total	7045	

FY 1999 Planned Program:

•	470	Sorbent - Fabricate Prototype
•	2576	Sorbent - Test and Evaluate Prototype
•	1030	Sorbent - Award Program Phase III Contract
•	474	Sorbent - Prepare ECP/IPR
Total	4550	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT DE4

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	8463	7977	4909
Appropriated Value		8289		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	8289	7045	4550

Change Summary Explanation:

Funding: FY1998: Transfer of funds ($-331K) from Large Area Decontamination program to Tech Base and reduction in Sorbent Decontamination System ($-567K) program. Other adjustments ($-34K)

FY1999: Transfer of funds ($-330K) from Large Area Decontamination program to Tech Base to support follow-on studies to advanced Concepts Tech Demo Testing. Other adjustments ($-29K).

Schedule:

Technical: FY 1998: Reduced scope of contractor efforts for Sorbent Decontamination Program.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement:										
G47001 Modular Decon System	0	0	0	7234	7547	11179	10566	10366	Cont'd	Cont'd

	DATE
	February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603884BP Chemical/Biological Defense	DE4

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MDS - Fabricate XM22 Hardware						X										
MDS - Initiate Pre-Production Qualification Test (PPQT)								X								
Joint MDS - Complete Development and Fabrication of Test Hardware										X						
Joint MDS - Complete PPQT and IOT&E Tests											X					
Joint MDS - Prepare Milestone III IPR												X				
Sorbent - Conduct Program Phase I Effect Studies						X										
Sorbent - Perform Optimization Studies						X										
Sorbent - Assess Environ Health Hazards								X								
Sorbent - Initiate Sizing Trials											X					
Sorbent - Initiate Producibility Studies											X					
Sorbent - Complete Sizing Trials												X				
Sorbent - Complete Produciblity Studies												X				
Sorbent - Fabricate prototype													X			
Sorbent - Test and evaluate prototype														X		
Sorbent - Prepare ECP/IPR															X	
Sorbent - Award Program Phase III Development Contract																X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603884BP Chemical/Biological Defense	DE4

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	0	1980	696	473
Fabrication Hardware	0	192	1057	1061
Technical Data/Documentation	0	902	570	260
Developmental Test and Evaluation	0	961	2648	1512
Operational Test and Evaluation	0	635	370	0
Integrated Logistics Support	0	241	100	0
Contractor Engineering Support	0	2036	100	0
Government Engineering Support	0	1202	531	1027
System Integration	0	0	973	217
SBIR/STTR	0	140	0	0
Total	0	8289	7045	4550

B. Budget Acquisition History and Planning Information Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: IP4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
IP4 Individual Protection	0	1897	0	0	0	0	0	0	0	1897

A. Mission Description and Budget Item Justification

Project IP4 - Individual Protection: This project conducts development and product improvement of individual protection equipment aimed at improving current protection levels while reducing physiological and logistical burdens. The goal is to provide equipment which allows the wearer to operate in a contaminated CB environment with no or minimal degradation of his/her performance. This project includes the JSLIST P3I program, which will invite contractors to submit tested protective clothing for evaluation in the quest for the next generation of advanced material chemical protective clothing technology. Candidate technologies will undergo technical and operational testing similar to the testing planned for the current generation JSLIST candidates.

Acquisition Strategy:

JSLIST P3I Market investigation, contractor fabrication of test candidates, operational and developmental testing, contractor fabrication of production items.

FY 1996 Accomplishments: This project funded in Projects S205 and C159.

FY 1997 Planned Program:

- 1864 JSLIST P3I - Conduct Developmental Testing (DT) and transition to EMD.
- 33 SBIR/STTR

Total 1897

FY 1998 Planned Program: No planned program.

FY 1999 Planned Program: No planned program

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: IP4

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	1937	5768	9049
Appropriated Value		1897		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	1897	0	0

Change Summary Explanation:

Funding: FY 1998: Transfer of funds for JSLIST P3I to BA5, PE 0604384BP, Project IP5 to properly align program ($-5,768K).

FY 1999: Transfer funds for Improved Respirator Program to new Joint Service General Purpose Mask Program, PE 0604384BP, Project IP5 ($-3799).Transfer of funds for JSLIST P3I to BA5 PE 0604384BP, Project IP5 to properly align program ($-5,250K).

Schedule:

Technical:

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,D Budget Activity 5, PE 0604384BP Proj D017 NBC Protection Systems	4218	0	0	0	0	0	0	0	0	4218
RDTE,D Budget Activity 5, PE 0604384BP Proj IP5, Individual Protection	0	3471	6023	9815	12091	17087	21894	13157	Cont'd	Cont'd
Procurement:										
MA0400 Protective Clothing	0	59620	35089	39562	40376	31300	38836	40514	Cont'd	Cont'd

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSLIST II - Conduct Development Test								X								

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT IP4

A. **Project Cost Breakdown**

	FY 1996	FY 1997	FY 1998	FY 1999
System Integration	0	962	0	0
Developmental Test and Evaluation	0	481	0	0
Project Management	0	421	0	0
Technical Support	0	0	0	0
Prototype Development	0	0	0	0
Technical Data/Documentation	0	0	0	0
Production Prove Out	0	0	0	0
SBIR/STTR	0	33	0	0
Total	0	1897	0	0

B. **Budget Acquisition History and Planning Information**: Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: MB4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MB4 Medical Biological Defense	0	5516	10051	6826	6553	4432	2170	1906	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project MB4- Medical Biological Defense: This project is a realignment of BD2 to more closely match the development phase of medical biological defense products. This project funds the Program Definition and Risk Reduction (PDRR) phase of vaccines, drugs and diagnostic medical devices which are directed against validated biological warfare agents to include bacteria, viruses, and toxins of biological origin. The PDRR phase of medical biological defense product development includes phase 1 clinical and experimental studies which evaluate product safety and efficacy, phase 2 dosing and scheduling studies, pilot lot production, and filing of the Investigation New Drug (IND) applications with the Food and Drug Administration (FDA).

Acquisition Strategy: A prime systems contract will be awarded in FY97 for a single integrator to manage the advanced development, production and storage of biological defense medical products. Involvement by the prime contractor in the PDRR phase is critical for the successful development of product safety, efficacy, and production data which the prime submits to the FDA for product licensure.

FY 1996 Accomplishments: This project funded in PE0604384BP, Project BD2.

FY 1997 Planned Program:

•	4740	Award prime systems contract for the Joint Vaccine Acquisition Program. Options will be exercised to initiate the advanced development of botulinum vaccines against serotypes A, B, E, and F.
•	530	Complete safety studies on new botulinum antiserum (despeciated) in nonclinical trials to support an IND application with the FDA for clinical trials.
•	150	Complete clinical trials on botulinum toxoid F vaccine.
•	96	SBIR/STTR
Total	5516	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-2)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT MB4

FY 1998 Planned Program:

- 9051 Continue prime systems contract efforts. Initiate the production and safety and efficacy testing of pilot lots of botulinum vaccines against serotypes A, B, E, and F.
- 1000 Initiate studies on medical biological defense products, such as nonclinical trials evaluating the usefulness of hand held kits in diagnosing exposure to biological warfare agents through the detection of organisms or their by-products in clinical specimens.

Total 10051

FY 1999 Planned Program:

- 6326 Continue efforts by the prime contractor to conduct safety and efficacy testing of botulinum vaccines against serotypes A, B, E, and F. Exercise options for the advanced development of ricin vaccine, Staphylococcus Enterotoxin B (SEB) vaccine, Venezuelan Equine Encephalitis (VEE) vaccine, brucellosis vaccine, new plague vaccine, new anthrax vaccine, and vaccines against botulinum serotypes C, D, and G.
- 500 Continue studies on medical biological defense products, such as nonclinical trials evaluating the usefulness of hand held kits in diagnosing exposure to biological warfare agents through the detection of organisms or their by-products in clinical specimens.

Total 6826

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	3632	2360	1999
Appropriated Value		5516		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	5516	10051	6826

Change Summary Explanation:

Funding: FY1997: Congressional realignment from procurement to BA4($1884K).

FY1998/1999: Increased funding is the result of realignment from Procurement to RDT&E funds to exercise additional options under prime contract to conduct safety, efficacy/immunogenicity studies on vaccines.

Schedule:

Technical:

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-2)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT MB4

C. **Other Program Funding Summary**

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E,D Budget Activity 5, PE0604384BP, Proj BD2, Joint Biological Defense - Medical	5358	0	0	0	0	0	0	0	0	5358
RDT&E, Budget Activity 5, PE0604384BP, Proj MB5, Medical Biological Defense	0	9044	16500	15646	43665	49725	50683	45954	Cont'd	Cont'd
Procurement JX0005 DOD Biological Vaccine Program	0	11915	24091	13664	22100	36427	43338	47204	Cont'd	Cont'd

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: MB4

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conduct safety studies on botulinum antiserum (despeciated)					X											
Award prime systems contract							X									
Begin PDDR of bot A vaccine								X								
Begin PDDR of bot B vaccine								X								
Begin PDDR of bot E vaccine										X						
Begin PDDR of bot F vaccine										X						
Begin PDDR of Polyvalent ABEF vaccine										X						
Begin PDDR of ricin vaccine														X		
Begin PDDR of SEB vaccine														X		
Begin PDDR of VEE vaccine														X		
Begin PDDR of anthrax (new) vaccine														X		
Begin PDDR of plague vaccine														X		
Begin PDDR of brucellosis vaccine														X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT MB4

A. Project Cost Breakdown:

	FY 1996	FY 1997	FY 1998	FY 1999
Preproduction		1427	905	614
Test and Evaluation		1951	6935	4710
Regulatory Affairs		284	603	410
System Integration		1758	1608	1092
SIBR		96		
Total		5516	10051	6826

B. Budget Acquisition History and Planning Information: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: MC4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MC4 Medical Chemical Defense	0	3938	894	2283	2892	2355	2035	2019	Continuing	Continuing

A. **Mission Description and Budget Item Justification**

Project MC4 - Medical Chemical Defense: This project funds advanced development of countermeasures for chemical agents including life support equipment, diagnostic equipment, pretreatment and therapeutic drugs, and individual/casualty decontamination compounds. A system of medical defense against chemical agents is required to provide protection, to sustain performance in a chemical environment, and to provide for self-aid and medical treatment of chemical casualties. For approval of a new drug, FDA requires demonstration of safety and efficacy, with multiple studies required for each.

Acquisition Strategy: Test and evaluate in-house and commercially developed products in government managed trials.

FY 1996 Accomplishments: Project funded in Project D993.

FY 1997 Planned Program:

•	3871	Demonstrate the human safety and technical performance of the cyanide pretreatment.
•	67	SBIR/STTR
Total	3938	

FY 1998 Planned Program:

•	594	Initiate validation of methemoglobin monitor.
•	300	Complete multiple dosing safety study for cyanide pretreatments.
Total	894	

FY 1999 Planned Program:

•	1192	Initiate animal toxicity and efficacy evaluation of advanced anticonvulsant.
•	1091	Complete validation and testing of methemoglobin monitor.
Total	2283	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT MC4

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	4021	3983	3944
Appropriated Value		3938		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	3938	894	2283

Change Summary Explanation:

Funding: FY 1998: Funds realigned to appropriate budget activity BA5 ($-3,085K). Other adjustments ($-4K).

FY 1999: Funds realigned to appropriate budget activity BA5 ($-1,646K). Other adjustments ($-15K)

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: MC4

C. Other Program Funding Summary:

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,D Budget Activity 5, PE 0604384BP, Proj MC5 Medical Chemical Defense	0	213	5265	1792	794	1190	1586	1687	Cont'd	Cont'd
RDTE,D Budget Activity 5, PE 0604384BP, Proj D848 Medical Chemical Defense Life Support Materiel	524	0	0	0	0	0	0	0	0	524
RDTE,D Budget Activity 4, PE 0603884BP, Proj D993 Medical Chemical Defense Life Support Materiel	3719	0	0	0	0	0	0	0	0	3719

D. Schedule Profile:

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cyanide Pretreatment - MS II											X					
Methemoglobin Monitor - MS I									X							
Advanced Anticonvulsant - MS I													X			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-3 Exhibit)	DATE: February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: MC4

A. **Project Cost Breakdown**

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	0	1615	580	1915
Project Development	0	1266	0	0
Project Management	0	540	249	260
Regulatory Affairs	0	450	65	108
SBIR/STTR	0	67	0	0
Total	0	3938	894	2283

B. **Budget Acquisition History and Planning Information** Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: CP4

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CP4 Counterproliferation Support	0	13165	31514	45729	22729	22539	20520	21087	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CP4 - Counterproliferation Support: Detection and characterization of biological warfare (BW) agents is one of the highest Commander-in Chief (CINC) priorities for fielding of counterproliferation warfighting capabilities. U.S. maneuver forces and troops are vulnerable to upwind releases of BW agents. In addition, the DoD biological mission area requires the detection of BW threat agents to provide early warning for high-value, fixed-site assets. This project supports the accelerated Program Definition and Risk Reduction (PDRR) of an early warning BW detection system. The remote and standoff detection systems will provide cueing (is there a suspicious aerosol cloud?), detection (is a biological substance present?), discrimination (is a biological warfare agent present?) and identification (what is the biological warfare agent?) capabilities as part of a system-of-systems architecture. The technologies used in each detection system are different and are designed to complement each other in the total system architecture.

The cornerstone of the project consists of fielding an eye-safe, Long Range Biological Standoff Detection System (LR-BSDS) rapid prototype with a maximum operational range of 50 km. The LR-BSDS will be capable of identifying the presence of man-made particulate aerosol clouds and provide the commander with capability to posture other detection systems to confirm the presence and type of biological agents using a light detection and ranging (LIDAR) eye-safe laser (1.56 micron) system. A Short Range Biological Standoff Detection System (SR-BSDS) will provide detection and possibly discrimination of aerosol clouds up to 2 kilometers away. Each system provides early warning and information to properly react and minimize or prevent casualties in the battlespace.

This project also supports and accelerates a two-phase Advanced Concept Technology Demonstration (ACTD) of the Joint Biological Remote Early Warning System (JBREWS). The primary objective of the remote early warning ACTD is to evaluate the military utility of remote early warning for BW attacks and to develop operational procedures associated with that capability. The project will demonstrate several remote early warning platforms that include, but are not limited to: artillery delivered remote detectors; man emplaced detectors; remotely piloted vehicle-mounted detectors and standoff active laser detectors. The first phase of the ACTD will develop and field an interim biological remote early warning capability. The second phase of the ACTD will develop and field an integrated chemical and biological early warning system that is networked to communicate Biological Warfare (BW)/ Chemical Warfare (CW) reports across the battlespace.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense — PROJECT: CP4

Acquisition Strategy: Utilize non-traditional acquisition Advanced Concept Technology Demonstration (ACTD) to rapidly provide the CINC with a biological remote early warning capability and develop concept of operations and doctrine associated with that capability. Fabricate LR-BSDS using a competitive prime systems integration contract.

FY 1996 Accomplishments: This project funded in DoD PE 0604384BP, Projects BD4, BD5, and PO5.

FY 1997 Planned Program:

•	4826	LR-BSDS- Complete fabrication of test items.
•	1384	LR-BSDS- Conduct technical testing.
•	4727	SR-BSDS- Fabricate UV test prototypes and transition to ACTD for JBREWS.
•	2000	JBREWS ACTD - Conduct technology definition and assessment of system performance of biological remote early warning systems.
•	228	SBIR/STTR
Total	13165	

FY 1998 Planned Program:

•	739	LR-BSDS- Conduct and complete documentation for Milestone II.
•	3000	LR-BSDS- Conduct user test and initiate Follow-On Test and Evaluation.
•	3005	LR-BSDS- Initiate rapid prototype fabrication.
•	7000	LR-BSDS - Purchase long lead item parts.
•	5000	JBREWS ACTD - Develop preliminary biological remote early warning system designs compatible with CINC-identified (CENTCOM and EUCOM) biological warfare scenarios.
•	3000	JBREWS ACTD - Modeling and simulation system development. Use modeling and simulation system to validate preliminary system designs and exercise concept of operations (CONOPS) for CINC-defined scenarios.
•	5000	JBREWS ACTD - Develop algorithms and software for biosensors and integrated network.
•	3000	JBREWS ACTD - Conduct chamber/field tests of JBREWS ACTD components.
•	1770	JBREWS ACTD - Develop CONOPS/Doctrine for CINC-defined biological warfare agents.
Total	31514	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense
	PROJECT CP4

FY 1999 Planned Program:

•	885	LR-BSDS -Conduct and complete documentation for Milestone III.
•	6800	LR-BSDS - Complete rapid prototypes.
•	700	LR-BSDS - Conduct acceptance testing.
•	500	LR-BSDS - Initiate fielding.
•	5000	JBREWS ACTD - Complete coding and simulation system development.
•	5000	JBREWS ACTD - Complete system design and conduct critical design review.
•	3000	JBREWS ACTD - Complete algorithm and software development.
•	2000	JBREWS ACTD - Conduct chamber tests of JBREWS ACTD components and subsystems.
•	5000	JBREWS ACTD - Conduct demonstration.
•	15000	JBREWS ACTD - Fabricate system leave-behinds for CENTCOM and EUCOM area of operations.
•	1844	JBREWS ACTD - Complete development and prove-outs of CONOPS/Doctrine.
Total	45729	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	20441	5961	0
Appropriated Value		13165		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	13165	31514	45729

Change Summary Explanation:

Funding: FY 1998/FY 1999: Realigned CPSP effort to correspond with development phases by transferring Budget Activity 5 (Project CP5) to this project (FY98 $+25,553K; FY99 $+45,729K).

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603884BP Chemical/Biological Defense PROJECT CP4

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E, BA 5, PE 0604384BP,Proj P05	18717	0	0	0	0	0	0	0	0	18717
RDT&E, BA 4, PE 0603384BP, Proj BJ4	0	0	1914	1897	1881	1885	1943	1986	Cont'd	Cont'd
RDT&E, BA 4, PE 0603384BP, Proj DE4	0	8289	7045	4550	7116	11062	2379	2580	Cont'd	Cont'd
RDT&E, BA 5, PE 0604384BP, Proj BD5	12464	0	0	0	0	0	0	0	0	12464

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LR-BSDS																
Complete Prototype Fabrication					X											
Complete Technical Feasibility Test							X									
Complete Early User Test								X								
Complete Milestone II										X						
Initiate Follow-On Test & Evaluation											X					
Complete Milestone III													X			
First Unit Fielding															X	
SR-BSDS																
Preliminary Design Review					X											
Complete Laser Design Experiments						X										
Transition to JBREWS ACTD																
JBREWS ACTD																
Initiate Definition and technical assessments of systems					X											
Complete Concept Designs; Preliminary Design Review							X									
Down-Select of Remote Early Warning Designs								X								
Initiate Dev/Fab of Remote Early Warning Designs									X							
System Design Reviews										X						
SR-BSDS ACTD System Demo											X					
Critical Design Reviews												X				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603884BP Chemical/Biological Defense

PROJECT: CP4

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JBREWS ACTD (Cont'd)																
Complete Test Design Plan													X			
Complete Fab of Remote Early Warning Designs														X		
Demonstration tests at Dugway Proving Ground															X	
Complete ACTD Demonstration Tests																X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603884BP Chemical/Biological Defense	CP4

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Design and Development	0	0	21770	15729
Test and Evaluation	0	3384	6739	7700
Fabrication	0	9553	3005	21800
Logistics Support	0	0	0	500
SBIR/STTR	0	228	0	0
Total	0	13165	31514	45729

B. Budget Acquisition History and Planning Information: Not Applicable

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

	COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	87326	97476	120535	108006	140560	117919	103924	91171	Continuing	Continuing
020	NBC Contamination Avoidance Systems	7405	0	0	0	0	0	0	0	0	7405
017	NBC Protection Systems	4218	0	0	0	0	0	0	0	0	4218
848	Medical Chemical Defense Life Support Materiel	524	0	0	0	0	0	0	0	0	524
L40	Joint Service Lightweight Integrated Suit Technology (JSLIST)	3033	0	0	0	0	0	0	0	0	3033
BD2	Joint Biological Defense - Medical	5358	0	0	0	0	0	0	0	0	5358
BD3	Joint Biological Defense - Biological Integrated Detection System	26965	0	0	0	0	0	0	0	0	26965
BD4	Joint Biological Defense - Interim Biological Agent Detector (IBAD)	1680	0	0	0	0	0	0	0	0	1680
BD5	Joint Biological Defense - Stand-Off Detection	12464	0	0	0	0	0	0	0	0	12464
041	Shipboard BR/CW Countermeasures	2418	0	0	0	0	0	0	0	0	2418
060	Naval Aircrew Chemical/Biological Defense	1008	0	0	0	0	0	0	0	0	1008
F21	Air Force Chemical/Biological Agent Detection and Warning and Decontamination	179	0	0	0	0	0	0	0	0	179
F37	Air Force Individual Protection	3357	0	0	0	0	0	0	0	0	3357
P05	Counterproliferation Support	18717	0	0	0	0	0	0	0	0	18717
BJ5	Biological Defense	0	32703	42926	34097	21240	24796	15364	22929	Continuing	Continuing

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 1997		
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense						
CA5 Contamination Avoidance	0	52045	48652	45384	61594	24198	12911	5955	Continuing	Continuing
CO5 Collective Protection	0	0	1169	1272	1176	923	1486	1489	Continuing	Continuing
IP5 Individual Protection	0	3471	6023	9815	12091	17087	21894	13157	Continuing	Continuing
MB5 Medical Biological Defense	0	9044	16500	15646	43665	49725	50683	45954	Continuing	Continuing
MC5 Medical Chemical Defense	0	213	5265	1792	794	1190	1586	1687	Continuing	Continuing

***Note:** The R-1 total for this PE shows an error because the funds were expensed in the wrong PE. This R-2 reflects the correct distribution and expenditure of funding.

A. Mission Description and Budget Item Justification: Operational forces have an immediate need to safely operate, survive and sustain operations in a chemical and biological agent threat environment across the continuum of global, contingency, special operations/low intensity conflict, counternarcotics, and other high risk missions. Operating forces have a critical need for defense against worldwide proliferation of CB warfare capabilities and for medical treatment of casualties in medical treatment facilities. Congress directed centralized management of DoD CB Defense initiatives, both medical and non-medical. This program element supports the Engineering Manufacturing Development (EMD) of CB defensive equipment, both medical and non-medical, and addresses various shortcomings identified in Conduct of the Persian Gulf War: Final Report to Congress, April 1992. These projects have been restructured to consolidate Joint and Service unique tasks within four commodity areas: contamination avoidance, force protection (individual and collective), decontamination and medical countermeasures. The consolidation will provide for development and operational testing of equipment for Joint Service as well as Service unique requirements. This program is enhanced using Counterproliferation Support Program funding.

Contamination avoidance efforts under this engineering and manufacturing development program will provide U.S. forces with real-time hazard assessment capabilities. They include advanced multi-agent point and remote chemical detection systems for ground, aircraft, and shipboard applications; automated warning and reporting systems; integrated radiation detection and monitoring equipment; and, enhanced battlefield reconnaissance capabilities. Force protection efforts will increase protection levels while decreasing physical and psychological burdens imposed by protective equipment. They include improved aircrew respiratory protection, lightweight integrated suit technology, and shipboard collective protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense

The medical chemical defense engineering and manufacturing development program funds improved medical equipment and drugs essential to counteracting lethal and performance-degrading effects of chemical threats, and medical equipment essential to meeting medical requirements on the integrated battlefield, with emphasis on decreased size/weight and high mobility, yet supporting large numbers of combat casualties. Additionally, foreign medical materiel may be procured for exploitation of advanced technology and development to meet medical defense goals. This program element supports the full-scale development of prophylactic and therapeutic drugs and rapid identification and diagnostic systems.

DoD Biological Defense mission requires the detection of validated biological threat agents to provide early warning capabilities on mobile and fixed platforms. This program element will provide theater protection through the development of point and stand-off detection systems. The detection system concept will provide detection, identification, warning and sample collection for verification that a biological agent attack has occurred. This program element also provides for the development of biological defense medical programs. DoD Biological Defense medical mission will address: (1) protective vaccines - vaccination capability against the most probable biological threat agents; (2) identification - clinical identification of biological threat agents through medical evaluation and laboratory analysis to augment early warning capabilities.

The projects in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: 020

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
020 NBC Contamination Avoidance Systems	7405	0	0	0	0	0	0	0	0	7405

A. Mission Description and Budget Item Justification

Project 020 - NBC Contamination Avoidance Systems: This project provides for the Engineering and Manufacturing Development (EMD) of advanced nuclear and chemical defensive equipment to enhance U. S. capability to detect and identify threat agents on the battlefield. The project supports: (1) Automatic Chemical Agent Alarm (ACADA), which is more sensitive and responsive than current detectors and is capable of concurrent nerve and blister agent detection; (2) Multipurpose Integrated Chemical Agent Detector (MICAD) which automates NBC warning and reporting throughout the battlefield and links digital data into the command, control and communications systems; (3) M93A1 FOX NBC Reconnaissance System (NBCRS), which is a dedicated system of NBC detection, warning, and sampling equipment integrated into a high speed, wheeled, high mobility armored carrier capable of performing NBC reconnaissance on primary, secondary, or cross country routes throughout the battlefield; (4) AN/UDR-13 Pocket Radiac Set which provides ground troops with a lightweight, user-friendly tactical device for measuring and detecting radiation; (5) Advanced Airborne Radiac System (AARS) to provide rapid, accurate, and safe measurement of radiation from the air and for correlating airborne readings to ground radiation readings and positions; and (6) CB Mass Spectrometer (CBMS) which identifies all chemical and biological agents collected and is a component of the NBCRS and Biological Integrated Detection System (BIDS).

FY 1996 Accomplishments:

- 3528 MICAD - Fabricated and inspected test systems.
- 800 MICAD - Fabricated and inspected installation kits.
- 750 MICAD - Conducted system integration.
- 2327 MICAD - Built prototype hardware.

Total 7405

FY 1997 Planned Program: This project transferred to Project CA5, Contamination Avoidance.

FY 1998 Planned Program: This project transferred to Project CA5, Contamination Avoidance.

FY 1999 Planned Program: This project transferred to Project CA5, Contamination Avoidance.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT 020

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	7653	0	0	0
Appropriated Value	7796			
Adjustments to Appropriated Value	-391			
FY 1998 Pres Bud Request	7405	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project CA5, Contamination Avoidance.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MICAD - Sample Transfer System Design			X													
MICAD - Build Prototype Hardware				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: 017

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
017 NBC Protection Systems	4218	0	0	0	0	0	0	0	0	4218

A. Mission Description and Budget Item Justification

Project 017 - NBC Protection Systems: Provides EMD of equipment to protect soldiers on NBC contaminated battlefields. The project resources development of the XM45 Aircrew Protective Mask (ACPM), which provides rotary-wing aircrew with a less burdensome respiratory protection system. The ACPM eliminates the aircrew dependence on forced air and is compatible with helicopter weapon sights and night vision systems. This project also supports the Advanced Integrated Collective Protection System (AICPS), which integrates NBC filtration, environmental controls, and power source components for combat systems and exploits new filtration technology. The AICPS can be integrated into multiple configurations to provide protection to several different tactical systems. Additionally, the project supports the M40 Mask Pre-Planned Product Improvement and the M20 Collective Protection System Pre-Planned Product Improvement.

FY 1996 Accomplishments:

•	1790	ACPM - Resolved design issues, completed TDP, built Initial Operational Test and Evaluation (IOT&E) hardware, and completed logistics support.
•	2025	ACPM - Conducted and supported Pre-Production Qualification Test (PPQT), and IOT&E.
•	403	ACPM - Prepared for and conducted Milestone III IPR.
Total	4218	

FY 1997 Planned Program: This project transferred to Projects CO5, Collective Protection and IP5, Individual Protection.

FY 1998 Planned Program: This project transferred to Projects CO5, Collective Protection and IP5, Individual Protection.

FY 1999 Planned Program: This project transferred to Projects CO5, Collective Protection and IP5, Individual Protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT 017

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	4359	0	0	0
Appropriated Value	4441			
Adjustments to Appropriated Value	-223			
FY 1998 Pres Bud Request	4218	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Projects IP5, Individual Protection and CO5, Collective Protection.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACPM - Build IOT&E Hardware	X															
ACPM - Conduct IOT&E & PPQT	X	X														
ACPM - Conduct MSIII IPR				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: 848

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
848 Medical Chemical Defense Life Support Materiel	524	0	0	0	0	0	0	0	0	524

A. Mission Description and Budget Item Justification

Project 848-Medical Chemical Defense Life Support Materiel: This project funds the development of medical materiel necessary to field an effective capability for medical defense against chemical agent threats facing U.S. forces in the field.

FY 1996 Accomplishments:

•	524	Evaluated extended stability of the medical aerosolized nerve agent antidote, convulsant antidote for nerve agents, and nerve agent pretreatment pyridostigmine; validated production/manufacturing capability for the topical skin protectant.
Total	524	

FY 1997 Planned Program: This project transferred to project MC5, Medical Chemical Defense.

FY 1998 Planned Program: This project transferred to project MC5, Medical Chemical Defense.

FY 1999 Planned Program: This project transferred to project MC5, Medical Chemical Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	329	0	0	0
Appropriated Value	335			
Adjustments to Appropriated Value	+189			
FY 1998 Pres Bud Request	524	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT 848

Change Summary Explanation:

Funding: Reprogramming from Medical Chemical Defense PE0603884BP, Project 993 ($+206K), Management Adjustments ($-11K)

Schedule:

Technical:

C. **Other Program Funding Summary:** Refer to Project MC5, Medical Chemical Defense.

D. **Schedule Profile**

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Extended stability evaluation				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: L40

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
L40 Joint Service Lightweight Integrated Suit Technology (JSLIST)	3033	0	0	0	0	0	0	0	0	3033

A. Mission Description and Budget Item Justification

Project L40 - Joint Service Lightweight Integrated Suit Technology: The Joint Service Lightweight Integrated Suit Technology (JSLIST) program is an effort to develop and field a common chemical protective ensemble (suit, boots, and gloves). The program objectives are to provide adequate chemical protection, reduced heat stress, full compatibility with all interfacing equipment, longer wear (45 days) and launderability, a single technical data package and technical data manual, a standard tariff, split issue to improve fit and reduce inventory, and flame retardancy. JSLIST promotes commonality and standardization to maximize resources and eliminate redundancy among the Services. This project is supported by the Counterproliferation Support Program.

FY 1996 Accomplishments:

•	3033	JSLIST - Continued and completed Integrated Developmental and Operational Testing of prototype ensembles.
Total	3033	

FY 1997 Planned Program: This project transferred to Project IP5, Individual Protection.

FY 1998 Planned Program: This project transferred to Project IP5, Individual Protection.

FY 1999 Planned Program: This project transferred to Project IP5, Individual Protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604384BP Chemical/Biological Defense	L40

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2180	0	0	0
Appropriated Value	2221			
Adjustments to Appropriated Value	812			
FY 1998 Pres Bud Request	3033	0	0	0

Change Summary Explanation:

Funding: FY 1996: Reprogramming from LNBCRS, PE 0603884BP, Project C159 to JSLIST ($1,270K). Management adjustments ($-417K).

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project IP5, Individual Protection.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSLIST - DT/OT				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE: February 1997		
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense					PROJECT: BD2	
COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
BD2 Joint Biological Defense - Medical	5358	0	0	0	0	0	0	0	0	5358

A. Mission Description and Budget Item Justification

Project BD2 - Joint Biological Defense Medical Biological Defense Drug and Vaccine: This project funds Demonstration and Validation (DEMVAL) and Engineering and Management Development (EMD) for vaccines, drugs and diagnostic medical devices (through expanded efficacy trials and licensure) to provide an effective medical defense against validated threat agents including toxins, bacteria, viruses and other agents of biological origin. By employing biotechnology, medical systems will be developed to rapidly diagnose, prevent, and treat diseases due to exposure to biological threat agents. Development of these products involves studies which demonstrate product safety and efficacy and which are required for product licensure by the Food and Drug Administration (FDA).

FY 1996 Accomplishments:

- 1966 Began clinical and nonclinical studies to collect data supporting a change to the FDA license for anthrax vaccine that would reduce the number of shots for protective immunization.
- 1216 Conducted studies, clinical and nonclinical, on vaccines against the seven types of botulinum toxins. Studies on the pentavalent vaccine (A-E) support application for FDA licensure of the existing stockpile of this vaccine. Studies on the new botulinum toxoid F vaccine evaluated vaccine dosing and scheduling.
- 635 Contractor support for the Joint Vaccine Acquisition Program prime contract, to include: completion of an independent government cost estimate, preparation and review of the RFP and supporting documentation, compilation and establishment of a vaccine data library for offeror use, and preparation of NEPA documentation for the program.
- 386 Began clinical evaluations of volunteer and laboratory workers to determine the effects of multiple immunizations with BD vaccines under the special immunization program (long term immunization studies).
- 288 Produced GMP lots of different vaccines against anthrax, Venezuelan equine encephalomyelitis virus, ricin toxin, and staphylococcal enterotoxin B. Evaluated the safety and efficacy of these vaccines in animal to support exit criteria from milestone reviews.
- 246 Conducted limited clinical evaluation of new handheld kits for diagnosis of human exposure to biological warfare agents (BWA) Completed abbreviated analysis on life cycle costs for competing technologies. Completed risk analysis study on receiving FDA licensure of handheld diagnostic kits for BWA.
- 207 Completed development of a surrogate animal model for small pox infection that does not involve the small pox (variola) virus that will allow for testing and evaluation of vaccines and drugs against this disease. Completed limited clinical trial on safety and immunogenicity of new small pox vaccine that is produced in cell cultures.
- 175 Completed limited clinical trial on the safety and immunogenicity of Q-fever vaccine.
- 153 Produced and tested lots of both equine and human antisera effective against the seven types of botulinum toxins.
- 86 Submitted license application for tularemia vaccine to the Food and Drug Administration.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT BD2

Total 5358

FY 1997 Planned Program: This project transferred to Projects MB4 and MB5, Medical Biological Defense.

FY 1998 Planned Program: This project transferred to Projects MB4 and MB5, Medical Biological Defense.

FY 1999 Planned Program: This project transferred to Projects MB4 and MB5, Medical Biological Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	6494	0	0	0
Appropriated Value	6616			
Adjustments to Appropriated Value	-1258			
FY 1998 Pres Bud Request	5358	0	0	0

Change Summary Explanation:

Funding: FY 1996: Funds reprogrammed to PE 0603384BP, Project 807, Industrial Base/Med Bio Def Vac for pre-clinical development of vaccines ($-1,015K) and to other high priority efforts ($-121K).

Schedule:

Technical:

C. Other Program Funding Summary Refer to Projects MB4 and MB5, Medical Biological Defense.

D. Schedule Profile See schedule profile for Project MB5, Medical Biological Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: BD3

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
BD3 Joint Biological Defense - Biological Integrated Detection System	26965	0	0	0	0	0	0	0	0	26965

A. **Mission Description and Budget Item Justification**

Project BD3 - Joint Biological Defense - Biological Integrated Detection System (BIDS): DoD Biological Defense mission area requires the detection of biological threat agents to provide early warning capabilities at mobile and fixed locations. The detection system concept will provide detection, identification, warning and sample collection for verification that a large area biological agent attack has occurred. This project will provide a product improvement to the fielded non-developmental item (NDI), fixed/mobile platform based, point Biological Integrated Detection System (BIDS). The BIDS consists of a shelter-configured detection suite (comprised of complementary generic, non-specific and specific detectors and supporting communications and meteorological equipment) mounted on a dedicated vehicle. The BIDS program is part of a biological defense "system of systems" architecture for detecting biological warfare agents in the battlespace. The BIDS P3I will simultaneously identify any eight agent types on the International Cooperative Agreements - Annex A6 (Bio-Chemical Detector Demonstration and Validation Program). BIDS is the highest priority project in the Joint Chemical/Biological Defense program.

This project also supports the development of a common point detection suite, the Joint Biological Point Detection System (JBPDS) for all Services. The detection suite will meet the Services' requirements as outlined in the Joint Operational Requirements Document (JORD). The suite will consist of a complementary trigger, sampler, detector and identification technologies to detect and identify biological threat agents in real-time. The suite will be capable of detecting BW agents in quantities below the amount needed to impact combat effectiveness. The suite will be capable of identifying BW agents in less than 15 minutes. The suite will be capable of identifying, as a minimum, BW agents listed in category A of International Task Force 6 (ITF 6) Report, dated 9 Feb 90, and cholera. The detection suite will be integrated into each Service's' platform (e.g. HMMWV, ship, truck, etc.) or airbase or port to provide a common detection capability for joint interoperability and supportability. The JBPDS will: increase the number of agents that can be identified by the BIDS and IBAD systems; decrease detection time; and increase detection sensitivity; provide automated knowledge-based, real-time detection and identification; and provide a point detection capability to the Air Force and Marine Corps. An evolutionary component/suite upgrade acquisition approach will be used to provide the Services a common point detection capability. The JBPDS project is an integration of the Army BIDS Objective (EMD), Navy BADS and Air Force unique development programs. The project is structured into two Block EMD phases. Block I EMD will provide the Services with automated detection and identification of BW agents capability. Block II will upgrade the Block I production suites to full compliance with the JORD requirements.

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BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense
	PROJECT: BD3

FY 1996 Accomplishments:

- 5329 BIDS - Designed and fabricated candidate P3I detection components.
- 1610 BIDS - Evaluated candidate P3I BIDS components.
- 2880 BIDS - Continued antibody, reagent and detector kit development and testing.
- 4300 BIDS - Completed biological detector (BD) prototype fabrication.
- 2547 BIDS - Conducted BD Production Proveout Test (PPT) and evaluation.
- 2515 BIDS - Initiated P3I integration and design.
- 4095 BIDS - Initiated P3I prototype fabrication.
- 1680 BIDS - Initiated P3I component engineering test.
- 2009 JPBDS - Initiated Block I preliminary suite design and conducted annual Joint Field Trials at Dugway Proving Ground.

Total 26965

FY 1997 Planned Program: This project transferred to Project BJ5, Biological Defense.

FY 1998 Planned Program: This project transferred to Project BJ5, Biological Defense.

FY 1999 Planned Program: This project transferred to Project BJ5, Biological Defense.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	27146	0	0	0
Appropriated Value	27655			
Adjustments to Appropriated Value	-690			
FY 1998 Pres Bud Request	26965	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT BD3

C. Other Program Funding Summary Refer to Project BJ5, Biological Defense.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BIDS - Fabricate P3I Detector Components		X														
BIDS - Eval Candidate P3I BIDS			X													
BIDS - Production Prove-out Test (PPT) and Eval for Detector Component			X													
JBPDS - Suite design			X													
JBPDS - Joint field trials			X													

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: BD4

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
BD4 Joint Biological Defense - Interim Biological Agent Detector (IBAD)	1680	0	0	0	0	0	0	0	0	1680

A. Mission Description and Budget Item Justification

Project BD4 Joint Biological Defense - Interim Biological Agent Detector (IBAD): This project will develop biological defensive systems for surface ships to support the requirement to sustain operations in a biological threat environment. The IBAD is a point detector system composed of a particle sizer/counter, particle wet cyclone sampler, manual identifier, and an improved membrane colorimetric ticket (flow-thru assay). The IBAD will be linked to visual and audible alarms located locally and in a ship's damage control central. The IBAD will give the Navy an interim point detection capability aboard combatant ships at sea, which is part of the theater protection strategy. This project also supports the Air Base/Port Bio Detection Advanced Concept Technology Demonstration (ACTD) which will provide: 1) BW perimeter detection system; 2) C4I NBC Warning and Reporting; 3) medical countermeasures; 4) unmasking procedures; 5) decontamination; 6) collective protection; and 7) oronasal masks to a CINC priority airbase or port facility.

FY 1996 Accomplishments:

- 446 IBAD - Completed rapid prototype fabrication and install additional units aboard ship for evaluation and accumulation of background aerosol data from areas of operation and provide unit training.
- 1234 ACTD - Completed two major field trials of ACTD network at Dugway Proving Ground, completed and staffed concept of operations document, initiated modeling of airbase/port facilities in CINC Area of Operations.

Total 1680

FY 1997 Planned Program: This project transferred to Project BJ5, Biological Defense.

FY 1998 Planned Program: This project transferred to Project BJ5, Biological Defense.

FY 1999 Planned Program: This project transferred to Project BJ5, Biological Defense.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT BD4

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2332	0	0	0
Appropriated Value	2376			
Adjustments to Appropriated Value	-696			
FY 1998 Pres Bud Request	1680	0	0	0

Change Summary Explanation:

Funding: FY1996: Reprogrammed to BD3 for the Joint Biological Point Detection System ($-575K) and to other high priority efforts ($-77K).

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project BJ5, Biological Defense.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
IBAD - Continue Rapid Prototype	X															
IBAD - Ship Install/Test/Train		X														
ACTD - Completed concept operations document		X														
ACTD - Completed Field Trials at Dugway Proving Ground				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense — PROJECT: BD5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
BD5 Joint Biological Defense - Stand-Off Detection	12464	0	0	0	0	0	0	0	0	12464

A. Mission Description and Budget Item Justification

Project BD5 - Joint Biological Defense - Stand-Off Detection: This project supports the development of a Stand-Off system. The Stand-Off system is part of a biological defense "system of systems" architecture for detecting and identifying biological warfare agents in the battlespace. The Long Range Biological Stand-Off Detection System (LR-BSDS) which will identify the presence of particulate aerosols at long range (30 km) but will not determine the presence of biological agents. The Short Range Biological Stand-Off Detection System (SR-BSDS) operates at much shorter ranges (2 km) and can further identify the presence of biological agent but not the specific agent. The early warning approach of LR-BSDS will enable the commander to posture other detection systems to confirm the presence and type of biological agents to properly react to minimize or prevent casualties. LR and SR are designed to complement current and future biological detection systems on the battlefield. This program will provide an air platform based LR-BSDS using Light Infrared Detection and Ranging (LIDAR) technology whereby a laser transmits pulses of infrared light and collects backscatter from the aerosol clouds. The program has a concurrent development effort to provide technology-driven upgraded capabilities to core systems as well as developing a SR-BSDS for fixed/mobile platforms for ranges out to 2 km. The SR-BSDS uses ultra-violet (UV) laser and Laser Induced Fluorescence (LIF) technologies. The accelerated LR-BSDS (supplemented by counterproliferation funding) involves accelerating the acquisition and fielding of an eye-safe, long range IR LIDAR biological agent aerosol cloud detection system with an operational range of 50 km. The program also includes the Joint Biological Remote Early Warning System (JBREWS). The JBREWS program is visualized as an automated, biological agent early warning system capable of enhancing situational awareness of battlespace in a theater of operations.

FY 1996 Accomplishments:

•	1500	LR-BSDS - Completed design, conducted Critical Design Review (CDR) and prepared preliminary Technical Data Package (TDP).
•	3698	LR-BSDS - Initiated prototype fabrication.
•	250	LR-BSDS - Initiated R&D Acceptance Test of subsystems.
•	1475	SR-BSDS - Completed design and conducted Preliminary Design Review (PDR) .
•	5241	SR-BSDS - Fabricated brass board.
•	300	JBREWS - Initiated program documents (e.g. JORD).
Total	12464	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT BD5

FY 1997 Planned Program: This project transferred to Project CP4, Counterproliferation Support.

FY 1998 Planned Program: This project transferred to Project CP4, Counterproliferation Support.

FY 1999 Planned Program: This project transferred to Project CP4, Counterproliferation Support.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	12883	0	0	0
Appropriated Value	13125			
Adjustments to Appropriated Value	-661			
FY 1998 Pres Bud Request	12464	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project BJ5 Biological Defense.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LR-BSDS - Complete Preliminary Technical Data Package (TDP)	X															
LR-BSDS (NDI) - MS III		X														
LR-BSDS - Initiate Prototype Fabrication		X														
JBREWS - Initiate J-ORD		X														
SR-BSDS - Conduct System Design			X													

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: 041

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
041 Shipboard BR/CW Countermeasures	2418	0	0	0	0	0	0	0	0	2418

A. Mission Description and Budget Item Justification

Project 041 - Shipboard BR/CW Countermeasures: Develops Chemical and Biological (CB) defensive systems for surface ships to support the requirement to sustain operations in a CB threat environment. Systems developed will counter threats in the near term and predicted emerging threats to Naval forces as validated by Office of Naval Intelligence (ONI) CB Threat Assessment (TA# 004-94).

FY 1996 Accomplishments:

- 341 SCAMP - Initiated fabrication of Shipboard Chemical Agent Monitor - Portable (SCAMP) Engineering Development Models (EDM) and started Technical Evaluation (TECHEVAL).
- 196 IPDS - Supported Improved Point Detection System (IPDS) fleet introduction and component development and testing. Prepare for Follow-on Test and Evaluation (FOT&E).
- 978 SALAD - Continued Shipboard Automatic Liquid Agent Detector (SALAD) TECHEVAL and shipboard Operational Evaluation (OPEVAL). Continued development of technical data package and requisite acquisition documentation in preparation for FY97 MS III.
- 903 Advanced Chemical Protective Garment (ACPG) - Under JSLIST program, completed TECHEVAL and OPEVAL and finalized technical data package and requisite acquisition documentation in preparation for FY97 MS III.

Total 2418

FY 1997 Planned Program: This project transferred to Project CA5, Contamination Avoidance and Project IP5, Individual Protection.

FY 1998 Planned Program: This project transferred to Project CA5, Contamination Avoidance and Project IP5, Individual Protection.

FY 1999 Planned Program: This project transferred to Project CA5, Contamination Avoidance and Project IP5, Individual Protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT 041

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2025	0	0	0
Appropriated Value	2063			
Adjustments to Appropriated Value	355			
FY 1998 Pres Bud Request	2418	0	0	0

Change Summary Explanation:

Funding: FY 1996: Funds reprogrammed from CARDS, PE 0603884BP, Project S205 to SALAD ($460K) and other management adjustments ($-67K).

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project CA5, Contamination Avoidance and IP5, Individual Protection.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
IPDS - Contract Milestone Award	X															

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: 060

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
060 Naval Aircrew Chemical/Biological Defense	1008	0	0	0	0	0	0	0	0	1008

A. Mission Description and Budget Item Justification

Project W060 - Naval Aircrew Chemical/Biological Defense: This project funds upgrading existing individual protective equipment for Navy and Marine Corps helicopter and tactical air crews. This project also tests and develops support packages for Non Developmental Item (NDI) mask assemblies for helicopter and tactical air crews.

FY 1996 Accomplishments:

•	1008	Prepared ILS and programmatic documentation and conducted TECH EVAL for NDI Mask Assembly.
Total	1008	

FY 1997 Planned Program: This project transferred to Project IP5, Individual Protection.

FY 1998 Planned Program: This project transferred to Project IP5, Individual Protection.

FY 1999 Planned Program: This project transferred to Project IP5, Individual Protection.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1042	0	0	0
Appropriated Value	1062			
Adjustments to Appropriated Value	-54			
FY 1998 Pres Bud Request	1008	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT 060

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. **Other Program Funding Summary** Refer to Project IP5, Individual Protection.

D. **Schedule Profile**

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
T & E Milestones TECH EVAL			X													

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: F21

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
F21 Air Force Chemical/Biological Agent Detection and Warning and Decontamination	179	0	0	0	0	0	0	0	0	179

A. Mission Description and Budget Item Justification

Project AF21 - Air Force Chemical and Biological Agent Detection and Warning, and Decontamination: Develops decontamination equipment and detectors to warn personnel of nuclear, biological and chemical attack and contamination.

FY 1996 Accomplishments:

- 119 AIDET - Developed performance specifications model, continued market survey for transition into EMD, and prepared for Milestone I/II decision on Aircraft Interior Detector. Merged AIDET into Joint Chemical Agent Detector (JCAD) program.
- 60 ACADA - Provided pre-milestone III decision support for Army ACADA program.

Total 179

FY 1997 Planned Program: This project transferred to Project CA5, Contamination Avoidance.

FY 1998 Planned Program: This project transferred to Project CA5, Contamination Avoidance.

FY 1999 Planned Program: This project transferred to Project CA5, Contamination Avoidance.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	516	0	0	0
Appropriated Value	526			
Adjustments to Appropriated Value	-347			
FY 1998 Pres Bud Request	179	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT F21

Change Summary Explanation:

Funding: FY 1996: Fire Fighter's Ensemble (FFE) funding moved to Project F37, Individual Protection ($-211K).Transferred funding from AIDET to cover JSLIST shortfalls and AERP modification design ($-126K).

Schedule: AIDET incorporated into Joint Chemical Agent Detector (JCAD) program.

Technical:

C. Other Program Funding Summary Refer to Project CA5, Contamination Avoidance.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AIDET - Receive Request for Information (RFI) Responses	X															

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: F37

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
F37 Air Force Individual Protection	3357	0	0	0	0	0	0	0	0	3357

A. Mission Description and Budget Item Justification

Project AF37 - Air Force Individual Protection: Based upon changing world conditions chemical/biological weapons have emerged as a major threat to our forces. Because of this, the using commands have issued operational requirements to protect personnel against agents while minimizing the impact to their performance. The Air Force is developing clothing and equipment (both aircrew and ground crew) to protect personnel in chemical/biological environments.

FY 1996 Accomplishments:

•	932	Explosive Ordnance Disposal (EOD) Ensemble - Continued EMD for the chemically protected EOD ensemble, including user evaluation and development/operational testing.
•	441	Fire Fighters' Ensemble (FFE) - Integrated fielded fire fighter mask with JSLIST ensemble - including human factors testing, wear trials and development of chemical/biological protective liner for existing fire fighters' glove.
•	71	Aircrew-Eye Respiratory Protection (AERP) - Supported aircraft modification designs for selected aircraft.
•	426	JSLIST - Tested and evaluated second skin for MCU 2A/P mask; performed analyses of initial phases of Phase IV decontamination of chemically contaminated suits.
•	1487	JSLIST - Supported joint DT/OT effort for Groundcrew Ensemble (GCE).
Total	3357	

FY 1997 Planned Program: This project transferred to Project IP5, Individual Protection.

FY 1998 Planned Program: This project transferred to Project IP5, Individual Protection.

FY 1999 Planned Program: This project transferred to Project IP5, Individual Protection.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: F37

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3138	0	0	0
Appropriated Value	3197			
Adjustments to Appropriated Value	+160			
FY 1998 Pres Bud Request	3357	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Project IP5, Individual Protection.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSLIST - GCE OT				X												
AERP - F-16 Bracket Design				X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: P05

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
P05 Counterproliferation Support	18717	0	0	0	0	0	0	0	0	18717

A. Mission Description and Budget Item Justification

Project P05 - Counterproliferation Support (EMD): The Counterproliferation Support Program is focused on accelerating the delivery of high priority technologies and capabilities in the areas of chemical and biological detection, individual protection and collective protection. This project provides funds to accelerate ongoing projects of the Joint Chemical/Biological Defense Program.

FY 1996 Accomplishments:

- 11143 Supported development of a Long Range Biological Stand-Off Detection System (LR-BSDS). See Project BD5 (Joint Biological Defense - Stand-Off Detection).
- 54 Supported development of a Short Range Biological Stand-Off Detection System (SR-BSDS). See Project BD5 (Joint Biological Defense - Stand-Off Detection).
- 3420 Supported Non-Respiratory Protection Program. See Project L40 (Joint Service Lightweight Integrated Suit Technology (JSLIST)).
- 1850 Supported Air Base/Port Biological Detection Advanced Concept Technology Demonstration (ACTD). See Project BD4 (Joint Biological Defense - Interim Biological Agent Detector (IBAD)).
- 650 Initiated planning and analysis for the Joint Biological Remote Early Warning System (JBREWS) ACTD.
- 1600 Completed design of the Nonproliferation Airborne Lidar Experiment (N-ABLE) which will use an aircraft mounted light detection and ranging (LIDAR) system to detect and identify chemical weapons and other target chemical signatures. Flight test plan completed; test range support established.

Total 18717

FY 1997 Planned Program: This project transferred to PE 0603884BP, Project CP4, Counterproliferation - Joint Remote/Stand-Off Detection DEM/VAL.

FY 1998 Planned Program: This project transferred to PE 0603884BP, Project CP4, Counterproliferation - Joint Remote/Stand-Off Detection DEM/VAL.

FY 1999 Planned Program: This project transferred to PE 0603884BP, Project CP4, Counterproliferation - Joint Remote/Stand-Off Detection DEM/VAL.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: P05

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	18099	0	0	0
Appropriated Value	18800			
Adjustments to Appropriated Value	-83			
FY 1998 Pres Bud Request	18717	0	0	0

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary Refer to Projects BD5, L40, BD4 and PE 0603884BP, Project CP4.

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N-ABLE																
System integration completed				X												
Ground tests				X												
Shakedown flight				X												

Also, see schedule profile for supported projects BD5, L40 and BD4.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense	PROJECT BJ5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
BJ5 Biological Defense	0	32703	42926	34097	21240	24796	15364	22929	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project BJ5 - Biological Defense: DOD Biological Defense mission requires the detection of biological threat agents to provide early warning capabilities at mobile high value and fixed site locations. The detection system concept will provide detection, identification, warning, and sample collection for verification of a large area and point source biological agent attacks.

This project completes the development of the ground-based Biological Integrated Detection System (BIDS) P3I RDTE program. The BIDS P3I will consist of a shelter-configured detection suite (comprised of complementary generic, non-specific and specific detectors, identifiers, and supporting communications and meteorological equipment) mounted on a dedicated vehicle. The BIDS P3I program is part of a biological defense "system of systems" architecture for detecting biological warfare agents in the battlespace. The BIDS P3I will simultaneously identify eight agent types on the International Cooperative Agreements - Annex A6 (Bio Chemical Detector Demonstration and Validation Program). This project supports the development of a common point detection suite for all Services.

The Joint Biological Point Detection System (JBPDS) program is an integration of the Army BIDS, Navy IBADs and Air Force Service specific development programs. The detection suite will meet the Services requirements as outlined in the Joint Operational Requirements Document (JORD). The suite will be capable of identifying, within 15 minutes, as a minimum, BW agents listed in category A of International Task Force (ITF) 6 Report, dated 9 Feb. 90. The suite will be integrated into each Services' platform (e.g. HMMWV, ship, truck, etc.) or airbase or port to provide a common detection capability with joint interoperability and supportability. The JBPDS will: increase the number of agents that can be identified by the BIDS and Interim Biological Agent Detector (IBAD) systems; provide automated knowledge-based, near real-time identification; and provide a first time point detection capability to the Air Force and Marine Corps. An evolutionary component/suite upgrade acquisition approach will be used to provide the Services a common point detection capability. The program is structured into two Block EMD phases. Block I EMD will provide the Services with an automated BW agent identification capability. Block II will upgrade the Block I production suites to full compliance with the JORD requirements.

This project includes the completion of the Navy shipboard IBAD in FY 99. IBAD gives the Navy an interim point detection capability aboard ships at sea, which will be part of the theater protection strategy. The JBPDS will replace the IBAD.

This project also supports the Air Base/Port Bio Detection Advanced Concept Technology Demonstration (ACTD) which will provide: 1)BW perimeter detection system; 2) C4I NBC Warning and Reporting; 3) medical countermeasures; 4) unmasking procedures; 5) decontamination; 6) collective protection; and 7) oronasal masks to a limited number of CENTCOM/USFK priority airbases and port facilities.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT BJ5

Acquisition Strategy:

BIDS P3I	Contractor/In-house market investigation, In-house Non Developmental Item Prototype Integration and Fabrication for In-house testing. In-house Fabrication of NDI BIDS. In-house Pre-Planned Product Improvement (P3I) development and market investigation. Contractor system integrator prototype fabrication for In-house testing. In-house fabrication of P3I production and NDI upgrade.
JBPDS	Prime System Integrator contract award and component development, contractor test, in-house/contractor platform integration. Contractor fabrication of production units.
IBAD	In-house development and fabrication of Rapid Prototypes.
Air Base/ Port ACTD	In-house development and fabrication of detection prototypes.

FY 1996 Accomplishments: This project funded in Projects BD3, BD4, BD5.

FY 1997 Planned Program:

•	3900	BIDS P3I -Complete P3I design and technical documentation.
•	1500	BIDS P3I -Complete Mini FCM Development and Technical Documentation.
•	2200	BIDS P3I -Complete Bio Dectector (BD) Development and technical documentation.
•	1500	BIDS P3I -Complete antibody development and technical documentation.
•	3200	BIDS P3I - Complete Prototype Fabrication and Engineering Test.
•	1500	BIDS P3I -Complete PPQT
•	2415	BIDS P3I -Conduct IOT&E
•	1200	BIDS P3I -Verify Technical Documentation
•	3690	JBPDS - Initiate Block I Suite Design
•	3132	JBPDS -Initiate fabrication of Block I suite components.
•	2721	JBPDS - Initiate modification and EDT testing of Block I components.
•	1778	JBPDS - Conduct annual Joint Field Trials at DPG and JPO support..
•	200	IBAD - Continue support of rapid prototypes, installation on Naval ships and investigation of aerosol background of Naval areas of operations.
•	3200	ACTD- Continue development and conduct final system operational test at Dugway Proving Ground.
•	567	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	32703	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense — PROJECT: BJ5

FY 1998 Planned Program:

•	3500	JBPDS -Complete Block I Suite Design.
•	3930	JBPDS -Complete fabrication, of Block I suite detection components.
•	3536	JBPDS -Complete EDT on Block I components.
•	4000	JBPDS- Complete software development and software testing of Block I suite components.
•	4000	JBPDS -Initiate system integration.
•	2253	JBPDS - Begin antibody development for 6 agents.
•	2617	JBPDS -Conduct Annual Joint Field Trials at Dugway Proving Ground and JPO support.
•	200	IBAD - Continue support of rapid prototypes, installation on Naval ships and investigation of aerosol background of Naval areas of operations.
•	750	Air Base/Port ACTD - Conduct/complete aerosol background sampling at CENTCOM/USFK air base/port sites.
•	14830	Air Base/Port ACTD - Fabricate five additional ACTD perimeter biological detector networks for CENTCOM/USFK air base/port sites.
•	1310	Air Base/Port ACTD - Initiate logistics support and fielding for CENTCOM/USFK air base/port sites.
•	2000	Air Base/Port ACTD - Conducted integrated biological/chemical perimeter detector network field test at Dugway Proving Ground.
Total	42926	

FY 1999 Planned Program:

•	3000	JBPDS - Complete detection component modification.
•	3533	JBPDS - Complete prototype fabrication.
•	7462	JBPDS - Conduct DT.
•	4000	JBPDS - Complete system integration in Army and Navy configurations.
•	3000	JBPDS - Complete system integration in Air Force and USMC configurations.
•	4000	JBPDS - Conduct OT for all four Services at Dugway Proving Grounds.
•	1255	JBPDS - Conduct OT for Navy and Marine Corps at Sigonella, Italy, Norfolk, VA, and Camp Lejeune, NC.
•	1946	JBPDS - Continue antibody development for 5 agents.
•	3356	JBPDS - Conduct annual Joint Field Trials at Dugway Proving Ground and JPO support.
•	238	IBAD - Continue support of rapid prototypes, installation on Naval ships and investigation of aerosol background of Naval areas of operations.
•	2307	Air Base/Port ACTD - Provide for logistics support and fielding at CENTCOM/USFK Air Base/Port sites.
Total	34097	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: BJ5

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget		29188	41381	33915
Appropriated Value		32703		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request		32703	42926	34097

Change Summary Explanation:

Funding: FY 1997: Changed due to Congressional increase for biological warfare countermeasures and SBIR/other economic adjustments.

Schedule:

Technical:

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 5, PE 0604384BP Proj D020 NBC Contamination Avoidance Systems	7405	0	0	0	0	0	0	0	0	7405
RDTE,D Budget Activity 5,PE 0604384BP Proj BD3, Joint Biological Defense, BIDS	26965	0	0	0	0	0	0	0	0	26965
RDTE,D Budget Activity 5, PE 0604384BP Proj BD4, Joint Biological Defense, IBAD	1680	0	0	0	0	0	0	0	0	1680
RDTE,D Budget Activity 5, PE 0604384BP Proj BD5,Joint Biological Defense, Stand-Off Detection	12464	0	0	0	0	0	0	0	0	12464

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: BJ5

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement										
JPO100 Joint Bio Point Detection System	0	0	0		68082	61914	66201	65571	Cont'd	Cont'd
DA0800 Joint Bio Defense Program	22009	0	0	0	0	0	0	0	0	22009
M93001 Bio Integrated Det Syst (BIDS)	0	21055	41341	15511	12621	0	0	0	0	90528
JPO200 Jt Bio Rem Erly Wrng (JBREWS)	0				12919	13911	37812	39915	Cont'd	Cont'd

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BIDS P3I - Complete prototype fab						X										
BIDS P3I - Conduct IOT&E							X									
BIDS P3I -Complete Pre-production Qualification Test (PPQT)								X								
BIDS P3I - Complete MS IV								X								
JBPDS - Complete MSII					X											
JBPDS - Award Contract					X											
JBPDS -Initiate Suite Design						X										
JBPDS -Initiate Fabrication of Components							X									
JBPDS - Initiate modification and EDT							X									
JBPDS - Conduct Joint Field Trials								X								
JBPDS - Initiate Antibody development									X							
JBPDS - Complete Block I suite design										X						
JBPDS - Complete fabrication of Block I detection components												X				
JBPDS -Complete EDT on Block I Components												X				
JBPDS - Complete software development												X				
JBPDS - Initiate System Integration												X				
JBPDS - Conduct annual JFT												X				
JBPDS - Complete detection component modification														X		
JBPDS - Complete prototype fabrication														X		

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: BJ5

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JBPDS - Complete DT															X	
JBPDS - Complete system integration for Army and Navy																X
JBPDS - Complete system integration for Air Force and USMC																X
JBPDS - Initiate OT																X
JBPDS - Conduct annual JFT																X
JBPDS - Conduct OT for Navy and USMC																X
ACTD - Conduct development and testing								X								
ACTD- Complete Sys Fabrication/Test									X							
ACTD - Initiate additional system Fab									X							
ACTD - Initiate logistics/fielding spt										X		X				
ACTD - Complete system fabrication													X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT BJ5

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Engineering Design		7590	5753	11946
Fabrication		3132	24296	3533
Test & Evaluation		11614	7367	16073
Technical Data/Documentation		6400		
Integrated Logistics Support		200	5510	2545
Hardware Development		3200		
SBIR/STTR		567		
Total		32703	42926	34097

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: CA5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CA5 Contamination Avoidance	0	52045	48652	45384	61594	24198	12911	5955	Continuing	Continuing

Mission Description and Budget Item Justification

Project CA5 - Contamination Avoidance: This project provides EMD of an array of chemical detection and warning systems comprising the basis of Joint Service Program efforts. The Joint Service Point Detection Program will explore leveraging technologies, to include the XM22 Automatic Chemical Agent Alarm (ACADA) which is more sensitive and responsive than current detectors with similar applications and is capable of concurrent nerve and blister agent detection, and the CB Mass Spectrometer (CBMS) which identifies chemical and biological agents collected and is a potential component for the Biological Integrated Detection System (BIDS) and the NBC Reconnaissance System. The Joint Service Chemical Agent Detector (JCAD) program will develop a combined portable monitoring and small point chemical agent detector for aircraft, shipboard stand alone and individual soldier applications. The Joint Service Lightweight Standoff Chemical Agent Detector Program (JSLSCAD), utilizing passive infrared technology with application to shipboard Chemical Agent Remote Detector System (CARDS), provides an automatic scanner and stand-off detector capability. The Joint Service Lightweight NBC Reconnaissance System (LNBCRS) provides a warning and reporting capability of a NBC hazard for light assault and expeditionary forces. The Joint Service Warning and Reporting Network (JWARN) will evaluate the current technologies which automate NBC warning collected from detectors in the field and transmit them to adjacent units and command centers. The Multipurpose Integrated Chemical Agent Detector (MICAD) is an integrated component of hardware and software that can process data for use by the JWARN for evaluation and transmitting on the Joint C4I Battlefield and also can be used by stand alone systems. The Shipboard Automatic Liquid Agent Detector (SALAD) is an externally mounted detector that will detect both blister and nerve agents.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT CA5

Acquisition Strategy:

JWARN	Contract development and fabrication of test prototypes, contractor/in-house testing, contract fabrication of production units.
JCAD	Contract development and fabrication of test prototypes, contractor/in-house testing, contract fabrication of production units.
ACADA	NDI contract fabrication of test items, in-house testing, contract fabrication of production units with option from multiple sources..
CBMS	Contract development and fabrication of prototype test hardware, in-house testing, in-house platform integration, contract fabrication of production units.
JSLSCAD	Contract development, in-house/contract testing, in-house/contract platform integration, contract fabrication of production units.
SALAD	Contractor development and contract fabrication test prototypes, In-house testing, contract fabrication of production units.
LNBCRS	Develop and fabrication of prototypes. Execute option for contract platform integration.
MICAD	Contract development and fabrication of test prototypes, contractor/in-house testing, contract fabrication of production units.

FY 1996 Accomplishments: This Project funded in Projects 020,041 and F21.

FY 1997 Planned Program:

- 2042 MICAD - Conduct PPT.
- 6836 MICAD - Build test hardware.
- 750 MICAD - Fabricate and inspect installation kits.
- 507 MICAD - System Integration.
- 2388 MICAD - Conduct PPQT.
- 1200 MICAD - Initiate IOT&E.
- 684 JWARN - Initiate EMD.
- 5435 JCAD - Acquire, evaluate and demonstrate prototypes/breadboard units. Prepare and execute contract award effort and Milestone II decision.
- 1874 ACADA - Continue support of production and improve ACADA by developing surface sampling capability.
- 10603 CBMS - Design Modifications for Block II CBMS.
- 1873 CBMS - Conduct Biological and Chemical profiling for Block II CBMS.
- 5370 CBMS - Software Documentation/ADA (Military style software) Development.
- 550 JSLSCAD - Initiate EMD phase.
- 1172 JSLSCAD - USN design shipboard integration.
- 621 JSLSCAD - USN program integration support.
- 4128 JSLSCAD - Design EMD hardware for fixed site, ground vehicle and air applications.
- 3305 JSLSCAD - Design software and program/hardware documentation for all applications.
- 1547 JSLSCAD - System integration into identified transport service vehicles.
- 272 SALAD - Conduct OPEVAL, continue generation of technical data package and requisite acquisition documentation.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT CA5

•	888	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	52045	

FY 1998 Planned Program:

•	20	ACADA/AVAD - Continue support of production and fielding planning efforts.
•	3269	JCAD - Initiate, build and test hardware.
•	2290	JCAD - Initiate and develop software and systems integration for multiple platforms.
•	1290	JCAD - Initiate planning and development of equipment for test/flyoff.
•	1007	JCAD - Provide in-house program support.
•	512	JCAD - Plan an prepare documentation for EMD contract award.
•	400	JSLSCAD - Continue USN program integration support.
•	1351	JSLSCAD - Continue USN design and prototype testing of shipboard integration.
•	1500	JSLSCAD - Continue design of EMD hardware for fixed site, ground vehicles and air applications.
•	1200	JSLSCAD - Continue software design and program/hardware documentation for all applications.
•	1247	JSLSCAD - Initiate build of test hardware.
•	2840	JSLSCAD - Continue systems integration into identified transport service vehicles.
•	5	JSLSCAD - Continue USMC program integration support.
•	2122	LNBCRS - Provide in-house program support.
•	5037	LNBCRS - Fabricate EMD prototypes.
•	2054	MICAD - Fabricate/test/integrate installation kits.
•	950	MICAD - Continue IOT&E.
•	1480	MICAD - Plan and prepare documentation for production contract.
•	600	MICAD - Complete development and conduct MSIII type classification IPR.
•	4980	JWARN - Develop software for NBC Warning and Reporting and C2 interfaces.
•	1481	JWARN - Develop radio and fiber optic links to detectors with Global Positioning System (GPS) interface desired.
•	500	JWARN - Test engineer design of initial system.
•	249	SALAD - Complete system procurement documentation.
•	5289	CBMS - Complete design of EMD Block II system.
•	4986	CBMS - Complete software development.
•	1993	CMBS - Fabricate engineering prototypes.
Total	48652	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT CA5

FY 1999 Planned Program:

•	3620	JCAD - Continue and complete development of test hardware and software to include mission-specific components.
•	2255	JCAD - Initiate and conduct DT &E/flyoff.
•	1756	JCAD - Continue systems integration.
•	1180	JCAD - Continue in-house program and test support.
•	4536	JSLSCAD - Conduct engineering test.
•	2716	JSLSCAD - Conduct initial systems IOT&E.
•	2680	JSLSCAD - Initiate PQT.
•	5	JSLSCAD - Continue USMC program integration support
•	2282	LNBCRS - Continue in-house program support.
•	5358	LNBCRS - Contract fabrication of Light Armored Vehicle Variant (LAV)
•	5962	JWARN - Update hardware and software for Service specific C4I interfaces.
•	4075	CBMS - Conduct Engineering Tests.
•	3385	CMBS - Complete Algorithm Development/Verification.
•	3557	CBMS - Initiate development of Technical Documentation.
•	2017	CBMS - Retrofit engineering prototypes.
Total	45384	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	53133	45245	38693
Appropriated Value		52045		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	52045	48652	45384

Change Summary Explanation:

Funding: FY 1999: Additional funding restructured to JSLSCAD from lower priority CBDP efforts ($6691).

Schedule:

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: CA5

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
G47101 JWARN	0	7000	0	10591	9648	9771	12677	11521	Cont'd	Cont'd
B96801 Pocket Radiac, AN/UDR-13	0	3472	3345	3396	3101	3116	4096	8277	Cont'd	Cont'd
DA0600 NBC Reconnaissance System	46813	0	0	0	0	0	0	0	0	46813
D02200 Improved Chem Agt Monitor (ICAM)	4727	0	0	0	0	0	0	0	0	4727
M98801 Auto Chem Agt Alarm (ACADA/AVAD)	0	9808	15673	19746	23836	29328	0	0	Cont'd	Cont'd
MA0601 Recon Syst, Fox NBC (NBCRS) Mods	0	56681	26788	19040	25557	34779	9552	9979	Cont'd	Cont'd
S10801 Ltwt Standoff Chem Agt Detect (JSLSCAD)	0	0	0	0	0	9738	9751	9779	Cont'd	Cont'd
S10901 CB Mass Spectrometer	0	0	0	0	0	5885	9751	9779	Cont'd	Cont'd
D00010 Chem Warfare Detectors	5252	0	0	0	0	0	0	0	0	5252
D00040 CBR Equipment - Shipboard	480	0	0	0	0	0	0	0	0	480
DF0010 Chem/Bio Defense Equipment	10636	0	0	0	0	0	0	0	0	10636
MC0100 Lightweight NBCRS	0	0	0	0	0	43324	56320	57809	Cont'd	Cont'd
N00041 Shipboard Detector Modifications (IPDS, SALAD, SCAMP)	0	7134	5864	9512	10399	10850	5832	5397	Cont'd	Cont'd
S02201 Improved Chemical Agent Monitor	0	3109	9777	5817	9690	9738	0	0	Cont'd	Cont'd
DB9680 Pocket Radiac An/UDR-13	3613	0	0	0		0	0	0	0	3590
DM9680 Remote Chem Agent Alarm	3936	0	0	0	0	0	0	0	0	4034
JF0100 Joint Chemical Agent Detector (JCAD)	0	0	0	0	0	0	42255	41778	Cont'd	Cont'd
JA0001 Joint Svc Laser Active Stand-Off Chem Detector	0	0	0	0	0	0	0	9979	Cont'd	Cont'd
JF0101 In-Line Water Chem/Bio Detector	0	0	0	0	0	0	0	998	Cont'd	Cont'd
JX0002 System Fielding Support/SPARES		956	936	1109	1186	2172	2531	2598	Cont'd	Cont'd

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT CA5

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MICAD-Conduct PPT					X											
MICAD-Build Test Hardware						X										
MICAD-Conduct PPQT							X									
MICAD-Conduct IOT&E								X	X							
MICAD - MS III/TC STD										X						
JWARN - Initiate EMD							X									
JWARN - Develop Software for NBC Warning and Reporting and C2 Interfaces												X				
JWARN - Develop radio and fiber optic links												X				
JWARN - Engineer initial system												X				
JWARN - Update Hardware and Software for Service C4Is															X	
CBMS - Complete Critical Design Review										X						
CBMS - Complete software development											X					
CBMS - Fab Engineering Prototypes												X				
CBMS - Complete Engineering Tests														X		
CBMS - Complete Alogrithm Dev															X	
CBMS - Retrofit Engineering Prototypes																X
JSLSCAD - Initiate EMD Phase					X											
JSLSCAD - Design JSLSCAD Integration								X								
JSLSCAD - Build test hardware											X					
JSLSCAD - Conduct engineering test													X			
JSLSCAD - Conduct System 1 IOT&E																X
JSLSCAD - Initiate PQT																X
JSLSCAD - Complete systems build																X
SALAD - Techeval							X									
SALAD - Opeval								X								
SALAD - Program Milestone MS III								X								
SALAD - Contract Milestone Award													X			
JCAD - Market survey/product demo						X										

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BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: CA5

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JCAD - RFP Release							X									
JCAD - Milestone II Decision								X								
JCAD - EMD Contract Award										X						
JCAD - Initiate DT&E/flyoff												X				
JCAD - Initiate OT&E Planning															X	
LNBCRS - Milestone II									X							
LNBCRS - DTI									X							
ACADA - Milestone III Decision						X										
ACADA - Follow-on Production Validation Test							X									
ACADA - Special IPR (Surface Sampler)								X								

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense — PROJECT: CA5

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development/EMD	0	20842	19716	11749
Software Development	0	7050	7755	5950
Fabrication Hardware	0	4264	5378	6986
Technical Data/Documentation	0	2391	2724	4940
Developmental Test and Evaluation	0	5457	4518	6744
Operational Test and Evaluation	0	1670	2204	5575
Project Management	0	450	508	107
Integrated Logistics Support	0	3580	650	0
Contractor Engineering Support	0	1904	2108	2211
Government Engineering Support	0	3274	1855	0
Production Support	0	49	1136	1122
Program Office Support	0	226	100	0
SBIR/STTR	0	888	0	0
Total	0	52045	48652	45384

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: CO5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CO5 Collective Protection	0	0	1169	1272	1176	923	1486	1489	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CO5 - Collective Protection: This project provides EMD of Joint Service NBC collective protection systems that are smaller, lighter, less costly to build and maintain and more logistically supportable to enable mission accomplishment in NBC environments. Collective protection platforms include shelters, vehicles, ships, aircraft, buildings and hospitals. Shipboard Collective Protection will provide a contaminant-free environment within specified zone boundaries of high priority ships. Equipment developed under Shipboard CPE is critical to the viability of shipboard CPS due to improved effectiveness and greatly reduced logistic costs.

Acquisition Strategy:

Shipboard Collective Protection	In-house/Contract design, contractor fabrication of prototypes, in-house testing. Contractor procurement will be customer (ship platform in SCN budget) dependent.

FY 1996 Accomplishments: This Project funded in Project 017.

FY 1997 Planned Program: No Planned Program

FY 1998 Planned Program:

•	1169	Shipboard Collective Protection - Integrate high pressure fan and filter improvements for shipboard use.
Total	1169	

FY 1999 Planned Program:

•	1272	Shipboard Collective Protection - Complete integration and evaluate high pressure fan and filter improvements for shipboard use. Complete shipboard documentation.
Total	1272	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: CO5

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	426
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	0	1169	1272

Change Summary Explanation:

Funding: FY 1998/1999: Service programs and funding restructures.

Schedule:

Technical: FY 1998/1999: Restructured Navy Shipboard Collective Protection Equipment program.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,D Budget Activity 5, PE 0604384BP, Proj 017 NBC Protection Systems	4218	0	0	0	0	0	0	0	0	4218

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Shipboard Collective Protection - Ship/ install prototype equipment.									X							
Shipboard Collective Protection - Complete test and evaluation.															X	
Shipboard Collective Protection-Conduct Milestone IV																X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT CO5

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development/EMD	0	0	527	120
Software Development	0	0	0	0
Fabrication Hardware	0	0	239	180
Technical Data/Documentation	0	0	238	110
Developmental Test and Evaluation	0	0	115	320
Operational Test and Evaluation	0	0	0	300
Project Management	0	0	50	50
Integrated Logistics Support	0	0	0	192
Total	0	0	1169	1272

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: IP5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
IP5 Individual Protection	0	3471	6023	9815	12091	17087	21894	13157	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project IP5 - Individual Protection: This project provides EMD of individual protection equipment, such as the Explosive Ordnance Disposal (EOD) ensemble, aimed at maintaining current protection levels while reducing physiological and logistical burdens. The goal is to provide equipment which allows the individual soldier, sailor, airman or marine to operate in a contaminated NBC environment with no or minimal degradation of his/her performance. Funding is provided for: (1) Design of Aircrew Eye-Respiratory Protection (AERP) systems modification kits to install in aircraft, (2) Navy/Marine Aircrew CB NDI Respirator System, (3) Completion of Joint Service Lightweight Suit Technology (JSLIST) EMD phase, (4) Joint Service General Purpose Mask program initiation and (5) Joint Service Aviation Mask and (6) completion of ITAP EMD.

Acquisition Strategy: Contract developmental and fabrication of prototype test hardware.

FY 1996 Accomplishments: This program funded in Projects 017, L40, 041, 060, and F37.

FY 1997 Planned Program:

•	340	EOD Ensemble - Complete EMD and support production for joint service program Improved Toxicological Agent Protective (ITAP) Suit.
•	1164	JSLIST - Complete EMD.
•	162	JSLIST - Support procurement and fleet introduction.
•	447	Naval Aircrew CB NDI Respirator- Support transition into production.
•	1299	AERP - Design aircraft modification kits for integration into aircraft.
•	59	SBIR/STTR
Total	3471	

FY 1998 Planned Program:

•	282	AERP Aircraft Modifications - Support integration of modifications into aircraft.
•	996	JSLIST P3I - Evaluate initial candidate materials.
•	622	JSLIST P3I - Prepare solicitation package for test items.
•	4123	JSLIST P3I - Procure and test prototypes.
Total	6023	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
PROJECT IP5	

FY 1999 Planned Program:

•	3775	Joint Service General Purpose Mask Program - Primary design and prototype evaluation.
•	823	AERP Aircraft Modifications - Support design and integration of modifications into aircraft.
•	5217	JSLIST P3I - Complete testing analysis and candidate selection, revise JSLIST specification for technology insertion and verify production items.
Total	9815	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	3544	558	419
Appropriated Value		3471		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	3471	6023	9815

Change Summary Explanation:

Funding:

FY 1998: Funding for JSLIST P3I transferred from PE 0603884BP, Project IP4 ($5768K). Other economic adjustments ($-303K).

FY 1999: Funds moved from PE 0603884BP, Project IP4 from Improved Respirator Program to new Joint General Purpose Mask Program ($3799K). Funding for JSLIST P3I transferred from PE 0603884BP, Project IP4 ($5,217K). Increased funding for AERP Aircraft Mods ($380K).

Schedule:

FY1999: Initiate Joint Service General Purpose Mask.

Technical:

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT IP5

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement										
MA0400 Protective Clothing	0	59620	35089	39562	40376	31300	38836	40514	Cont'd	Cont'd
M99501 Mask, Acft	0	7399	5882	2283	0	0	0	0	0	15564
JN0011 AERP Aircraft Mods	0	0	1439	1224	2028	977	1374	1046	Cont'd	Cont'd
JX0001 System Fielding Support/Spares	0	1073	988	711	693	99	100	349	Cont'd	Cont'd
JA0002 Joint Service Aviation Mask	0	0	0	0	0	0	0	8632	Cont'd	Cont'd

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: IP5

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSLIST - Milestone III						X										
JSLIST P3I- Conduct Development/ Operational Testing										X	X					
JSLIST P3I - Downselect to Production Candidates													X			
JSLIST P3I- Prove Out Production													X	X	X	
Naval Aircrew NDI Resp - MS III						X										
Naval Aircrew NDI Resp - Contract MS Production Option								X								
EOD Ensemble - Milestone III								X								
AERP - Aircraft Mod Designs						X										
AERP - Modify Aircraft										X				X		
Joint Service General Purpose Mask - Design & prototype evaluation														X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT IP5

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development/EMD	0	984	0	1384
Software Development	0	0	0	900
Developmental Test and Evaluation	0	20	2969	100
Technical Data/Documentation	0	0	457	1426
Operational Test and Evaluation	0	380	760	632
Integrated Logistics Support	0	194	778	653
Contractor Engineering/Management Support	0	604	57	156
Government Engineering Support	0	40	0	289
Production Prove Out	0	0	0	3675
Aircraft Modification Design/Integration	0	954	150	450
Program Office Support	0	236	852	150
SBIR/STTR	0	59	0	0
Total		3471	6023	9815

B. Budget Acquisition History and Planning Information: Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: MB5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MB5 Medical Biological Defense	0	9044	16500	15646	43665	49725	50683	45954	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project MB5 - Medical Biological Defense: This project is a realignment of BD2 to more closely match the development phase of medical biological defense products. This project funds the engineering/manufacturing and development phase (EMD) of vaccines, drugs and diagnostic medical devices which are directed against validated biological warfare (BW) agents to include bacteria, viruses, and toxins of biological origin. The EMD phase of medical biological defense product development largely involves phase 2 expanded clinical and experimental efforts which evaluate product safety and efficacy. Results from these efforts and those conducted during program definition and risk reduction (PDRR) phase will be used to submit product and establishment applications to the Food and Drug Administration (FDA) for product licensure.

Acquisition Strategy: A prime systems contract will be awarded in FY97 for a single integrator to manage the advanced development, production and storage of biological defense medical products. Involvement by the prime contractor in the EMD phase is critical for the successful development of product safety, efficacy, and production data which the prime submits for FDA product approval.

FY 1996 Accomplishments: This Project funded in PE0604384BP, Project BD2.

FY 1997 Planned Program:

•	3650	Award prime systems contract for the Joint Vaccine Acquisition Program. Begin EMD on Q-fever vaccine, tularemia vaccine, and vaccinia (small pox) vaccine.
•	2791	Contractor and program management support for source selection process of the prime contract, for completion of the programmatic environmental analysis, and for special studies to identify and recommend approaches to legal and regulatory issues that may arise from the JVAP prime contract.
•	1933	Conduct clinical trials, complete data collection/analysis, and prepare license applications to the FDA for botulinum pentavalent vaccine.
•	223	Testing of Investigation New Drug (IND) vaccines and antisera to ensure safety and potency during storage and to meet FDA regulations.
•	200	Support for the special immunization program at Ft. Detrick to protect at risk personnel from exposure to potential BW agents in the laboratory and in field.
•	90	Continue clinical and non-clinical studies evaluating the protective immunity stimulated by a reduced immunization schedule with anthrax vaccine.
•	157	SBIR/STTR.
Total	9044	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT MB5

FY 1998 Planned Program:

•	13949	Continue EMD efforts by the prime contractor on Q-fever vaccine, tularemia vaccine, and vaccinia vaccine.
•	1594	Continue clinical and non-clinical studies evaluating the protective immunity stimulated by a reduced immunization schedule with anthrax vaccine and compile data for a license amendment.
•	738	Initiate phase 2 clinical trials and nonclinical studies on despeciated botulinum antiserum.
•	219	Complete license applications for old botulinum pentavalent vaccine.
Total	16500	

FY 1999 Planned Program:

•	14674	Continue EMD efforts by the prime contractor on Q-fever vaccine, tularemia vaccine, and vaccinia vaccine.
•	819	Complete efforts leading to license amendment for reducing number of immunizations for anthrax vaccine.
•	153	Continue EMD studies on safety and efficacy of despeciated botulinum antiserum.
Total	15646	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: MB5

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget		3833	8151	12255
Appropriated Value		9044		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request		9044	16500	15646

Change Summary Explanation:

Funding: FY1997: Congressional reallocation of $5.4M from Vaccine procurement.

FY1998/99: Restructure of Procurement funding (DOD Biological Vaccine Program) for increased phase 2 studies (FY98 - $8,430K; FY99 - $3,490). Other management adjustments (FY98 - $-81K; FY99 - $-99K).

Schedule:

Technical:

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E,D Budget Activity 5, PE0603884BP, Proj BD2, Joint Biological Defense - Medical	5358	0	0	0	0	0	0	0	0	5358
Procurement:										
SSN:JX0005 DOD Biological Vaccine Program		11915	24091	13664	22100	36427	43338	47204	Cont'd	Cont'd

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Began clinical studies collecting data to change FDA license for anthrax vaccine	X															
Conducted studies on pentavalent vaccine (A-E) support application for FDA licensure of existing stockpile	X															
Began clinical evaluations of volunteers to determine effects of multiple immunizations with BD vaccines	X															

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: MB5

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Produced cGMP lots of different vaccines against Venezuelan equine encephalomyeelitis virus and staphylococcal enterotoxin B			X													
Award prime systems contract							X									
Begin EMD; (long-term (4-5yrs) human trials on product safety and efficacy) for tularemia vaccine							X	X	X	X	X	X	X	X	X	X
Begin EMD; (long-term (4-5yrs) human trials on product safety and efficacy) for Q-fever vaccine							X	X	X	X	X	X	X	X	X	X
Begin EMD; (long-term (4-5yrs) human trials on product safety and efficacy) for vaccinia vaccine							X	X	X	X	X	X	X	X	X	X
Complete license application for old bottoxoid vaccine												X				

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE: February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense	PROJECT: MB5

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY1999
Preproduction		2920	11159	11739
Test and Evaluation		2701	3308	1999
Regulatory Affairs		146	777	587
System Integration		3120	1256	1321
SBIR		157	0	0
Total		9044	16500	15646

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense

PROJECT: MC5

COST (*In Thousands*)	FY 1996 Actual*	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MC5 Medical Chemical Defense	0	213	5265	1792	794	1190	1586	1687	Continuing	Continuing

A. **Mission Description and Budget Item Justification**

Project MC5 - Medical Chemical Defense Life Support Materiel: This project funds the development of medical materiel and other medical equipment items necessary to provide an effective capability for medical defense against chemical agent threats facing U.S. forces in the field. This project supports research efforts in the engineering and manufacturing development phases of the acquisition strategy for pretreatment theraputic drugs, diagnostic equipment, and other life support equipment for protection against and management of chemical warfare agents.

Acquisition Strategy: Test and evaluate in-house and commercially developed products in government managed trials.

FY 1996 Accomplishments: This Project funded in Project 848.

FY 1997 Planned Program:

•	209	Prove extended stability of the medical aerosolized nerve agent antidote and prepare New Drug Application (NDA) for topical skin protectant.
•	4	SBIR/STTR
Total	213	

FY 1998 Planned Program:

•	1177	Initiate human exercise performance, definitive effectiveness studies and stability testing for cyanide pretreatment.
•	1214	Submit NDA and initiate stability testing for TSP.
•	15	Initiate Convulsant Antidote Nerve Agent (CANA) long-term stability testing.
•	884	Complete testing and development of Multichambered Autoinjector.
•	1975	Conduct type classification of CB collective protection shelter.
Total	5265	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense
	PROJECT MC5

FY 1999 Planned Program:

•	70	Conduct stability testing and respond to regulatory requirements for multichamber autoinjector.
•	13	Complete CANA long-term stability testing.
•	447	Update of regulatory documents and conduct LRIP for TSP after NDA approval.
•	1262	Conduct large-scale effectiveness and safety studies for cyanide pretreatment.
Total	1792	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	217	205	157
Appropriated Value		213		
Adjustments to Appropriated Value		0		
FY 1998 Pres Bud Request	0	213	5265	1792

Change Summary Explanation:

Funding: FY 1998: Program restructured to allow for type classification - standard of CB Collective Protection Shelter ($1975K) and funds restructured from PE0603884BP, Project MC4 for EMD/FDA requirements ($3085K).

FY 1999: Funds restructured from PE0603884BP, Project MC4 for EMD/FDA requirements ($1635K)

Schedule:

Technical:

C. Other Program Funding Summary:

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement										
R12301 CB Protective Shelter (CBPS)	0	5257	17292	12046	0	0	0	0	Cont'd	Cont'd
D12300 CB Protective Shelter (CBPS)	11064	0	0	0	0	0	0	0	0	11064

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604384BP Chemical/Biological Defense — PROJECT: MC5

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Topical Skin Protectant - File NDA						X										
MANAA - Stability studies IPR								X								
CBPS - TC Milestone III												X				
MANAA - Reformation/stability studies IPR																X
Topical Skin Protectant - MS III													X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604384BP Chemical/Biological Defense PROJECT MC5

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test and Evaluation		26	5002	1117
Project Development		91	88	140
Project Management		79	80	75
Regulatory Affairs		13	95	460
SBIR/STTR		4	0	0
Total		213	5265	1792

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 6 - Management Support

PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7007	16365	18730	17677	15182	15641	16579	16676	Continuing	Continuing
D049 Joint Chemical/Biological Contact Point and Test	1616	0	0	0	0	0	0	0	0	1616
AT6 Anti-Terrorism	0	0	3688	3010	497	497	496	497	Continuing	Continuing
CP06 Counterproliferation Support	1581	0	0	0	0	0	0	0	0	1581
O49 Joint Chemical/Biological Contact Point and Test	0	1572	1689	1694	1679	1669	1818	1872	Continuing	Continuing
MS6 Management Support	3810	3407	4073	3390	3602	3677	4179	3904	Continuing	Continuing
DW6 Dugway Proving Ground	0	11386	9280	9583	9404	9798	10086	10403	Continuing	Continuing

Mission Description and Budget Item Justification: This program element provides for the Joint Chemical/Biological (CB) Contact Point and Test, financial/program management of the Joint Service Chemical and Biological Defense Program, and sustainment of a technical test capability at Dugway Proving Ground and support to DOD response to CB terrorism.

The objectives of the CB Contact Point and Test program are to plan, conduct, evaluate, and report on joint tests (for other than developmental hardware) and accomplish operational research assessments in response to requirements received from the Services. This program will provide ongoing input to the Services for development of doctrine, policy, training procedures, and feedback into the RDT&E cycle.

This program provides management support for the DOD NBC defense program to allow program overview and integration of overall medical and non-medical programs by the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs), financial management support by the Ballistic Missile Defense Organization (BMDO), integration of Joint requirements, training and doctrine by the Joint Service Integration Group (JSIG), Joint Research, Development and Acquisition (RDA) planning, input to annual report to Congress and Program Objective Memorandum (POM) Strategy development by the Joint Service Materiel Group (JSMG).

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense

Funding for Dugway Proving Ground provides for Chemical Biological Defense testing of DoD material, weapons and weapon systems from concept through production. It finances indirect test operating costs not billable to test customers, maintenance cost of test facilities, replacement of test equipment and test modernization projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations and technological advances.

Funding for Anti-terrorism provides DoD with a process and means to conduct assessments of installation vulnerabilities to Chemical/Biological threats.

This program includes research and development effort directed toward support of installations or operations required for general research and development use and therefore appropriate to Budget Activity 6.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 6 - Management Support

PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense

PROJECT: D049

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D049 Joint Chemical/Biological Contact Point and Test	1616	0	0	0	0	0	0	0	0	1616

A. Mission Description and Budget Item Justification

Project D049 - Joint Chemical/Biological Contact Point and Test: This project funds the conduct of chemical/biological (CB) field trials, laboratory tests, and maintenance of a repository of CB information for multiple users.

FY 1996 Accomplishments:

•	1265	Initiated six assessments, three field trials and two laboratory tests evaluating performance and procedures in a chemical environment.
•	80	Updated VX Source Book.
•	271	Continued automation of Joint Technical Information Center.
Total	1616	

FY 1997 Planned Program: This project transferred to Project O49.

FY 1998 Planned Program: This project transferred to Project O49.

FY 1999 Planned Program: This project transferred to Project O49.

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1671	0	0	0
Appropriated Value	1702			
Adjustments to Appropriated Value	-86			
FY 1998 Pres Bud Request	1616	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense
	PROJECT D049

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. **Other Program Funding Summary:** Refer to Project O49

D. **Schedule Profile:** These efforts are continuous in nature, therefore no milestones or events are provided.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 6 - Management Support

PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense

PROJECT: AT6

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
AT6 Anti-Terrorism	0	0	3688	3010	497	497	496	497	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** The growing threat of the use of Chemical/Biological agents in an act of terrorism places the United States Armed Forces installations and personnel at risk. In light of the growing threat this project provides DoD a process and means to conduct assessments of installations' vulnerabilities to Chemical/Biological threats as relates to anti-terrorism. The knowledge gained is to be integrated into training to be provided to the U.S. forces both in CONUS and overseas.

Acquisition Strategy:

FY 1996 Accomplishments: No program.

FY 1997 Planned Program: No program.

FY 1998 Planned Program:

•	1502	Develop a process for assessing an installations' vulnerability to Chemical/Biological threats.
•	1689	Establish a team to conduct assessments and conduct vulnerability assessments at various DoD installations.
•	497	Develop and conduct training in response to Chemical/Biological threats.
Total	3688	

FY 1999 Planned Program:

•	2513	Continue to conduct vulnerability assessments at various DoD installations.
•	497	Continue to develop and conduct training in response to Chemical/Biological threats.
Total	3010	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
Previous President's Budget	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
Current Budget Submit/President's Budget	0	0	3688	3010

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 6 - Management Support	PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense / PROJECT: AT6

Change Summary Explanation:

Funding: FY1998/99 - Funding added in response to DOD Directive 2000.12, "DOD Combating Terrorism Program," dated September 15, 1996 and the Downing Task Force Report, "Global Interests/Global Responsibilities," dated September 16, 1996.

Schedule:

Technical:

C. Other Program Funding Summary: N/A

D. Schedule Profile:

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Develop assessment process									X	X	X	X				
Initiate conduct of assessments												X				
Conduct assessments													X	X	X	X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense	PROJECT CP06

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
CP06 Counterproliferation Support	1581	0	0	0	0	0	0	0	0	1581

A. Mission Description and Budget Item Justification

Project CP06 - Counterproliferation Support: The activities of this project directly support the Counterproliferation Support Program (CPSP) managed by the Deputy for Counterproliferation, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (DATSD(NCB) (CP)). Project CP06 funds support the following activities:

(1) Four research projects of the Center for Counterproliferation Research (CCR), National Defense University (NDU). The research projects address the implications of the global proliferation of nuclear, biological and chemical (NBC) weapons to U.S. national security education; national security policy development; military operations, doctrine, and training; and bilateral and multilateral international cooperation. (2) Development of an approach and a series of analytical products that will simulate the operational impact of hostile chemical (CW) and/or biological weapons (BW) employment against U.S. forces. (3) Analyses and planning activities necessary for program development, project prioritization and management oversight.

FY 1996 Accomplishments:

- 238 Research Project 1: Establish Common Understanding of the Implications of NBC Employment
  -- Completed initial survey and qualitative assessment of historical and current studies and models concerned with the implications of an adversary's use of CW and BW against U.S. forces across the spectrum of military operations.

  Research Project 2: Joint Doctrine and Operations--Implications of the NBC Threat
  -- Completed analysis and documentation of the results and lessons learned from a series of workshops conducted by the NDU CCR in FY95 for each of the military services. The workshops examined the effects of NBC proliferation on Service doctrine and operational capabilities.
  -- Completed analysis and documentation of adversarial NBC doctrine and tactics.
  -- Conducted survey of current joint NBC doctrine.
  -- In conjunction with the Joint Warfighting Center, began analysis of NBC events in current joint war games.

  Research Project 3: Chemical and Biological Weapons Deterrence--Lessons Learned from the Gulf War
  -- Completed initial draft of report to summarize the key BW and CW deterrence decision making events during the Persian Gulf War.
  -- Began process of arranging workshop to discuss NBC deterrence and defense. The workshop participants will consist of former senior DoD officials who participated in BW and CW decision making events during the Gulf War.

  Research Project 4: Nuclear Smuggling--Defining the Issue
  -- Completed baseline research for development of a systematic model for describing nuclear smuggling pathways.
  -- Completed proof-of-concept modeling.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense PROJECT CP06

•	799	Initiated contractual effort to improve and expand the methodology for simulating the operational impact of hostile chemical and biological weapons employment against friendly forces using the METRIC model for joint/coalition warfare. Effort is ongoing.
•	544	Program management and planning support; Counterproliferation (CP) technical analyses support and acquisition program oversight support; CP architectural studies and assessments.
Total	1581	

FY 1997 Planned Program: No Planned Program.

FY 1998 Planned Program: No Planned Program.

FY 1999 Planned Program: No Planned Program.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense
	PROJECT CP06

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3081	0	0	0
Appropriated Value	3200			
Adjustments to Appropriated Value	-1619			
FY 1998 Pres Bud Request	1581	0	0	0

Change Summary Explanation:

Funding: FY1996: Various economic adjustments ($-55K) and ($-1445K) was reprogrammed to other Counterproliferation Support Program PEs to fund CINC-identified higher priority counterproliferation warfighting capabilities. Of the reprogrammed ($1445K), ($925K) was reprogrammed to Project P539, PE 0603160D and ($524K) was reprogrammed to Project P05, PE 0604384BP.

Schedule: FY1996: No impact on project schedules.

Technical: No impact.

C. Other Program Funding Summary Refer to Project O49.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 6 - Management Support

PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense

PROJECT: CP06

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Survey of historical BW/CW military use complete			X													
Analysis/documentation of BW/CW and Joint doctrine and operations complete			X													
Report summarizing key BW/CW deterrence decision making events during Gulf War complete				X												
Baseline research for nuclear smuggling pathways model complete			X													
Development plan for wargaming use of BW complete				X												
Program management/planning	X	X	X	X												
CP architectural studies and assessments			X	X												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense PROJECT O49

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
O49 Joint Chemical/Biological Contact Point and Test	0	1572	1689	1694	1679	1669	1818	1872	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project O49 - Joint Chemical/Biological Contact Point and Test: This project funds the conduct of chemical/biological (CB) assessments, field trials, and laboratory tests.

FY 1996 Accomplishments: This project funded in Project D049.

FY 1997 Planned Program:

•	636	Conduct six assessments evaluating performance and procedures in a chemical environment.
•	600	Conduct three field trials evaluating performance and procedures in a chemical environment.
•	308	Conduct two laboratory tests evaluating performance and procedures in a chemical environment.
•	28	SBIR/STTR
Total	1572	

FY 1998 Planned Program:

•	696	Conduct assessments evaluating performance and procedures in a chemical environment.
•	656	Conduct field trials evaluating performance and procedures in a chemical environment.
•	337	Conduct laboratory tests evaluating performance and procedures in a chemical environment.
Total	1689	

FY 1999 Planned Program:

•	700	Conduct assessments evaluating performance and procedures in a chemical environment.
•	656	Conduct field trials evaluating performance and procedures in a chemical environment.
•	338	Conduct laboratory tests evaluating performance and procedures in a chemical environment.
Total	1694	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense PROJECT O49

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	1605	1598	1605
Appropriated Value		1572		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	1572	1689	1694

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary: N/A

D. Schedule Profile: These efforts are continuous in nature, therefore no milestones or events are provided.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 6 - Management Support

PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense

PROJECT: MS6

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MS6 Management Support	3810	3407	4073	3390	3602	3677	4179	3904	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project MS6 - Management Support: Management Support for the DoD NBC defense program will provide program overview and integration of overall medical and non-medical programs by the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs), financial management support by the Ballistic Missile Defense Organization (BMDO), integration of Joint requirements, training and doctrine by the Joint Service Integration Group (JSIG), Joint Research Development Acquisition (RDA) planning, input to annual report to Congress and Program Objective Memorandum (POM) Strategy development by the Joint Service Materiel Group (JSMG), and programming support provided for the Joint Service Chemical Biological Information System (JSCBIS).

FY 1996 Accomplishments:

- 1099 Performed program oversight, assessment and policy development.
- 259 Provided funding distribution, financial management and database support.
- 857 Developed Joint requirements, training, doctrine documentation and Joint Modernization Plan.
- 1595 Developed FY98-03 POM Strategy, Research, Development and Acquisition (RDA) Plan, conducted execution review with budget formulation recommendations, completed Industrial Base Assessment and initiated Logistics Support Plan.

Total 3810

FY 1997 Planned Program:

- 700 Perform program review/oversight and assessment, policy development, and integrate, support and publish Annual Report to Congress.
- 200 Provide funding distribution and execution review/BMDO financial management.
- 150 Provide JSCBIS database support.
- 1498 Develop and update RDA plan, POM Strategy, logistics support plan, Budget Estimate, President's Budget and input to Annual Report to Congress.
- 800 Develop Joint requirements, training and doctrine documentation, Joint Modernization Plan, and input to Annual Report to Congress.
- 59 SBIR/STTR

Total 3407

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense
	PROJECT MS6

FY 1998 Planned Program:

•	837	Perform Program Review/Assessments, provide programmatic PPBS overview/analysis, and provide Congressional issue analysis and support.
•	200	Provide funding distribution and execution review/BMDO financial management.
•	175	Provide JSCBIS database support.
•	1945	Develop assessments to support RDA Plan, provide analytic programmatic support for development of POM Strategy and build Budget Estimate (BES) and President's Budget (PB) submissions, and respond to specialized evaluation studies throughout the PPBS process.
•	916	Develop assessments to support the Joint Modernization Plan, provide analytic support for development of Joint Requirements, training and doctrine documentation and respond to specialized evaluation studies throughout the PPBS process.
Total	4073	

FY 1999 Planned Program:

•	788	Perform Program Review/Assessments, provide programmatic PPBS overview/analysis, and provide Congressional issue analysis and support.
•	200	Provide funding distribution and execution review/BMDO financial management.
•	190	Provide JSCBIS database support.
•	1298	Develop assessments to support RDA Plan, provide analytic programmatic support for development of POM Strategy and build Budget Estimate (BES) and President's Budget (PB) submissions, and respond to specialized evaluation studies throughout the PPBS process.
•	914	Develop assessments to support the Joint Modernization Plan, provide analytic support for development of Joint Requirements, training and doctrine documentation and respond to specialized evaluation studies throughout the PPBS process.
Total	3390	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	3478	3461	3413
Appropriated Value		3407		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	3810	3407	4073	3390

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense
	PROJECT MS6

Change Summary Explanation:

Funding: FY1996: CBDP Management Support financed from all R&D projects ($3,810K).

FY1998: Adjustment of CBDP program to support JSMG expanded mission in Budget Formulation Process ($612K).

Schedule:

Technical:

C. Other Program Funding Summary: N/A

D. Schedule Profile: These efforts are continuous in nature, therefore no milestones or events are provided.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 6 - Management Support

PE NUMBER AND TITLE: 0605384BP Chemical/Biological Defense

PROJECT: DW6

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DW6 Dugway Proving Ground	0	11386	9280	9583	9404	9798	10086	10403	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project DW6 - Dugway Proving Ground: Project provides a technical capability for testing DoD material, weapons and weapon systems from concept through production. It finances indirect test operating costs not billable to test customers, maintenance cost of test facilities, replacement of test equipment and test modernization projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations and technological advances. Funding transferred from Army budget PE 0605601A Project DE9 to the OSD Chemical/Biological Defense Program.

FY 1996 Accomplishments: Project funded in PE 0605601A, Project DE9.

FY 1997 Planned Program:

•	5204	Provide direct test support labor.
•	3273	Provide contract support.
•	1618	Finance restructuring of personnel.
•	695	Finance indirect operating costs.
•	395	Maintain test facility .
•	201	SBIR/STTR
Total	11386	

FY 1998 Planned Program:

•	5309	Provide direct test support labor.
•	3085	Provide contract support.
•	468	Finance indirect operating costs.
•	418	Maintain test facility .
Total	9280	

RDT&EBUDGET ITEMJUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 6 - Management Support	PE NUMBER AND TITLE 0605384BP Chemical/Biological Defense
	PROJECT DW6

FY 1999 Planned Program:

•	4771	Provide direct test support labor.
•	3365	Provide contract support.
•	523	Finance restructuring of personnel.
•	497	Finance indirect operating costs.
•	427	Maintain test facility .
Total	9583	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	11625	9326	9643
Appropriated Value		11386		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	11386	9280	9583

Change Summary Explanation:

Funding:

Schedule:

Technical:

C. Other Program Funding Summary: N/A

D. Schedule Profile These efforts are continuous in nature, therefore no milestones or events are provided.

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DEFENSE INFORMATION SYSTEMS AGENCY

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Defense Information Systems Agency
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999	Sec
				Thousands of Dollars				
21	0305108K	Command and Control Research	2	1,705	1,814	1,937	2,013	U
	Applied Research			1,705	1,814	1,937	2,013	
114	0208045K	C3 Interoperability	7	24,712	24,941	25,670	26,648	U
118	0302016K	National Military Command System-Wide Support	7	1,995	1,978	2,064	2,099	U
119	0302019K	Joint/Defense Information Systems Engineering and Integration	7	3,622	4,468	4,721	4,971	U
120	0303126K	Long-Haul Communications (DCS)	7	17,788	22,479	14,520	15,254	U
121	0303127K	Support of the National Communications System	7	3,486	3,808	4,552	4,545	U
122	0303129K	Defense Message System	7		1,353			U
123	0303131K	Minimum Essential Emergency Communications Network (MEECN)	7	2,620	2,110	2,381	2,450	U
127	0303149K	C4I for the Warrior	7		2,851			U
128	0303153K	Joint Spectrum Center	7	4,702				U
	Operational Systems Development			58,925	63,988	53,908	55,967	
Total	Defense Information Systems Agency			60,630	65,802	55,845	57,980	

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RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/02					**R-1 ITEM NOMENCLATURE** C2 Research/P.E. 0305108K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Command and Control Research/A10	1.705	1.814	1.937	2.013	2.075	2.138	2.183	2.235	Contg	Contg

A. Mission Description and Budget Item Justification:

This program element represents DISA's portion of a joint DISA/multi-service effort that supports research into emerging technologies, methodologies and theories of military command and control (C2), the application of research results to resolve the problems of C2 associated with joint operations and the optimal use of MILDEP laboratory resources. Accordingly, this program element is located in Budget Activity 02. The C2 research program was initiated to develop C2 as a scientific discipline, foster joint service techbase cooperation and demonstrations and develop a C2 curriculum for DOD.

The project supports command and control basic research and applied research. The project consists of research and studies for high level issues in command and control, and the development of curricula for National Defense University, Naval Post Graduate School and the Service War colleges. It addresses joint techbase issues including joint distributed ADP, Joint War Gaming, and technology sharing.

FY1996 Accomplishments

- Continued coordinating and managing the Joint Service C3 Science and Technology Program, developing an annual Joint Service Plan for C3 Research. Supported the development and execution of the Deputy Director of Research and Engineering (DDR&E) Advanced Concepts Technology Demonstrations (ACTDs) using the Joint Warfare Information Demonstration (JWID) ($210K) (AUG 96)
- Continued development and demonstration within the Global Grid test bed environment of Multi-level Security and data fusion ($270K) (SEP 96)
- Continued C3 Decision Aids and Data Fusion Symposia and the information exchange through Technical Panels for C3 (TPC3)subpanels. Formalized the expansion into the international arena. ($405K) (SEP96)
- Continued basic and applied research in C2 architecture's theory and analysis tools. Continued basic research in Conditional Event Probability Algebraic Logic (CEPAL)and its application to the C3 process ($520K) (SEP 96)
- Continued C2 curricula for National Defense University and other DOD schools and analysis and studies of high level C3 issues. ($300K) (SEP 96) $1.705M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/02					**R-1 ITEM NOMENCLATURE** C2 Research/P.E. 0305108K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Command and Control Research/A10	1.705	1.814	1.937	2.013	2.075	2.138	2.183	2.235	Contg	Contg

FY1997 Plans:

- Continue coordinating and managing the Joint Service C3 Science and Technology Programs and developing an annual Joint Service Plan for C3 Research. Support development and execution of the Deputy Director of Research and Engineering (DDR&E) Advanced Concepts Technology Demonstrations (ACTDs) using the Joint Warfare Information Demonstrations (JWID). ($400K) (AUG 97)
- Continue demonstrations within the Global Grid testbed environment of Distributed Computing Environment(DCE) capabilities in Multi-Media Security and fusion. Incorporate research into JWID arena for demonstration. ($240K) (SEP 97)
- Continue C3 Decision Aids and Data Fusion Symposia and the information exchange through the TPC3 subpanels. Formalize the expansion into the international arena. Hold first international Symposia in Europe. ($315K) (AUG 97)
- Continue basic and applied research in C2 architecture's theory and analysis tools. Continue basic research in Conditional Event Probability Algebraic Logic and its application to the C3 process. ($509K) (SEP 97)
- Continue C2 curricula for National Defense University and other DOD schools and analysis and studies of high level C3 issues ($350K) (SEP 97)

$1.814M Total

FY1998 Plans:

- Continue C3 Decision Aids Data Fusion Symposia. Continue to formalize the international expansion of the Symposia effort. Host the second international C3 Symposia in Europe/UK. ($400K) (JUNE/SEP 98)
- Continue development of the C2 reference model and its application. ($250K) (SEP 98)
- Continue basic and applied research in C2 architecture's theory and analysis capability. Develop applications for analyses and tools. ($550K) (JUNE 98)
- Continue development of C2 and Information Warfare related curricula for National Defense University and other DOD schools. ($393K) (SEP 98)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/02

R-1 ITEM NOMENCLATURE
C2 Research/P.E. 0305108K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Command and Control Research/A10	1.705	1.814	1.937	2.013	2.075	2.138	2.183	2.235	Contg	Contg

- Continue analysis and studies of C3 and Information Warfare high level issues. Continue with the establishment of the Advanced Concepts Technology (ACT) program as the DOD center of excellence for lessons learned. ($344K) (JUNE 98)

$1.937M Total

FY1999 Plans:

- Continue C3 Decision Aids/Data Fusion Symposia. Continue to formalize the international expansion of the Symposia effort. Host the third international C3 Symposia in Europe/UK. ($400K) (JUNE/SEP 99)
- Continue development of the C2 reference model and its application. ($200K) (SEP 99)
- Continue basic and applied research in C2 architecture's theory and analysis capability. Develop applications for analyses and tools. ($450K) (JUNE 99)
- Continue development of C2 and Information Warfare related curricula for National Defense University and other DOD schools. ($478K) (SEP 99)
- Continue analysis and studies of high level C3 and Information Warfare issues. ($485K) (AUG 99)

$2.013M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/02					**R-1 ITEM NOMENCLATURE** C2 Research/P.E. 0305108K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Command and Control Research/A10	1.705	1.814	1.937	2.013	2.075	2.138	2.183	2.235	Contg	Contg

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	1.819	1.856	1.944	2.024
Appropriated Value	1.999	1.856		
Adjustments to Appropriated Value	-.294	-.042		
Adjustments to Budget Year since FY 1997 President's Budget			-.007	-.011
Current Budget Submit/President's Budget (FY 1998)	1.705	1.814	1.937	2.013

Change Summary Explanation:
Funding: FY96 and FY97 reductions due to Congressional adjustment to Defense-wide Investment Appropriation and below threshold reprogramming.

C. Other Program Funding Summary: N/A

D. Schedule Profile
(U) FY1996
Contract/study delivered 2nd quarter FY96
(U) FY1997
Contract/study delivered 3rd quarter FY97
(U) FY1998
Contract/study delivered 3rd quarter FY98
(U) FY1999
Contract/study delivered 3rd quarter FY99

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
C3 Interoperability 0208045K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE: 0208045K	24.712	24.941	25.670	26.648	28.227	29.867	30.509	31.205	Contg	Contg
T20 Center for Standards	2.294	1.674	1.632	1.677	1.840	1.988	2.025	2.067	Contg	Contg
T80 Technology Assessment and Insertion	.572	.550	.582	.598	.654	.707	.728	.751	Contg	Contg
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg
T40 Major Range and Test Facility Base (MRTFB)	7.356	7.674	8.009	8.344	8.860	9.368	9.489	9.525	Contg	Contg

A. Mission Description & Budget Item Justification:

To ensure interoperability and integration of Command, Control, Communications and Intelligence (C3I) systems through development and maintenance of a joint global architecture, interface and system standards, interface definitions, operational procedures and a test and certification program for C3 systems; and to function as an Operational Test Agency (OTA) to test/certify the Defense Information Systems Network (DISN), Defense Message System (DMS), and other strategic systems. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE C3 Interoperability 0208045K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Center for Standards/T20	2.294	1.674	1.632	1.677	1.840	1.988	2.025	2.067	Contg	Contg

A. Mission Description & Budget Item Justification:

The Center serves as DOD Executive Agent for centralized management of Information Technology (IT) standards. The primary goal is to guide development of standards within DoD and encourage industry adoption of standards supporting DOD requirements. When commercially available standards exist, they will be adopted. The Center will manage development of DOD unique requirement efforts. The Center will also select candidate technologies for advanced technology demonstrations, and develop the roadmap and business case analyses for transitioning technologies into leading edge services.

(U) FY 1996 Accomplishments:

- Develop standards profile to support procurement of Defense Information Systems Network (DISN) (Sep 96; $146K).
- Approve MIL-STD-187-700B, which provides for selected standards to evolve the future Defense Information System (DIS) (Sep 96; $52K).
- Complete and approve Standard for Asynchronous Transfer Mode (ATM) on Network Node Interface (NNI) (Jun 96) and commence update of standard on ATM User Network Interface (Jul 96; $52K).
- Complete development of Trusted Networking Security Standards (Sep 96; $100K).
- Tailor Personal Communications Standards (PCS) to meet DOD needs (Sep 96; $109K).
- Complete development of Draft ATM over a Tactical Network Standard (Aug 96; $150K).
- Complete development of Data Communications Standards incorporating INTERNET Protocols (Sep 96; $100K).
- Complete development of Standards to support the use of Commercial SATCOM (Sep 96; $75K).
- Revise and distribute parts of Joint Pub 6-05 (Ongoing; $150K).
- Technical Standards support on Joint and Electronic Key Management Systems (Ongoing; $85K).
- Validation and approval of Electronic Data Interchange (EDI) and DODISS Compartmented Work Station Security Standards (Ongoing; $150K).
- Validation and approval of initial Tactical Messaging Standards and initial Thin Stack Standards (Ongoing; $150K).

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Center for Standards/T20	2.294	1.674	1.632	1.677	1.840	1.988	2.025	2.067	Contg	Contg

(U) FY 1996 Accomplishments (cont'd):

- o Maintain and expand IT Standards Framework, establish a repository of certified DOD IT standards profiles, provide direct standards profile selection support for DOD system (1st Qtr - 4th Qtr; $310K).
- o Design and develop advanced UHF SATCOM Modulation (AUSM) (1st Qtr - 4th Qtr; $665K).

$2.294M Total

(U) FY 1997 Plans:

- o Commence update of MIL-STD-187-700C for the DIS (1st Qtr - 4th Qtr; $150K).
- o Technical Standards support on Joint and Electronic Key Management Systems (1st Qtr - 4th Qtr; $85K).
- o Exploration into User/System Developer Standards Requirements (1st Qtr - 4th Qtr; $186K).
- o Develop Multicasting Lower Layer 3 Routing Standards (1st Qtr - 4th Qtr; $154K).
- o Enhance Lower Layer 4 Multicasting Standards (1st Qtr - 4th Qtr; $105K).
- o Revise and distribute parts of Joint Pub 6-05 (1st Qtr - 4th Qtr; $240K).
- o Complete development of ITU X.400 Key Protocol Standards (1st Qtr - 4th Qtr; $74K).
- o Validation and approval of Tactical Messaging Standards and initial Thin Stack Standards (1st Qtr - 4th Qtr; $110K).
- o Validation and approval of Tactical Directory Standard (1st Qtr - 4th Qtr; $90K).
- o Maintain and expand IT Standards Framework, establish a repository of certified DOD IT standards profiles, provide direct standards profile selection support for DOD system (1st Qtr - 4th Qtr; $480K).

$1.674M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Center for Standards/T20	2.294	1.674	1.632	1.677	1.840	1.988	2.025	2.067	Contg	Contg

(U) FY 1998 Plans:

- Develop ATM Network-to-Network Interface Standards Profile (1st Qtr - 4th Qtr; $220K).
- Development of SHF, UHF, and EHF SATCOM Standards (1st Qtr - 4th Qtr; $550K).
- Technical support of SATCOM STANAG development (1st Qtr - 4th Qtr; $193K).
- Technical support to NATO TACOMS 2000 (1st Qtr - 4th Qtr; $200K).
- Technical support to message (1st Qtr - 4th Qtr; $150K).
- Technical support to PM-EC/EDI (1st Qtr - 4th Qtr; $150K).
- Development of standards for Digitized Battlefield (1st Qtr - 4th Qtr; $100K).
- DOD technical requirements for Internet Engineering Task Force (1st Qtr - 4th Qtr; $69K).

$1.632M Total

(U) FY 1999 Plans:

- Develop ATM Network-to-Network Interface Standards Profile (1st Qtr - 4th Qtr; $220K).
- Development of SHF, UHF, and EHF SATCOM Standards (1st Qtr - 4th Qtr; $540K).
- Technical support of SATCOM STANAG development (1st Qtr - 4th Qtr; $200K).
- Technical support to NATO TACOMS 2000 (1st Qtr - 4th Qtr; $200K).
- Technical support to PM-DMS (1st Qtr - 4th Qtr; $150K).
- Technical support to PM-EC/EDI (1st Qtr - 4th Qtr; $150K).
- Development of standards for Digitized Battlefield (1st Qtr - 4th Qtr; $100K).
- DOD technical requirements for Internet Engineering Task Force (1st Qtr - 4th Qtr; $117K).

$1.677M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Center for Standards/T20	2.294	1.674	1.632	1.677	1.840	1.988	2.025	2.067	Contg	Contg

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	2.185	1.582	1.639	1.687
Appropriated Value	1.759	1.582		
Adjustments to Appropriated Value	.535	.092		
Adjustments to Budget Year Since FY97 President's Budget			-.007	-.010
Current Budget Submit/President's Budget (FY98)	2.294	1.674	1.632	1.677

Change Summary Explanation:

FY96 and FY97 increase is due to below threshold reprogramming.

FY98 and FY99 reductions due to revised fiscal guidance.

C. Other Program Funding Summary:

	FY96	FY97	FY98	FY99	Total Cost
O&M	8.449	6.642	10.092	9.851	Contg

D. Schedule Profile:

FY 1996 3rd Qtr: EC/EDI Standard
4th Qtr: MIL-STD-188-220 (Revised Combat Net Radio Standard)
DISN Profile

FY 1997 1st Qtr: UHF SATCOM 5KHz DAMA Waveform Standard (Voice)
2nd Qtr: Revised X.500 PICS for Directory Services

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Center for Standards/T20	2.294	1.674	1.632	1.677	1.840	1.988	2.025	2.067	Contg	Contg

D. Schedule Profile (cont'd):

FY 1997 (continued)
- 3rd Qtr: EHF SATCOM Medium Data Rate (MDR) Data Link Standard, Revision A
- 4th Qtr: SHF SATCOM Message Format Standard

FY 1998
- All Qtrs: Develop VTC Standards Profile for ATM Networks
- 2nd Qtr: Internet RFC on Common Security Labeling, Internet RFC on COUL Protocol
- 3rd Qtr: UHF SATCOM Data Control Standard, Revision A
- 4th Qtr: EHF SATCOM Low Data Rate Data Link Standard, Revision E

FY 1999
- All Qtrs: Develop VTC Standards Profile for LANs and Internet and Mobile Cellular Radios
- 1st Qtr: Internet Draft on Quality of Service additions to IP layer protocols
- 2nd Qtr: Internet RFC on Mobile AdHoc Networking
- 3rd Qtr: Advanced EHF SATCOM Standard

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
C3 Interoperability 0208045K/Center for Standards/T20

A. Project Cost Breakdown: ($000)

	FY96	FY97	FY98	FY99
Systems Engineering	2,294	1,674	1,632	1,677

B. Budget Acquisition History and Planning Information:
Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
LOGICON	C/CPFF	08/91	12,490	12,490	4,340	1,520	1,250	1,147	1,181	Contg	Contg
All Other Contracts						774	424	485	496	Contg	Contg
	SUBTOTAL CONTRACTS					2,294	1,674	1,632	1,677		
In House Engineering & Technical Support: N/A											
TOTAL PROJECT						2,294	1,674	1,632	1,677		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Technology Assessment and Insertion/T80	.572	.550	.582	.598	.654	.707	.728	.751	Contg	Contg

A. Mission Description & Budget Item Justification:

This project continues to plan and promote an expeditious and cost effective development of needed information technology capabilities by targeting R&D efforts to DOD mission needs and leveraging on DOD and industry developments. It provides for the transition of new technologies into leading edge and core information services.

(U) FY 1996 Accomplishments:

- Engineering for Network Engineering Assessment Facility (NEAF) (1st Qtr - 4th Qtr; $185K).
- Engineering for ATM systems for Non-Secure Internet Protocol Router Network (NIPRNET) and Global Combat Support Systems (GCSS) (1st Qtr - 4th Qtr; $387K).

$.572M Total

(U) FY 1997 Plans:

- Engineering for NEAF (1st Qtr - 4th Qtr; $200K).
- Engineering for ATM systems for NIPRNET and GCSS (1st Qtr - 4th Qtr; $350K).

$.550M Total

(U) FY 1998 Plans:

- Engineering for NEAF (1st Qtr - 4th Qtr; $200K).
- Engineering for ATM systems for NIPRNET and GCSS (1st Qtr - 4th Qtr; $382K).

$.582M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Technology Assessment and Insertion/T80	.572	.550	.582	.598	.654	.707	.728	.751	Contg	Contg

(U) FY 1999 Plans:

- Engineering for NEAF (1st Qtr - 4th Qtr; $200K).
- Engineering for ATM systems for NIPRNET and GCSS (1st Qtr - 4th Qtr; $398K).

$.598M Total

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.571	.563	.584	.601
Appropriated Value	.954	.563		
Adjustments to Appropriated Value	-.382	-.013		
Adjustments to Budget Year Since FY97 President's Budget			-.002	-.003
Current Budget Submit/President's Budget (FY98)	.572	.550	.582	.598

Change Summary Explanation:

FY96 decrease due to Congressional adjustment to Defense-wide Investment Appropriation & below threshold reprogrammings.

FY97 decrease due to Congressional adjustment to Defense-wide Investment Appropriation.

FY98-99 decrease due to revised fiscal guidance.

C. Other Program Funding Summary: N/A

D. Schedule Profile:

(U) All Qtrs: Engineering for NEAF
Engineering for ATM systems for NIPRNET and GCSS.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Technology Assessment and Insertion/T80

A. Project Cost Breakdown: ($000)

	FY96	FY97	FY98	FY99
Systems Engineering	572	550	582	598

B. Budget Acquisition History and Planning Information:
Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
All Other Contracts						572	550	582	598	Contg	Contg
SUBTOTAL CONTRACTS						572	550	582	598		
In House Engineering & Technical Support: N/A											
TOTAL PROJECT						572	550	582	598		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Test and Evaluation/T30

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

A. Mission Description & Budget Item Justification: Through effective life cycle test and evaluation (T&E), this project ensures that C3I and information systems (IS) developed by DOD Components are interoperable and permit flexible employment of forces throughout the world. T&E is performed throughout the entire life cycle including proof-of-concept, system development, system deployment, and system upgrade and modification. This T&E includes interoperability, performance, operational test and evaluation, systems effectiveness and force effectiveness testing of all C3I and IS system standards and system interfaces used in joint and combined operations.

(U) FY 1996 Accomplishments:

- Provide independent operational evaluation and assessments of Defense Information Infrastructure (DII) programs, i.e., Defense Message System (DMS), Defense Information Systems Network (DISN), Global Command and Control System (GCCS) and Survivable Secure Communications Network (SSCN). (Sep 96, $1446K).
- Provide CINC interoperability testing and technical assistance; publish Lessons Learned Report sharing C4I problems, issues and solutions; (Ongoing; $649K).
- Perform interoperability and technical testing for the following C4IFTW system interfaces and standards; Defense Information Systems Network, Defense Message System, AN/USC-42 (Mini-DAMA), Military Strategic and Tactical Relay (MILSTAR) Satellite Program, Ultrahigh Frequency Satellite Terminal System, Global Grid, Asynchronous Transfer Mode (ATM), and multiple US command and control systems employing TADILS A/B/C/J, ATDL-1, USMTF and VMF standards (Ongoing, $6249K).
- Provide technical and operational fixes to interface and interoperability problems in a coordinated environment involving both the user and the developer/commercial vendor, provide the Commander in Chief Joint Task Force planner operational guidance in the planning, establishment and employment of tactical multi-Service systems and the integration of these systems into the Strategic Network and Defense Information Infrastructure. Document critical C3 equipment strings (Sep 96, $800K).
- In conjunction with the Defense Information Systems Agency's mission to provide testing and associated training and implementation support for automated information systems and programs: BETA and interoperability Test and Evaluation of Service-unique and Defense Message System joint projects. Types of testing include hardware acceptance testing (HAT), quality acceptance testing (QA), interface/interoperability certification testing (ICT), software change proposal testing (SCP), security test and evaluation (ST&E) and DMS functional testing, (Ongoing, $4503K).

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Test and Evaluation/T30

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

(U) FY 1996 Accomplishments: (Continued)

- Test/evaluate/certify information transfer systems related to GCCS; ensure that GCCS provides quality command and control capability to the warfighter CINCs via timely and cost effective migration; (Sep 96, $843K).

$14.490M Total

(U) FY 1997 Plans

- Evaluate systems operational effectiveness and suitability for fielding for the following Defense Information Systems Agency oversight programs: Defense Message System, Global Command and Control System, and Defense Information Systems Network; (Sep 97, $1979K).
- Provide interoperability testing and technical assistance, publish Lessons Learned Report sharing C4I problems, issues and solutions; (Ongoing, $584K).

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE C3 Interoperability 0208045K/Test and Evaluation/T30					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

A. Mission Description & Budget Item Justification: (Continued)

(U) FY 1997 Plans (Continued)

- Perform interoperability and technical testing for the following C4IFTW system interfaces and standards;, Defense Information Systems Network (DISN), AN-USC-42 (Mini-DAMA), Military Strategic and Tactical Relay (MILSTAR) Satellite program, Ultrahigh Frequency Satellite Terminal System, Global Grid, Asynchronous Transfer Mode (ATM), and multiple US command and control systems employing TADILS A/B/C/J, ATDL-1, USMTF and VMF standards; (Ongoing, $5651K).
- Provide technical and operational fixes to interface and interoperability problems in a coordinated environment involving both the user and the developer/commercial vendor, provide the Commander in Chief Joint Task Force planner operational guidance in the planning, establishment and employment of tactical multi-Service systems and the integration of these systems into the Strategic Network and Defense Information Infrastructure. Document critical C3 equipment strings; (Sep 97, $778K).
- In conjunction with the Defense Information Systems Agency's mission to provide testing and associated training and implementation support for automated information systems and programs: BETA and interoperability Test and Evaluation of Service-unique and Defense Message System joint projects. Types of testing include hardware acceptance testing (HAT), quality acceptance testing (QA), interface/interoperability certification testing (ICT), software change proposal testing (SCP), security test and evaluation (ST&E) and DMS functional testing; (Ongoing, $4943K).
- Test/evaluate/certify information transfer systems related to GCCS; ensure that GCCS provides quality command and control capability to the warfighter CINCs via timely and cost effective migration; (Sep 97, $958K).
- Assesses CINCs intelligence systems interoperability initiatives; (Sep 97, $150K).

$15.043M Total

(U) FY 1998 Plans

- Test and Evaluation of DODs' major C4I programs--Defense Message System (DMS), Global Command and Control System (GCCS), Global Combat Support System (GCSS), and Defense Information Systems Network (DISN) by certifying that critical requirements are supported by interoperable functionalities. Evaluate systems' operational effectiveness and suitability for fielding by documenting critical operational issues through an appropriate test, and referring results to the decision authority; (Ongoing; $6096K).

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE C3 Interoperability 0208045K/Test and Evaluation/T30					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

(U) FY 1998 Plans (Continued)

- C4I Technical Support to the Warfighter--Provide technical and operational support and expertise to CINCs, Services and Agencies during exercises (e.g., RIMPACT, Unified Endeavor, Internal Look, Roving Sands, etc.) real world contingencies (e.g., Joint Endeavor in Bosnia) and operational assessments. Provide Lessons Learned Report on NIPRNET/SIPRNET addressing current interoperability problems and solutions; (Ongoing; $1525K).
- Joint C4I Interoperability Test and Certification--Support production decisions of the Defense Acquisition Board (DAB) and fielding decisions of the Chairman, Joint Chiefs of Staff (CJCS) by providing test, evaluation and certification of C4I systems to ensure interoperability within and between systems, the sustaining base, the National Command Authority, and Service echelons and allies. Systems tested include High Frequency Automatic Link Establishment (HF/ALE), Ultra-High Frequency Demand Access Multiple Assignment (UHF DAMA), Universal Modem System, High Frequency Radio, Facsimile, Theater Deployable Communications (TDC), Tactical Data Link (TADIL A, B, J), Integrated Tactical Warning and Attack Assessment (ITWAA); (Ongoing; $7826K).

$15.447M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Test and Evaluation/T30

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

A. Mission Description & Budget Item Justification: (Continued)

(U) FY 1999 Plans

- Test and Evaluation of DODs' major C4I programs--Defense Message System (DMS), Global Command and Control System (GCCS), Global Combat Support System (GCSS), and Defense Information Systems Network (DISN) by certifying that critical requirements are supported by interoperable functionalities. Evaluate systems' operational effectiveness and suitability for fielding by documenting critical operational issues through an appropriate test, and referring results to the decision authority; (Ongoing, $6417K).
- C4I Technical Support to the Warfighter--Provide technical and operational support and expertise to CINCs, Services and Agencies during exercises (e.g., RIMPACT, Unified Endeavor, Internal Look, Roving Sands, etc.) real world contingencies (e.g., Joint Endeavor in Bosnia) and operational assessments. Provide Lessons Learned Report on NIPRNET/SIPRNET addressing current interoperability problems and solutions; (Ongoing, $1604K).
- Joint C4I Interoperability Test and Certification--Support production decisions of the Defense Acquisition Board (DAB) and fielding decisions of the Chairman, Joint Chiefs of Staff (CJCS) by providing test, evaluation and certification of C4I systems to ensure interoperability within and between systems, the sustaining base, the National Command Authority, and Service echelons and allies. Systems tested include High Frequency Automatic Link Establishment (HF/ALE), Ultra-High Frequency Demand Access Multiple Assignment (UHF DAMA), Universal Modem System, High Frequency Radio, Facsimile, Theater Deployable Communications (TDC), Tactical Data Link (TADIL A,B,J), Integrated Tactical Warning and Attack Assessment (ITWAA); (Ongoing, $8008K).

$16.029M Total

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	13.080	14.449	15.081	15.665
Appropriated Value	14.677	14.449		
Adjustments to Appropriated Value	- .187	.594		
Adjustments to Budget Year Since FY 1997 President's Budget			.366	.364
Current Budget Submit/President's Budget (FY 1998)	14.490	15.043	15.447	16.029

Change Summary Explanation:

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE C3 Interoperability 0208045K/Test and Evaluation/T30					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

B. Program Change Summary (Continued)

Funding: FY96-FY97 change is due to congressional adjustment to Defense Wide Appropriations and below threshold reprogramming. FY98-FY99 adjustment is due to revised fiscal guidance and realignment of funds.

Schedule: N/A
Technical: N/A

C. Other Program Funding Summary: N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Test and Evaluation/T30

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

D. Schedule Profile:

(U) FY 1996

- 2nd Quarter - Independent Evaluation Report (IER) for Phase I DISN testing; DMS X.400 project; OT&E of DISN Integrated Network Management System (INMS), GCCS and others.
- 4th Quarter - Interoperability and technical testing for the following: GCCS, AN/USC-42 (Mini-DAMA), Ultra-High Frequency Satellite Terminal System, DISN, Global Grid, Asynchronous Transfer Mode (ATM), and multiple US command and control systems employing TADILS A/B/C/J, ATDL-1, USMTF and VHF standards.

(U) FY 1997

- 2nd Quarter - DMS X.400 project; OT&E of DISN INMS, GCCS and others.
- 4th Quarter - Interoperability and technical testing for the following: GCCS, AN/USC-42 (Mini-DAMA), Ultra-High Frequency Satellite Terminal System, DISN, Global Grid, Asynchronous Transfer Mode (ATM), and multiple US command and control systems employing TADILS A/B/C/J, ATDL-1, USMTF and VHF standards.

(U) FY 1998

- 2nd Quarter - DMS X.400 project; OT&E of DISN INMS, GCCS and others.
- 4th Quarter - Interoperability and technical testing for the following: GCCS, AN/USC-42 (Mini-DAMA), Ultra-High Frequency Satellite Terminal System, DISN, Global Grid, Asynchronous Transfer Mode (ATM), and multiple US command and control systems employing TADILS A/B/C/J. ATDL-1. USMTF and VHF standards.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE C3 Interoperability 0208045K/Test and Evaluation/T30					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T30 Test and Evaluation	14.490	15.043	15.447	16.029	16.873	17.804	18.267	18.862	Contg	Contg

(U) FY 1999

- 2nd Quarter - DMS X.400 project; OT&E of DISN INMS, GCCS and others.

- 4th Quarter - Interoperability and technical testing for the following: GCCS, AN/USC-42 (Mini-DAMA), Ultra-High Frequency Satellite Terminal System, DISN, Global Grid, Asynchronous Transfer Mode (ATM), and multiple US command and control systems employing TADILS A/B/C/J, ATDL-1, USMTF and VHF standards.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Test and Evaluation/T30

A. Project Cost Breakdown

	FY96	FY97	FY98	FY99
C3I Interoperability and Information Systems Testing	14,490	15,043	15,447	16,029

B. Budget Acquisition History and Planning Information

Test and Evaluation Organization

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget To Complete	Total Program
*LOGICON	C-CPAF	08/91	12,252	12,252	11,856	916	180			Contg	Contg
*INTEROP	C-CPAF	08/91	12,870	12,870	12,456	2,759	2,147	2,314	2,467	Contg	Contg
*BDM	C-CPAF	08/91	11,880	11,880	11,525	2,189	2,147	2,314	2,467	Contg	Contg
*VALIDITY	C-T&M	10/91	3,769	3,769	3,158	2,001	2,147	2,314	2,467	Contg	Contg
All Other Contracts					1,371						
		Subtotal Contracts			40,366	7,865	6,621	6,942	7,401	Contg	Contg
In House Engineering & Technical Support											
		Subtotal In-House				6,625	8,422	8,505	8,628		
TOTAL PROJECT						14,490	15,043	15,447	16,029		

*Current OMNIBUS contracts expire and new contracts awarded in 2nd quarter of FY 97.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
C3 Interoperability 0208045K/Major Range and Test Facility Base (MRTFB)

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T40 Major Range and Test Facility Base (MRTFB)	7.356	7.674	8.009	8.344	8.860	9.368	9.489	9.525	Contg	Contg

A. Mission Description & Budget Item Justification: This project provides resources to operate DISA's Joint Interoperability Test Command (JITC) which is a member of DOD's Major Range and Test Facility Base (MRTFB). Indirect operation/maintenance expenses, overall testbed improvement and modernization, and facility and logistics support are included in this project.

(U) FY 1996 Accomplishments:

- Develop automated systems to facilitate test and evaluation and maximize use of test assets; develop and enhance Corporate Database and other microcomputer applications to provide cost accounting reports to track and catalog customer expenses for internal and external processes and customer disclosure; continue to develop automated support for management of contracts, manpower and fiscal resources; provide base operations business support to JITC's testing mission; (Ongoing; $1576K).
- Maintain and operate the JITC test facilities at Fort Huachuca, AZ; VA and Cheltenham, MD for DOD use; (Ongoing, $5780K).

$7.356M Total

(U) FY 1997 Plans:

- Continue to refine the automated systems to facilitate test and evaluation and maximize use of test assets; Maintain the Corporate Database and other microcomputer applications to provide cost accounting reports to track and catalog customer expenses for internal and external processes and customer disclosure; continue to develop automated support for management of contracts, manpower and fiscal resources; provide base operations business support to JITC's testing mission; (Ongoing; $1921K).
- Maintain and operate the JITC test facilities at Fort Huachuca, AZ; VA and Cheltenham, MD for DOD use; (Ongoing; $5753K).

$7.674M Total

(U) FY 1998 Plans:

- Recurring maintenance of JITC's automated systems to facilitate test and evaluation and maximize use of test assets; Maintain the Corporate Database and other microcomputer applications to provide cost accounting reports to track and catalog customer expenses for internal and external processes and customer disclosure; continue to develop automated support for management of contracts, manpower and fiscal resources; provide base operations business support to JITC's testing mission; (Ongoing, $1921K).

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Major Range and Test Facility Base (MRTFB)

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T40 Major Range and Test Facility Base (MRTFB)	7.356	7.674	8.009	8.344	8.860	9.368	9.489	9.525	Contg	Contg

A. Mission Description & Budget Item Justification: (Continued)

(U) FY 1998 Plans: (Continued)

- Maintain and operate the JITC test facilities at Fort Huachuca, AZ; VA and Cheltenham, MD for DOD use; (Ongoing, $2500K).
- Indirect testing mission support; (Ongoing; $3588K).

$8.009M Total

(U) FY 1999 Plans:

- Recurring maintenance of JITC's automated systems to facilitate test and evaluation and maximize use of test assets; Maintain the Corporate Database and other microcomputer applications to provide cost accounting reports to track and catalog customer expenses for internal and external processes and customer disclosure; continue to develop automated support for management of contracts, manpower and fiscal resources; provide base operations business support to JITC's testing mission; (Ongoing, $1921K).
- Maintain and operate the JITC test facilities at Fort Huachuca, AZ; VA and Cheltenham, MD for DOD use; (Ongoing, $2610K).
- Indirect testing mission support; (Ongoing; $3813K).

$8.344M Total

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	7.356	7.674	8.009	8.344
Appropriated Value	7.948	7.674		
Adjustments to Appropriated Value	-.592			
Adjustments to Budget Year Since FY 1997 President's Budget				
Current Budget Submit/President's Budget (FY 1998)	7.356	7.674	8.009	8.344

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C3 Interoperability 0208045K/Major Range and Test Facility Base (MRTFB)					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
T40 Major Range and Test Facility Base (MRTFB)	7.356	7.674	8.009	8.344	8.860	9.368	9.489	9.525	Contg	Contg

Change Summary Explanation: FY96 change is due to congressional adjustment to Defense Wide Appropriations and below threshold reprogramming.

C. Other Program Funding Summary: N/A

D. Schedule Profile Milestones

(U) FY 1996 through FY 1999

1st-4th Quarter - BOS and RPMAR and Corporate MIS Database; business process review and improvement; test infrastructure

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
C3 Interoperability 0208045K/Major Range and Test Facility Base (MRTFB)

A. Project Cost Breakdown ($000)

	FY96	FY97	FY98	FY99
a. Improvement and Modernization (I&M)	651	612	610	615
b. Base Operating Support (BOS)	891	927	930	945
c. Other Institutional Expenses	5,814	6,135	6,469	6,784
TOTAL:	7,356	7,674	8,009	8,344

B. Budget Acquisition History and Planning Information

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget To Complete	Total Program
*LOGICON/VALIDITY	C-CPAF	08/91	8,545	8,545	8,545	0	748	766	799	Contg	Contg
*INTEROP	C-CPAF	08/91	9,443	9,443	7,257	2,186	748	767	798	Contg	Contg
*BDM	C-CPAF	08/91	8,145	8,145	8,145	0	749	767	798	Contg	Contg
		Subtotal Contracts				2,186	2,245	2,300	2,395	Contg	Contg
In House Engineering & Technical Support											
		Subtotal In-House				5,170	5,429	5,709	5,949		
TOTAL PROJECT						7,356	7,674	8,009	8,344		

*Current OMNIBUS contracts expire and new contracts awarded in 2nd quarter of FY 97.

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RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1.995	1.978	2.064	2.099	2.214	2.329	2.379	2.476	Contg	Contg
NMCS Subsystem Engineering/T50	.400	.367	.406	.431	.511	.595	.609	.636	Contg	Contg
NMCS Command Center Engineering/S32	1.221	1.224	1.244	1.238	1.260	1.277	1.303	1.363	Contg	Contg
Support to Defense Support Activity (DSA)/Z60	.374	.387	.414	.430	.443	.457	.467	.477	Contg	Contg

A. Mission Description and Budget Item Justification:

This program provides concept development, requirements definition, proof-of-principle experiments, rapid prototyping and technology insertions, technical specifications, systems engineering and integration, and technical assessments for NMCS Command and Control (C2) systems. This support provides informed, decision-making linkage between the National Command Authorities (NCA) and the Commanders-in-Chief (CINC) of the Unified and Specified Commands. Concentrating on the CINCs, this engineering draws upon improved C2 methodologies and technology insertion opportunities to meet the command, control and information system requirements of the CINCs for all crises and security threats involving US military forces. These efforts emphasize interoperability and are designed to contribute directly to the achievement of the global C4I infrastructure. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Subsystem Engineering/T50	.400	.367	.406	.431	.511	.595	.609	.636	Contg	Contg

A. Mission Description & Budget Item Justification:

To accommodate rapid changes in requirements and increasing budget constraints, new approaches to reduce development and integration time, as well as costs for command and control systems must be sought. This project provides system engineering support to C4I information systems by developing near-term prototypes to satisfy CINC/Joint Task Force (JTF) operational requirements. Through this prototyping technical approach, operational requirements are assessed, system performance is measured, system interoperability is demonstrated and standard DISA products are premiered in an operational setting (Defense Message System (DMS), Global Command and Control System (GCCS), Global Combat Support System (GCSS), and Defense Information Infrastructure (DII)). The incorporation of prototypes into Joint Warrior Interoperability Demonstration (JWID) demonstrations and command exercises provides real-time assessment of technological advances and identifies interoperability problems and generates associated solutions. This approach also applies to assessing command center capabilities and the implications of DMS, GCCS, GCSS and DII on future command center requirements.

(U) FY 1996 Accomplishments:

- o A prototype Special Operations Command Europe (SOCEUR) command and control configuration was operationally installed second quarter FY96. Enhancement to the IOC configuration will be implemented. This configuration supports the SOCEUR JTF from a headquarters as well as deployable perspective (Sep 96; $100K).
- o A proof-of-concept Personal Digital Assistant prototype was introduced to EUCOM for use in Joint Endeavor. The prototype will be enhanced for operational use in deployment and redeployment planning (Jul 96; $100K).
- o EUCOM Tiger Team report assessing baseline capabilities and implications of future C2 systems (Jul 96; $75K).
- o ICELAND Defense Force, Combined Operations Center, Tiger Team (Sep 96; $125K).

$.400M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Subsystem Engineering/T50	.400	.367	.406	.431	.511	.595	.609	.636	Contg	Contg

(U) FY 1997 Plans:

- o Integration of additional GCCS functionality, DMS and DII capabilities into JTF prototypes (Sep 97; $95K).
- o Technical analysis for operational implementation of EUCOM's Soldier's Digital Assistant (SDA) concept (Nov 96; $48K).
- o Assess CINC/JTF prototypes (with DMS, DII capabilities) during major exercises and demonstrations (Jun 97; $48K).
- o EUCOM continued C2 systems integration for CINC/JTFs (Oct 96; $73K).
- o Continued C2 systems integration for CINC/JTFs (Jun 97; $103K).

$.367M Total

(U) FY 1998 Plans:

- o CINC/JTF prototype enhancements via integration of COTS/GOTS capabilities and emerging GCCS and DII technologies (Dec 98; $306K).
- o Technology assessment of CINC/JTF prototypes (Aug 98; $100K).

$.406M Total

(U) FY 1999 Plans:

- o Continuation of CINC/JTF prototype evolution including software and hardware technologies to enhance two-way communication with warfighter, command and control from the foxhole to the commander (Sep 99; $431K).

$.431M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Subsystem Engineering/T50	.400	.367	.406	.431	.511	.595	.609	.636	Contg	Contg

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.400	.379	.428	.465
Appropriated Value	.412			
Adjustments to Appropriated Value	-.012	-.012		
Adjustments to Budget Year Since FY97 President's Budget			-.022	-.034
Current Budget Submit/President's Budget (FY98)	.400	.367	.406	.431

Change Summary Explanation:

FY96 and FY97 change due to Congressional adjustment to Defense-wide investment appropriation.
FY98 and FY99 adjustments due to revised fiscal guidance.

C. Other Program Funding Summary:

Related RDT&E: Program Element #0208045K, C3 Interoperability.

D. Schedule Profile:

FY1996 3rd Qtr: EUCOM/Joint Endeavor SDA Engineering for GCCS-D
4th Qtr: JWID 96 Engineering and Integration of SDA
SOCEUR Joint Special Operations Task Force (JSOTF) prototype enhancements
ICELAND Tiger Team - C2 system integration
EUCOM - C2 system integration for CINC/JTFs

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Subsystem Engineering/T50	.400	.367	.406	.431	.511	.595	.609	.636	Contg	Contg

FY1997 1st Qtr: Technical analysis for operational implementation of EUCOM's SDA concept
EUCOM - continued C2 system integration for CINC/JTFs
Continued C2 system integration for other CINC/JTFs
3rd Qtr: Assess CINC/JTF prototypes (with DMS, DII capabilities) during major exercises and demonstrations
4th Qtr: Integration of additional GCCS functionality, DMS and DII capabilities into JTF prototypes

FY1998 1st Qtr: CINC/JTF prototype enhancements via integration of COTS/GOTS capabilities and emerging GCSS and DII technologies
4th Qtr: Technology assessment of CINC/JTF prototypes

FY1999 4th Qtr: Continuation of CINC/JTF prototype evolution including software and hardware technologies to enhance two-way communications with warfighter, command and control from the foxhole to the commander

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
National Military Command System (NMCS)-Wide Support/0302016K
NMCS Subsystem Engineering/T50

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	400	367	406	431
TOTAL	400	367	406	431

B. Budget Acquisition History and Planning Information:
Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities	C/SS CPAF CPFF WR/PO					400	367	406	431	Contg	Contg
Government Furnished Property: N/A											
Total Project						400	367	406	431		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Command Center Engineering/S32	1.221	1.224	1.244	1.238	1.260	1.277	1.303	1.363	Contg	Contg

A. Mission Description and Budget Item Justification:

This project provides overall system engineering and technical integration activities for a broad spectrum of command center systems which provide the underpinning capabilities for the crisis/war decision-making processes of the National Command Authorities (NCA), the NMCS, and the Unified and Specified Commanders-in-Chief. Technical activities include requirements analysis, systems definition and engineering, and rapid prototyping. The project emphasizes the utilization of commercial-off-the-shelf (COTS) and emerging technologies for application in NMCS command centers in information processing and overall facility design to provide common solutions to theater, national, and world-wide crisis situations affecting the Department of Defense (DOD) and the Executive Office of the President.

(U) FY 1996 Accomplishments:

- Technical analysis for implementation of improvements of National Airborne Operations Center (NAOC) and Special Airlift Mission (SAM) aircraft (Sep 96; $149K).
- Engineering for implementation of an Airborne Communications Bus on Project Speckled Trout to interconnect mission equipment (Jun 96; $200K).
- Published Secretary of Defense Senior Leadership Communications Architecture (SLCA) (Aug 96; $180K).
- Engineering for qualitative operational test and evaluation of major NAOC improvements (Sep 96; $65K).
- Providing technical analysis of National Military Command Center (NMCC) and NMCC Site R operational requirements and development of engineering alternatives to improve strategic and crisis capabilities (Sep 96; $140K).
- Providing technical support for operational evaluation of FOC Special Technical Operations communications (May 96; $132K).
- Engineering for implementation of new consolidated red/black voice switching systems for NMCC and NMCC Site R (Sep 96; $180K).
- Integration engineering and transition planning for critical NMCC C3 systems in response to the new NMCC Pentagon renovation for design of facilities and communications systems (Sep 96; $175K).

$1.221M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Command Center Engineering/S32	1.221	1.224	1.244	1.238	1.260	1.277	1.303	1.363	Contg	Contg

(U) FY 1997 Plans:

- o Technical analysis for implementation of improvements to NAOC and SAM aircraft (Sep 97; $98K).
- o Engineering support for qualitative operational test and evaluation of major NAOC improvements (Sep 97; $73K).
- o Trouble-shooting and support of current NAOC and 89th Wing operations (Sep 97; $147K).
- o Development of overall and individual systems and subsystem engineering, transition plans and test plans for moving the NMCC to another location in the Pentagon (May 97; $551K).
- o Engineering evaluation of new emergency message and TW/AA systems for the NMCC and NMCC Site R (Sep 97; $171K).
- o Integration engineering and transitioning secure NMCC systems to the DMS (Feb 97; $97K).
- o Revise and update the SLCA (Sep 97; $87K).

$1.224M Total

(U) FY 1998 Plans:

- o Revise and update the SLCA (1st Qtr - 4th Qtr; $60K).
- o Technical analysis for implementation of improvement to NAOC and SAM aircraft (1st Qtr - 4th Qtr; $120K).
- o Engineering support for qualitative operational test and evaluation of major NAOC improvements (1st-4th Qtr; $100K).
- o Trouble-shooting and support of current NAOC and 89th Wing operations (1st Qtr - 4th Qtr; $149K).
- o Automated Configuration Management for JS and NMCC (1st Qtr - 4th Qtr; $178K).
- o NMCC Site R and STRATCOM Planning (1st Qtr - 4th Qtr; $204K).
- o NMCS DDO Upgrade (1st Qtr- 4th Qtr; $15K).
- o NMCS Engineering Support for integration of DII elements (1st Qtr - 4th Qtr; $164K).
- o NMCC Relocation Connectivity to JCS and High Altitude Electromagnetic Pulse (HEMP) issues (1st Qtr - 4th Qtr; $55K).
- o NMCC Engineering of COM and ADP Systems (1st Qtr - 4th Qtr; $199K) $1.244M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Command Center Engineering/S32	1.221	1.224	1.244	1.238	1.260	1.277	1.303	1.363	Contg	Contg

(U) FY 1999 Plans:

- Revise and update the SLCA (1st Qtr - 4th Qtr; $60K).
- Technical analysis for implementation of improvements to NAOC and SAM aircraft (1st Qtr - 4th Qtr; $120K).
- Engineering support for qualitative operational test and evaluation of major NAOC improvements (1st Qtr - 4th Qtr; $100K).
- Trouble-shooting and support of current NAOC and 89th Wing operations (1st Qtr - 4th Qtr; $149K).
- Automated Configuration Management for JS and NMCC (1st Qtr - 4th Qtr; $177K).
- NMCC Site R and STRATCOM Planning (1st Qtr - 4th Qtr; $203K).
- NMCS DDO Upgrade (1st Qtr - 4th Qtr; $15K).
- NMCS Engineering Support for integration of DII elements (1st Qtr - 4th Qtr; $160K).
- NMCC Relocation Connectivity to JCS and HEMP issues (1st Qtr - 4th Qtr; $55K).
- NMCC Engineering of COM and ADP Systems (1st Qtr - 4th Qtr; $199K) $1.238M Total

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	1.221	1.268	1.315	1.337
Appropriated Value	1.314	1.268		
Adjustments to Appropriated Value	-.093	-.044		
Adjustments to Budget Year Since FY97 President's Budget			-.071	-.099
Current Budget Submit/President's Budget (FY98)	1.221	1.224	1.244	1.238

Change Summary Explanation:

FY96 and FY97 changes due to Congressional adjustment to Defense-Wide Investment Appropriation.

FY98 and FY99 adjustments due to revised fiscal guidance.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Command Center Engineering/S32	1.221	1.224	1.244	1.238	1.260	1.277	1.303	1.363	Contg	Contg

C. Other Program Funding Summary:

	FY96	FY97	FY98	FY99	FY00	FY01	Budget to Complete	Total Cost
O&M 0302019K	.635	.365	.258	.239	.177	.091	Contg	Contg

D. Schedule Profile:

FY1996 2nd Qtr: Develop Option Year 1 of contract for NMCS Engineering Test & Evaluation.
4th Qtr: Develop Option Year 1 of contract for Command Center System Engineering.
Provide system engineering for implementation of new NAOC red/black voice switching system.

FY1997 1st Qtr: Provide User Test & Evaluation criteria for NAOC Mod Block V.
2nd Qtr: Develop Option Year 2 of contract for NMCS Engineering Test & Evaluation.
4th Qtr: Develop Option Year 2 of contract for Command Center System Engineering.
Complete Engineering for systems transition of new NMCC.
SLCA update to provide CINCs and Service Chiefs guidance on how to improve their positions of the Senior Leadership Travel Communications System.

FY1998 1st Qtr: Provide interactive distributed communications management system for NMCS tasks.
2nd Qtr: Integrate new DII elements into JS procedures.
3rd Qtr: Update on-line database reference systems with new subscriber services.
4th Qtr: Expand unclassified Internet capability.
Annual update of SLCA.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NMCS Command Center Engineering/S32	1.221	1.224	1.244	1.238	1.260	1.277	1.303	1.363	Contg	Contg

FY1999 1st Qtr: NMCC relocation issues, consolidation of communications control from Site R.
2nd Qtr: NMCS ADP terminal improvement.
3rd Qtr: NMCC display and video switching improvement.
4th Qtr: NMCC DII integration with HEMP Room Equipment Suite.
Annual Update of SLCA.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K NMCS Command Center Engineering/S32

A. Project Cost Breakdown: ($000)

Projected Cost Categories

	FY96	FY97	FY98	FY99
a. System Engineering	1,221	1,224	1,244	1,238

B. Budget Acquisition History and Planning Information:

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities						1,221	1,224	1,244	1,238	Contg	Contg
Government Furnished Property: N/A											
TOTAL PROJECT						1,221	1,224	1,244	1,238		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Support to Defense Support Activity/Z60	.374	.387	.414	.430	.443	.457	.467	.477	Contg	Contg

A. Mission Description and Budget Item Justification:

This project provides direct support to the Defense Support Activity (DSA) as prescribed in DOD Directive 5100.81. This project is unique in terms of the policy decisions supported and that the customers supported are actual DOD policy decision-makers. Z60 supports basic research and the acquisition and enhancement of software that aids in the illumination of counter-proliferation issues. Research is also provided in a number of areas of special interest to the OSD's theater tactical ballistic and cruise missile defense community and Precision Guided Munition (PGM) communities, as well as the defense planning community, and the acquisition and employment policy making communities. It also supports systems engineering, development of state-of-the-art technologies and the translation of these technologies into leading edge analytical models. Acquisition of support is provided by competitively awarded contracts.

(U) FY 1996 Accomplishments:

- Developed analytical tools to support assessments of joint warfighting operational plans' compliance with the Secretary's guidance and to rapidly illuminate policy issues. This development focused on illustrating PGM effects and optimal deployment of theater missile defenses. ($96K) Sep 96
- Acquired and enhanced leading edge analytical tools to rapidly illuminate policy issues in the following areas:
  1) the probability of structural damage to deep underground targets; and
  2) the effects of chemical and biological munitions on military operations. ($90K) Sep 96
- Analyzed the potential contributions of Navy Upper Tier defensive systems and sensor requirements. ($96K) Sep 96
- Developed analytical tools for the study of both the cruise missile defensive and ballistic missile defensive systems, technologies, logistics, and architectures. ($55K) Sep 96
- Provided research support to the USD(A&T) as the cruise missile and ballistic missile threats evolve. ($37K) Sep 96

$.374M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Support to Defense Support Activity/Z60	.374	.387	.414	.430	.443	.457	.467	.477	Contg	Contg

(U) FY 1997 Plans:

- Continue to develop analytical tools used to support assessments of joint warfighting operational plans' compliance with the Secretary's guidance and to rapidly illuminate policy issues. This development will focus on illustrating PGM effects and optimal deployment of theater missile defenses. ($100K) Sep 97
- Continue to acquire and enhance leading edge analytical tools to rapidly illuminate policy issues in the following areas:
  1) the probability of structural damage to deep underground targets; and
  2) the effects of chemical and biological munitions on military operations. ($100K) Sep 97
- Examine the effectiveness of current and planned theater, regional, and national defensive systems against emerging threats. ($100K) Sep 97
- Develop analytical tools for the study of both the cruise missile defense and ballistic missile defensive systems, technologies, logistics, and architectures. ($50K) Sep 97
- Provide research support to the USD(A&T) as the cruise missile and ballistic missile threats evolve. ($37K) Sep 97

$.387M Total

(U) FY 1998 Plans:

- Continue to develop analytical tools used to support assessments of joint warfighting operational plans' compliance with the Secretary's guidance and to rapidly illuminate policy issues. This development will focus on illustrating PGM effects and optimal deployment of theater missile defenses. ($103K) Sep 98
- Continue to acquire and enhance leading edge analytical tools to rapidly illuminate policy issues in the following areas:
  1) the probability of structural damage to deep underground targets; and
  2) the effects of chemical and biological munitions on military operations. ($103K) Sep 98

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Support to Defense Support Activity/Z60	.374	.387	.414	.430	.443	.457	.467	.477	Contg	Contg

(U) FY 1998 Plans (cont'd):

- Examine the ongoing Israeli/US ground based Theater High Energy Laser and the U.S. Airborne Laser programs for system efficacy and program performance. Provide alternatives and recommendations to USD(A&T). ($108K) Sep 98
- Evaluate National Missile Defense (NMD), Theater High Altitude Air Defense (THAAD), Navy Wide Area and Navy Theater Area Defense systems for performance and program effectiveness. Provide programmatic alternatives and recommendations to USD(A&T). ($50K) Jun 98
- Evaluate the DOD Cruise Missile Defense (CMD) programs and management structure for effectiveness and provide alternatives and recommendations to USD(A&T). ($50K) Jun 98

$.414M Total

(U) FY 1999 Plans:

- Continue to develop analytical tools used to support assessments of joint warfighting operational plans' compliance with the Secretary's guidance and to rapidly illuminate policy issues. This development will focus on illustrating PGM effects and optimal deployment of theater missile defenses. ($108K) Sep 99
- Continue to acquire and enhance leading edge analytical tools to rapidly illuminate policy issues in the following areas:
  1) the probability of structural damage to deep underground targets; and
  2) the effects of chemical and biological munitions on military operations. ($107K) Sep 99
- Examine the effectiveness of current and planned theater, regional, and national defensive programs and systems for effectiveness against emerging threats and program performance. Provide alternatives and recommendations to the USD(A&T). ($135K) Sep 99
- Develop analytical tools for the study of both cruise missile and ballistic missile defensive systems, technologies, logistics, and architectures. ($50K) Sep 99

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Support to Defense Support Activity/Z60	.374	.387	.414	.430	.443	.457	.467	.477	Contg	Contg

(U) FY1999 Plans (cont'd):

- o Provide ongoing special project research support to the USD(A&T) as the cruise missile and ballistic missile threats evolve. ($30K) Sep 99
  $.430M Total

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.374	.400	.415	.432
Appropriated Value	.405	.400		
Adjustments to Appropriated Value	-.031	-.013		
Adjustments to Budget Year Since FY97 President's Budget			-.001	-.002
Current Budget Submit/President's Budget (FY98)	.374	.387	.414	.430

Change Summary Explanation:
FY96 and FY97 changes are due to Congressional adjustment to Defense-Wide Investment Appropriation.
FY98 and FY99 changes are due to revised fiscal guidance.

C. Other Program Funding Summary:
Not applicable.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Support to Defense Support Activity/Z60	.374	.387	.414	.430	.443	.457	.467	.477	Contg	Contg

D. Schedule Profile:

Fiscal Year actual and planned events by quarter

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Annual Renewal of contract		X				X				X				X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** National Military Command System (NMCS)-Wide Support/0302016K Support to Defense Support Activity/Z60

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Basic Research and Software Analysis	374	387	414	430
TOTAL	374	387	414	430

B. Budget Acquisition History and Planning Information:
Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities						374	387	414	430	Contg	Contg
Government Furnished Property: N/A											
TOTAL PROJECT						374	387	414	430		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Joint/Defense Information Systems Engineering and Integration
0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3.622	4.468	4.721	4.971	5.404	5.858	5.984	6.123	Contg	Contg
Defense-Wide C3 Architecture & Planning/T62	1.200	1.373	1.464	1.542	1.707	1.873	1.912	1.957	Contg	Contg
Theater C3 Technical Integration/T63	.447	0*	0	0	0	0	0	0	Contg	Contg
Technology Advancement/A19	.349	.361	.366	.360	.375	.390	.399	.407	Contg	Contg
Special Projects/T64	1.100	1.114	1.200	1.246	1.386	1.531	1.564	1.601	Contg	Contg
CINCUSACOM Support/T65	.526	0*	0	0	0	0	0	0	Contg	Contg
CINC/JTF C4 Integration/T66	0*	1.620	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

A. Mission Description & Budget Item Justification:

This program provides overall system analysis, architectural development, system engineering, integration, and developmental engineering responsibilities for joint and national level Command, Control, and Communications (C3) systems to ensure the affected systems continue to be responsive in current, dynamically changing environments. These activities involve joint/national level systems which necessitate a high degree of multi-service/agency planning and development. Included are technical support and engineering integration to facilitate compliance with standards and technical architectures and to improve the command centers of the Unified and Specified (U&S) Commands. Technical support in the above mentioned activities is provided to the Office of the Secretary of Defense (OSD), the Joint Staff (JS), U&S Commands (CINCs), the Military Departments and Defense Agencies. The program element develops planning guidance backed by analysis and data to support OSD, the JS, and the CINCs in prioritizing their Command and Control (C2) requirements and acquisitions. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

*Beginning FY 1997, Projects T63 and T65 are combined into a new project, "CINC/JTF C4 Integration", T66.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Defense-Wide C3 Architecture & Planning/T62	1.200	1.373	1.464	1.542	1.707	1.873	1.912	1.957	Contg	Contg

A. Mission Description & Budget Item Justification:

This project encompasses two efforts: (1) The first effort provides the interoperability and integration of resources essential to the achievement of a Global C4I Infrastructure that will be "seamless" to the user. This is accomplished through a multi-level planning program which includes four elements: (a) The Defense Information Infrastructure (DII), which integrates all DOD information systems, sensors, data storage services, communications networks, and computer storage devices to provide collection, processing, storage, display and information transfer; (b) DII Technology Insertion, which provides assessment of the utility of new technology through high level performance simulation of the DII; (c) The Defense Information Systems Network (DISN) which addresses the fixed common-user systems, treating the long haul communications, base-level, and rear-area tactical communications as an end-to-end system with particular focus on user requirements, technology and standards, features and services, security, and network management; (d) the DISN Security which includes current and future DISN security initiatives for communications. (2) The second effort provides planning for interoperability and integration of C4I for the Warrior (C4IFTW). This is accomplished through the development of enterprise, mission, functional and technical architecture products. These products depict how all DOD systems, to include information, sensors, data storage services, and communications networks provide collection, processing, storage, display and information transfer. It incorporates the DII and National Information Infrastructure (NII). This project gives DOD overall improved operational performance and reduced costs through common architecture standards and interfaces, and a sharing of assets and capabilities.

(U) FY 1996 Accomplishments:

- o Provide major update of DISN architecture guidance based on FY95 accomplishments together with technology and standards evolution (Sep 96; $348K).
- o Initiate DISN transition plan in support of Global Grid (Sep 96; $341K).
- o Develop tools for legacy DISN networks on object oriented, open COTS system and tools for design/analysis of Asynchronous Transmission Mode (ATM)-based networks on object oriented, open COTS system (Sep 96; $511K).

$1.200M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Joint/Defense Information Systems Engineering and Integration
0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Defense-Wide C3 Architecture & Planning/T62	1.200	1.373	1.464	1.542	1.707	1.873	1.912	1.957	Contg	Contg

(U) FY 1997 Plans:

- Perform Horizontal Integration Analysis and develop system engineering guidance for Horizontal Integration between the components of DISN, Defense Messaging System (DMS), DII COE, Global Command and Control System (GCCS), Global Combat Support System (GCSS), DII Command and Control (DIIC2) and INFOSEC (Sep 97; $838K).
- Develop prototype access line sizing for ATM-based networks and prototype backbone link sizing for ATM-based networks (Sep 97; $535K).

$1.373M Total

(U) FY 1998 Plans:

- Continue to perform Horizontal Integration Analysis and develop system engineering guidance for Horizontal Integration between the components of DISN, DMS, DII COE, GCCS, GCSS, DIIC2 and INFOSEC (Sep 98; $893K).
- Develop DISA/ARPA Joint Program Office recommended ATM user premises infrastructure design/analysis trade-off capability and develop ATM traffic source characterizations for specific applications (Sep 98; $571K).

$1.464M Total

(U) FY 1999 Plans:

- Continue to perform Horizontal Integration Analysis and develop system engineering guidance for Horizontal Integration between the components of DISN, DMS, DII COE, GCCS, GCSS, DIIC2 and INFOSEC (Sep 99; $941K).
- Validate traffic source models for specific ATM applications and develop capability to import operational topology and traffic information from ATM-based networks (Sep 99; $601K).

$1.542M Total

Acquisition Strategy: The MITRE Corporation, McLean, VA; Booz-Allen & Hamilton, Inc., Bethesda, MD;Logicon, Reston, VA.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Joint/Defense Information Systems Engineering and Integration
0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Defense-Wide C3 Architecture & Planning/T62	1.200	1.373	1.464	1.542	1.707	1.873	1.912	1.957	Contg	Contg

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	1.323	1.399	1.470	1.551
Appropriated Value	1.869	1.399		
Adjustments to Appropriated Value	-.669	-.026		
Adjustments to Budget Year Since FY97 President's Budget			-.006	-.009
Current Budget Submit/President's Budget (FY98)	1.200	1.373	1.464	1.542

Change Summary Explanation:

FY96 reduction due to below threshold reprogramming.
FY97 decrease due to congressional adjustment to Defense-wide Investment Appropriation.
FY98-99 adjustment due to revised fiscal guidance.

C. Other Program Funding Summary:

N/A

D. Schedule Profile:

FY 1996 3rd Qtr: Develop design tools for legacy DISN networks.
FY 1997 3rd Qtr: Develop design tools for ATM-based networks.
FY 1998 4th Qtr: Develop ATM traffic source characterizations.
FY 1999 4th Qtr: Develop capability to import operational topology and traffic from ATM-based networks.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K/Defense-Wide C3 Architecture & Planning/T62

A. Project Cost Breakdown: ($000)

	FY96	FY97	FY98	FY99
a. Systems Engineering	1,200	1,373	1,464	1,542
TOTAL	1,200	1,373	1,464	1,542

B. Budget Acquisition History and Planning Information:

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities	CPAF CPFF MIPR					1,200	1,373	1,464	1,542	Contg	Contg
Government Furnished Property: N/A											
TOTAL PROJECT						1,200	1,373	1,464	1,542		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Theater C3 Technical Integration/T63	.447	0*	0	0	0	0	0	0	Contg	Contg

A. Mission Description & Budget Item Justification:

This project provides technical engineering support to ensure technical integration of tactical switched systems and associated network management into the Strategic Network in a seamless architecture that supports the C4IFTW concept. The project provides support directly to the warfighting and supporting CINCs to overcome deficiencies in the interface and management between tactical and strategic as well as tactical-to-tactical switched systems and to provide C3 capabilities that contribute to mission accomplishment. This project supports DISA's designated responsibilities as the technical integrator for tactical to DISN switched systems and as the integrator for all DOD communications network management systems. In addition, it provides a method to inject Corporate Information Management (CIM), and DII concepts, evolving architectures and standards into the theater commands, thus contributing to the achievement of global C3I infrastructure. USCENTCOM, USEUCOM, USPACOM, and USSOUTHCOM depend on this project to correct existing C3 deficiencies which have significant operational impacts. This support is near-term, externally focused and user oriented; the recommendations are developed in coordination with the warfighting planners. This project provides the technical guidance to CINC and Service C4I system development to ensure that both CINC and Service programs incorporate and are consistent with the DISN Goal Architecture and C4IFTW guidance.

(U) FY 1996 Accomplishments:

- o Provide engineering for Joint Communications Planning and Management System (JCPMS) Planning and Management Support (Sep 96; $223K).
- o Develop architecture documentation and provide support necessary for implementation of the Joint Task Force Tactical Communications Architecture, provide technical support for the Joint Task Force (JTF) interoperability work, and assist with solving JTF interoperability problems referred to DISA for resolution (Sep 96; $224K).

$.447M Total

*Beginning FY 1997, Projects T63 and T65 are combined into a new project, "CINC/JTF C4 Integration", T66.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Theater C3 Technical Integration/T63	.447	0*	0	0	0	0	0	0	Contg	Contg

Acquisition Strategy: Booz-Allen & Hamilton, Inc., Bethesda, MD; The MITRE Corporation, McLean, VA; Logicon Eagle Technology, Reston, VA and Winter Park, FL.

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.447	0	0	0
Appropriated Value	.927			
Adjustments to Appropriated Value	-.480			
Adjustments to Budget Year Since FY97 President's Budget				
Current Budget Submit/President's Budget (FY98)	.447	0*	0	0

Change Summary Explanation:

FY96 reduction due to Congressional adjustments of Defense-Wide Investment appropriation and below threshold reprogramming.

*In FY97, funding for this project was combined with Project T65 in a new project, T66.

C. Other Program Funding Summary:

	FY96	Total Cost
Operation and Maintenance:	.027	Contg

Related RDT&E: Other projects in PE #0302019K.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Theater C3 Technical Integration/T63	.447	0*	0	0	0	0	0	0	Contg	Contg

D. Schedule Profile:

FY 1996 1st Qtr: Limited Testing and Evaluation of Joint Integrated Tactical Switch (JITS) prototypes.
2nd Qtr: JITS Milestone III Review.
Initial Fielding of Joint Communications Network Management Tool.
3rd Qtr: Issue RFP for JITS.
Fielding/Retrofit of Circuit Switch Routing Task Execution Plan.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K/Theater C3 Technical Integration/T63

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	447	0*	0	0
TOTAL	447	0*	0	0

B. Budget Acquisition History and Planning Information:

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities	CPAF CPFF MIPR					447	0	0	0	*	*
Government Furnished Property: N/A											
TOTAL PROJECT						447	0	0	0		

*Beginning FY 1997, Projects T63 and T65 are combined into a new project, "CINC/JTF C4 Integration", T66.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Technology Advancement/A19	.349	.361	.366	.360	.375	.390	.399	.407	Contg	Contg

A. Mission Description & Budget Item Justification:

The rapid evolution of the global military environment is driving a major evolution of the DOD force structure and military operations, requiring greater flexibility to meet the global warfighting requirements to rapidly project forces anywhere in the world. This project is to build a DOD-wide High Level Architecture (HLA) C4ISR Model Federation to support the acquisition, testing, and assessing of operational activities in support of OSD. The model supports these taskings by providing C4ISR quantitative analysis as measured against mission success. The quantitative analysis provided accentuates the decision making process in new acquisitions, assessments of doctrine and design of operational activities.

(U) FY 1996 Accomplishments:

- o Development of an initial prototype C4ISR model. (3rd Qtr - 4th Qtr) ($.349M Total)

(U) FY 1997 Plans:

- o Initial integration with theater level force deployment models and analytical support for Vision 2000 objectives. (1st Qtr - 3rd Qtr) ($.361M Total)

(U) FY 1998 Plans:

- o Full integration with theater level force deployment models. (1st Qtr - 3rd Qtr) ($.366M Total)

(U) FY 1999 Plans:

- o Full integration for DISA CINC assessments. (1st Qtr - 3rd Qtr) ($.360M Total)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Technology Advancement/A19	.349	.361	.366	.360	.375	.390	.399	.407	Contg	Contg

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.349	.361	.367	.362
Appropriated Value	.479	.361		
Adjustments to Appropriated Value	-.130	0		
Adjustments to Budget Year Since FY97 President's Budget			-.001	-.002
Current Budget Submit/President's Budget (FY 98)	.349	.361	.366	.360

Change Summary Explanation:
FY96 reduction due to Congressional adjustment of Defense-wide Investment appropriation and below threshold reprogramming.
FY98 and FY99 changes due to revised fiscal guidance.

C. Other Program Funding Summary:
N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Technology Advancement/A19	.349	.361	.366	.360	.375	.390	.399	.407	Contg	Contg

D. Schedule Profile:

Fiscal Year actual and planned events by quarter.

FY 1996 3rd Qtr: Execute option year of technical support contract

FY 1997 1st Qtr: Execute option year of technical support contract

FY 1998 1st Qtr: Execute option year of technical support contract

FY 1999 1st Qtr: Execute option year of technical support contract

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K/Technology Advancement/A19

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. System analysis, design and programming	349	361	366	360
TOTAL	349	361	366	360

B. Budget Acquisition History and Planning Information

N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Special Projects/T64	1.100	1.114	1.200	1.246	1.386	1.531	1.564	1.601	Contg	Contg

A. Mission Description & Budget Item Justification:

All aspects of this project are classified and require special access. Therefore, information on this project is not contained in this document but can be obtained upon request.

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	1.100	1.155	1.205	1.253
Appropriated Value	1.412	1.155		
Adjustments to Appropriated Value	-.312	-.041		
Adjustments to Budget Year Since FY97 President's Budget			-.005	-.007
Current Budget Submit/President's Budget (FY98)	1.100	1.114	1.200	1.246

Change Summary Explanation:

FY96 reduction due to Congressional adjustment of Defense-wide Investment Appropriation and below threshold reprogramming.

FY97 decrease due to Congressional adjustment of Defense-wide Investment Appropriation.

FY98-99 adjustment due to revised fiscal guidance.

C. Other Program Funding Summary:

Related RDT&E: PE 0303131K, Minimum Essential Emergency Communications Network (MEECN).

D. Schedule Profile:

Information will be made available upon request.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K/Special Projects/T64

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	1,100	1,114	1,200	1,246
TOTAL	1,100	1,114	1,200	1,246

B. Budget Acquisition History and Planning Information

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
MITRE	SS/CPFF					1,100	1,114	1,200	1,246	Contg	Contg
Government Furnished Property: N/A											
TOTAL PROJECT						1,100	1,114	1,200	1,246		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINCUSACOM Support/T65	.526	0*	0	0	0	0	0	0	Contg	Contg

A. Mission Description & Budget Item Justification:

This project develops the near and mid-term Command, Control, Communications and Computer (C4) plans for CINCUSACOM, identifies shortcomings in C4 systems and procedures and, when appropriate, prototype solutions to those shortcomings. The CJCS Unified Command Plan significantly increased ACOM's missions, giving the command the responsibility for joint training, joint force packaging, UN peacekeeping support and the land defense of CONUS and Canada. Because of this, USACOM's C4 planning encompasses missions much broader than other unified commands and will serve as a model for them. Therefore, this project's outputs not only contain the only C4 planning done for specific operational missions but they will also contain key portions of the C4 planning for support to all CINCs' operational missions. Implementation of this project will, therefore, provide global benefits for all the nation's security objectives.

(U) FY 1996 Accomplishments:

- Supported USACOM's production of their FY96 C4 Strategic Master Plan (C4SMP) Assessment Update (Sep 96; $240K).
- Prototyped solutions to USACOM's C4 deficiencies with global impact and collect data on ACOM's operational use to expedite standardized solution development (Aug 96; $286K).

$.526M Total

Acquisition Strategy: Logicon Eagle Technology, Inc., Winter Park, FL.

*Beginning FY 1997, Projects T63 and T65 are combined into a new project, "CINC/JTF C4 Integration", T66.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINCUSACOM Support/T65	.526	0*	0	0	0	0	0	0	Contg	Contg

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.526	0*	0	0
Appropriated Value	.451			
Adjustments to Appropriated Value	+.075			
Adjustments to Budget Year Since FY97 President's Budget				
Current Budget Submit/President's Budget (FY98)	.526	0*	0	0

Change Summary Explanation:
FY96 adjustment due to below threshold reprogramming.

C. Other Program Funding Summary:

	FY96
Operations and Maintenance	.665

D. Schedule Profile:

FY 1996 1st Qtr: Place tasks on contract
3rd Qtr: Delivery of FY96 C4 Assessment
4th Qtr: Delivery solution recommendation for ACOM evaluation

*Beginning FY 1997, Projects T63 and T65 are combined into a new project, "CINC/JTF C4 Integration", T66.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Joint/Defense Information Systems Engineering and Integration
0302019K/CINCUSACOM/T65

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	526	0*	0	0
TOTAL	526	0*	0	0

B. Budget Acquisition History and Planning Information
Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
LOGICON	C/CPAF					526	0*	0	0	*	*
Government Furnished Property: N/A											
TOTAL PROJECT						526	0*	0	0		

*Beginning FY 1997, Projects T63 and T65 are combined into a new project, "CINC/JTF C4 Integration", T66.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINC/JTF C4 Integration/T66	0	1.620*	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

A. Mission Description & Budget Item Justification:

The Chairman, Joint Chiefs of Staff Instruction (CJCSI) 6111.01, C4 Planning, Assessment, and Evaluation Process, establishes policy guidelines and assigns responsibilities for modernization planning, analytical assessment, and operational evaluation of C4 systems. It provides general guidance to the CINCs, sub-unified commands, Service components, and the Joint Staff for coordinating actions required to field new C4 systems, integrating systems architectures, modifying existing systems, and assessing short and long range C4 capabilities or deficiencies. It is the basis for CINC C4 inputs to the JSPS, PPBS, the CINCs Integrated Priority List (IPL), the Joint Monthly Readiness Report, and the Joint Warfighter Capabilities Assessment (JWCA). The process advocates documentation of short, middle, and long range C4 objectives, anticipating future requirements and serving as regional C4 road map. CJCSI 6111.01 specifically identifies DISA as the responsible agent for providing the following technical and automation support to the Joint Staff, J-6, and the CINCs:

(1) Development and maintenance of automated C4 analysis tools.
(2) Performing C4 studies or analysis in support of the CINCs or Joint Staff.
(3) Providing a secure electronic repository for C4 planning, assessment, and evaluation documents.

(U) FY 1997 Plans:

- Transition Road Map (TRM) Support to USSOUTHCOM: This work consists of updating and integrating the USSOUTHCOM TRM with C4ISR (Intelligence) issues; in addition to developing the CINC Annual C4 Assessment. This task also involves converting the TRM along with other supporting C4 assessment documentation to Hyper Text Markup Language (HTML) and loading it on to their home page on the SIPRNET. (Contg; $250K)

*This project is not a new start.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Joint/Defense Information Systems Engineering and Integration
0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINC/JTF C4 Integration/T66	0	1.620*	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

(U) FY 1997 Plans (cont'd):

- C4I Assessment and Planning Support to USACOM: This work consists of developing the FY97 USACOM C4 Planning, Assessment, and Evaluation Master Plan, along with the CINC Annual C4 Assessment. Both documents will be converted to HTML and loaded on to a home page on the SIPRNET with supporting C4 related documentation. (Contg; $375K)
- C4I Assessment and Planning Support to USSOCOM: This work consists of developing the CINC Annual C4 Assessment, converting it to HTML, and loading it on to a home page on the SIPRNET with supporting C4 related documentation. (Contg; $375K)
- C4 PA&E Automation Support: The objective of this task is to design, implement, and maintain CINC and Joint Staff home pages over the INTERNET World Wide Web. This task is inherent to supporting all CINCs and the Joint staff and associated costs are already included in the aforementioned tasks. (Contg; $270K)
- C4 Assessment Tool: This task involves development of an automated C4 assessment tool consisting of a database populated with criteria that serve as a strategic foundation for the development of warfighter objectives and capabilities for CINC USSOUTHCOM, USACOM, and USSOCOM. This criteria will be extracted from documents such as the Joint Monthly Readiness Report (JMRR), IPL, Joint Mission Essential Task List (JMETL), Joint Universal Lessons Learned System (JULLS), and JWCA issues. The CINCs will have the ability to weigh the relative value of each individual criteria, based on their mission and functions, producing a rank order listing of their C4 capabilities or deficiencies which they can incorporate into their JWCA submission to the Joint Staff. It would provide a uniform methodology across all the CINCs and tie the C4 PA&E process into the overall theater architecture through an automated means. The tool would run over the SIPRNET. (Contg; $350K)

$1.620M Total

*This project is not a new start.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									**DATE:** February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINC/JTF C4 Integration/T66	0	1.620*	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

(U) FY 1998 Plans:

- C4I Assessment and Planning Support to Joint Staff and Unified CINCs: This work consists of developing the FY98 C4 Planning, Assessment, and Evaluation Master Plan for all CINCs in addition to development of their CINC Annual C4 Assessment. These deliverables will be converted to Hyper Text Markup Language (HTML) and loaded on to CINC home pages on the SIPRNET with supporting C4 related documentation. Support to the Joint Staff will be closely similar. (Contg; $1691K)

  $1.691M Total

(U) FY 1999 Plans:

- C4I Assessment and Planning Support to Joint Staff and Unified CINCs: This work consists of developing the FY99 C4 Planning, Assessment, and Evaluation Master Plan for all CINCs in addition to development of their CINC Annual C4 Assessment. These deliverables will be converted to Hyper Text Markup Language (HTML) and loaded on to CINC home pages on the SIPRNET with supporting C4 related documentation. Support to the Joint Staff will be closely similar. (Contg; $1823K)

  $1.823M Total

Acquisition Strategy: N/A

*This project is not a new start.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Joint/Defense Information Systems Engineering and Integration
0302019K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINC/JTF C4 Integration/T66	0	1.620*	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

B. Program Change Summary:

	FY96	FY97*	FY98	FY99
Previous President's Budget (FY97)	0	1.679	1.698	1.833
Appropriated Value		1.679		
Adjustments to Appropriated Value		-.059		
Adjustments to Budget Year Since FY97 President's Budget			-.007	-.010
Current Budget Submit/President's Budget (FY98)	0	1.620	1.691	1.823

Change Summary Explanation:
FY97 decrease due to Congressional adjustment to Defense-Wide Investment Appropriation.
FY98 and FY99 decrease due to revised fiscal guidance.

C. Other Program Funding Summary:
N/A

*This project is not a new start.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINC/JTF C4 Integration/T66	0	1.620*	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

D. Schedule Profile:

FY1997 1st Qtr: 1st Draft of SOUTHCOM TRM
2nd Qtr: 1st Draft of ACOM C4 PA&E Master Plan
1st Draft of SOCOM C4 PA&E Master Plan
C4PA&E Automation Support
Final Draft of SOUTHCOM TRM
Preliminary design of the C4 Assessment Tool
3rd Qtr: C4 PA&E Automation Support
Complete development of the C4 Assessment Tool
4th Qtr: C4 PA&E Automation Support
Complete development of the C4 Assessment Tool
CINC C4 Annual Summary

FY1998 1st Qtr: 1st Draft of each CINCs C4 PA&E Plan
C4 PA&E Automation Support
C4 Assessment Tool O&M
2nd Qtr: Final Draft of each CINCs C4 PA&E Plan
C4 PA&E Automation Support
C4 Assessment Tool O&M
3rd Qtr: C4 PA&E Automation Support
C4 Assessment Tool O&M

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
CINC/JTF C4 Integration/T66	0	1.620*	1.691	1.823	1.936	2.064	2.109	2.158	Contg	Contg

4th Qtr: C4 PA&E Automation Support
C4 Assessment Tool O&M
CINC C4 Annual Summary

FY 1999 1st Qtr: 1st Draft of each CINCs C4 PA&E Plan
C4 PA&E Automation Support
C4 Assessment Tool O&M
2nd Qtr: Final Draft of each CINCs C4 PA&E Plan
C4 PA&E Automation Support
C4 Assessment Tool O&M
3rd Qtr: C4 PA&E Automation Support
C4 Assessment Tool O&M
4th Qtr: C4 PA&E Automation Support
C4 Assessment Tool O&M
CINC C4 Annual Summary

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Joint/Defense Information Systems Engineering and Integration 0302019K/CINC/JTF C4 Integration/T66

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	0	1,620	1,691	1,823
TOTAL	0	1,620	1,691	1,823

B. Budget Acquisition History and Planning Information:

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities	CPAF CPFF MIPR					0	1,620	1,691	1,823	Contg	Contg
Government Furnished Property: N/A											
TOTAL PROJECT						0	1,620	1,691	1,823		

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RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Total PE Cost: PE 0303126K	17.788	22.479	14.520	15.254	8.746	9.047	9.241	9.457	Contg	Contg
Commercial Satellite Communications Init./E25	7.254	7.464	0	0	0	0	0	0	0	44.718
Leading Edge Pilot Info. Technologies/E26	2.044	2.854	3.060	3.114	3.222	3.335	3.519	3.597	Contg	Contg
MILSATCOM & DII Planning/E61	4.329	4.211	4.797	4.883	5.053	5.227	5.226	5.353	Contg	Contg
Defense Info. Systems Network Acquisition/H20	1.131	7.496	6.200	6.800	0	0	0	0	0	21.627
Defense Message System/H80	2.584	*	0	0	0	0	0	0	Contg	Contg
White House Situation Support Staff/W90	0.446	0.454	0.463	0.457	0.471	0.485	0.496	0.507	Contg	Contg

A. Mission Description and Budget Item Justification: This program element funds system engineering and test & evaluation for the Defense Communications System (DCS)/Defense Information Systems Network (DISN) which provides Defense-wide communications for the day-to-day operations of the DOD and serves as the core of DOD wartime communications for the National Command Authorities (NCA), the Joint Chiefs of Staff (JCS), the Commanders-in-Chief (CINCs), and other critical users. This PE provides for the engineering to consolidate the operational communications networks into DISN and for the technologies, commercial equipments and service offerings to reduce the cost of the DCS/DISN and to provide valuable new information services to users.

The PE consists of 6 projects. Project E25 develops and implements a commercial satellite communications system pilot program in support of the DISN. Project E26 supports Leading Edge Pilot Services which include information for worldwide DOD user and research communities. Project E61 supports the planning and decision management to provide responsive communications and information services to support evolving military missions. Project H20 covers DISN,

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications

architecture and integration activities and service contracts. Project H80 supports the development of the Defense Message System (DMS) which is designed to provide the defense community a more interoperable and cost effective messaging service. Project W90 supports engineering to provide full level crisis management capabilities for the White House. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

* Project H80 has been transferred to PE 0303129K in FY 1997.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E25 Commercial Satellite Communications Initiative Follow-On	7.254	7.464	0	0	0	0	0	0	0	44.718

A. Mission Description & Budget Item Justification:

(U) This project develops and implements pilot capabilities for a proof of concept using available commercial satellite communications capabilities. This program establishes a seed pilot network, a tool for networking planning, development of a bandwidth management capability for leased whole transponders, and validation of a concept to reduce DOD commercial satellite telecommunications costs by bundling of individual circuit leases and by consolidating telecommunications requirements on whole transponders. The pilot network will offer a variety of services that are presently not available, such as downloading high data rate information from airborne vehicles via commercial satellites to processing centers, and dissemination of information to remote users. This program will demonstrate how to integrate commercial satellite capabilities with the Defense Information System Network (DISN) and Defense Satellite Communications System (DSCS).

(U) FY 1996 Accomplishments:

- o Continue contracts and extend services to new regions ($7.254 M)
- o Validate new contracts
- o Expand pilot network services (Ongoing)
  - Serve telemedicine, meteorological and ships at sea applications
- o Support Bosnia Peace Keeping

$7.254M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E25 Commercial Satellite Communications Initiatives Follow-On	7.254	7.464	0	0	0	0	0	0	0	44.718

(U) FY 1997 Plans:

- o Expand pilot services ($7.464 M Ongoing)
- o Validate concepts (4Q97)
  - -sustainable customer base established, integration with DSCS and DISN, final reports and business plan
  - $7.464M Total

Acquisition Strategy: All services and equipment are to be competitively procured.

B. Program Change Summary

	FY 96	FY 97	FY 98	FY 99	Total Cost
Previous President's Budget (FY 1997)	7.263	7.636	0	0	44.899
Appropriated Value	8.000	7.636			
Adjustments to Appropriated Value	- .746	-.172			
Adjustments to Budget Year Since FY 1997 President's Budget					
Current Budget Submit/President's Budget	7.254	7.464	0	0	44.718

Change Summary Explanation:
Funding: FY 96 and FY97 reduction due to Congressional adjustment to Defense-wide Investment Appropriation.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&&E, Defense Wide/07					R-1 ITEM NOMENCLATURE PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E25 Commercial Satellite Communications Initiatives Follow-On	7.254	7.464	0	0	0	0	0	0	0	44.718

Schedule: N/A
Technical: N/A

C. Other Program Funding Summary: N/A

D. Schedule Profile:
Fiscal Year actual and planned events by quarter.

	FY 1996				FY 1997			
	1	2	3	4	1	2	3	4

Engineering Milestones:
Award VSAT Terminal
Award transponder and bandwidth contract
T&E milestones:
Validated Bmc/Control X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications/E25/ COMMERCIAL SATELLITE COMMUNICATIONS INITIATIVES FOLLOW-ON

A. Project Cost Breakdown ($000)

Project cost categories	FY 96	FY 97	FY 98	FY 99
1. Travel	25	25	0	0
2. Management Support Services	300	300	0	0
3. Engineering & Technical Services	6,929	7,139	0	0
Total	7,254	7,464	0	0

B. Budget Acquisition History and Planning Information: N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
PE 0303126K/Long Haul Communications

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E26 Leading Edge Pilot Information Technology	2.044	2.854	3.060	3.114	3.222	3.335	3.519	3.597	Contg	Contg

A. Mission Description & Budget Item Justification: Leading Edge Pilot Services are information transport and value added services which are not available from the Defense Information Infrastructure (DII) and for which customers are willing to assume some of the risk associated with development of initial deployment. These services may include information processing, storage, and retrieval; communications (voice, data, video, multimedia); and security technologies and applications in command, control, and intelligence for the worldwide DOD user and research communities. This program supports the acquisition and delivery of consolidated advanced technology information services in a maximally competitive environment (as cost effectively as is possible) to customers with operational needs that exceed those capabilities currently available from the DII. The resulting services will be managed in the operational context of the single information DII, operated and maintained by DISA. The DISA/ARPA Advanced Information Technology Services Joint Program Office (AITS-JPO) will integrate advanced technology research and development efforts from ARPA and others, focus the flow of these technologies from R&D to widespread experimental uses, to leading edge and from leading edge to maximize the potential for migration into the DII and the National Information Infrastructure (NII). The DISA funding under this program element will allow the AITS-JPO to leverage research and development funding and efforts.

(U) FY 1996 Accomplishments:

o Monitor candidate information system technologies and capabilities which are still research and development for potential integration into the AITS-JPO Pilot Service portfolio. ($100K) (1st Qtr - 4th Qtr)

o Participate, initiate, expedite, or collaborate in Advanced Concepts Technology Demonstrations (ACTD's) in support of leading edge technology services. ($184K) (1st Qtr - 4th Qtr)

o Evaluate available candidate Advanced Information Technology (AIT) services versus user requirements and select promising technologies for pilot service. ($584K) (1st Qtr - 4th Qtr)

o Develop and coordinate plans and strategies for migration of Leading Edge Services into the DII. ($868K) (1st Qtr - 4th Qtr)

o Migrate video teleconferencing services to the DII. ($50K) (1st Qtr - 4th Qtr)

o Evaluate and integrate interim call encryption security devices for the modeling and simulation and high performance computing users. ($208K) (1st Qtr - 4th Qtr)

o Evaluate Asynchronous Transfer Mode (ATM) multicast services for the modeling and simulation users. ($50K) (1st Qtr - 4th Qtr)

$2.044M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E26 Leading Edge Pilot Information Technology	2.044	2.854	3.060	3.114	3.222	3.335	3.519	3.597	Contg	Contg

(U) FY 1997 Plans:

o Monitor candidate information system technologies and capabilities which are still in research and development for potential integration into the AITS-JPO Pilot Service portfolio ($100K) (1st Qtr - 4th Qtr)

o Participate, initiate, expedite, or collaborate in Advanced Concepts Technology Demonstrations (ACTD's) in support of leading edge technology services. ($100K) (1st Qtr - 4th Qtr)

o Evaluate available candidate AIT services versus user requirements and select promising technologies for pilot service ($700K) (1st Qtr - 4th Qtr)

o Develop and coordinate plans and strategies for migration of Leading Edge Services into the DII. ($950K) (1st Qtr - 4th Qtr)

o Migrate selected modeling and simulation services to the DII. ($400K) (1st Qtr - 4th Qtr)

o Integrate first production key agile cell encryption devices for modeling and simulation users ($239K) (1st Qtr - 2nd Qtr)

o Enhance emerging band width-aware and end-to-end security pilot services ($155K) (1st Qtr - 4th Qtr).

o Integrate ATM multicast services for modeling and simulation users ($200K) (1st Qtr - 4th Qtr)

$2.854M Total

(U) FY 1998 Plans:

o Develop and implement emerging technologies in order to identify potential candidates to migrate into advanced DOD-wide applications and services. ($1,060K) (1st Qtr - 4th Qtr)

o Evaluate and implement emerging standards and protocols into pilot services network ($1,000K) (1st Qtr - 4th Qtr)

o Develop and coordinate plans and strategies for migration of leading edge services to the DII. ($1,000K) (1st Qtr - 4th Qtr)

$3.060M Total

(U) FY 1999 Plans:

o Perform program and engineering analysis of candidate leading edge information technologies test of pilot operations and demonstrations of leading edge technologies for migration into the DII. (1st Qtr - 4th Qtr) $3.114M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E26 Leading Edge Pilot Information Technology	2.044	2.854	3.060	3.114	3.222	3.335	3.519	3.597	Contg	Contg

Acquisition Strategy: Develop and implement statements of work and task orders to support FFRDC and SETA Contracts.

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	2.873	3.029	3.139	3.260
Appropriated Value	2.971	3.029		
Adjustments to Appropriated Value	-.927	-.175		
Adjustments to Budget Year Since FY97 President's Budget			-.079	-.146
Current Budget Submit/President's Budget (FY 1998)	2.044	2.854	3.060	3.114

Change Summary Explanation:

Funding: FY96 and FY97 reduction due to Congressional adjustment to Defense-wide Investment Appropriation. FY98 and FY99 changes are due to revised fiscal guidance.

Schedule: N/A

Technical: N/A

C. Other Program Funding Summary:

	FY96	FY97	FY98	FY99
O&M	2.355	2.658	2.736	2.856

D. Schedule Profile

Fiscal Year actual and planned events by quarter.

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SOW for SETA Support	X				X	X			X	X			X	X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications/E26 Leading Edge Pilot Info Tech

A: Project Cost Breakdown

	FY96	FY97	FY98	FY99
Project Cost Categories				
Modeling & Simulation	2,044	2,854	3,060	3,114
Total	2,044	2,854	3,060	3,114

B: Budget Acquisition History and Planning Information: N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E61 MILSATCOM and Defense Information Infrastructure (DII) Planning	4.329	4.211	4.797	4.883	5.053	5.227	5.226	5.353	Contg	Contg

A. Mission Description & Budget Item Justification: The rapid evolution of the global military environment is driving a major evolution of the DOD force structure and military operations requiring greater flexibility to meet the global warfighting requirements to rapidly project forces anywhere in the world. This project supports the planning and decision management required to provide responsive communications and information services to support the evolving military missions. The efforts support integrated DOD communications planning and investment strategy for the successful deployment of DoD information systems by performing a broad spectrum of activities in support of C4I programs including modeling, simulation, focused testing, evaluation, and performing technical and operational assessment techniques on emerging technologies. This work is essential to achieve the DISA goal of quality information services at an affordable cost through a deliberate decision management process. Part of the work is being the leader in C4I models, decision tools, and technical, economic and mitigation risk assessments. The warfighter is provided electronic simulated field combat training aids and assessment of contingency operations and exercises through this project.

(U) FY96 Accomplishments:

- o JCDSC: Continue upgrading the JCDSC, developing advanced planning tools and databases. ($832K) (2nd Qtr - 4th Qtr)
- o C4I Simulation Integration: Migrate to a common family of models for training, planning and assessment. ($950K) (2nd Qtr - 4th Qtr)
- o C4I/Defense Information Infrastructure (DII) Assessment: Provide assessment support to DISA and the operational community. ($654K) (2nd Qtr - 4th Qtr)
- o Joint Staff Support: Provide analysis and decision management support to the warfighters in the realization of C4IFTW. ($519K) (2nd Qtr - 4th Qtr)
- o Integrated Network Assessments: Assess military and commercial telecommunications alternatives to resolve programmatic issues. ($1374K) (2nd Qtr - 4th Qtr)

$4.329M Total

(U) FY97 Plans:

- o Integrated Communication Data Base (ICDB)($369K)(1st Qtr - 3rd Qtr)
- o C4I Simulation Integration: Migrate to a common family of models for training, planning and assessment. ($985K)(1st Qtr - 4th Qtr)
- o C4I/DII Assessment: Provide assessment support to DISA and the operational community.($465K)(1st Qtr - 4th Qtr)
- o Joint Staff Support: Provide analysis and decision management support to the warfighters in the realization of C4IFTW. ($1612K) (1st Qtr - 4th Qtr)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E61 MILSATCOM and Defense Information Infrastructure (DII) Planning	4.329	4.211	4.797	4.883	5.053	5.227	5.226	5.353	Contg	Contg

o Integrated Network Assessments: Assess military and commercial telecommunications alternatives to resolve programmatic issues. ($550K) (1st Qtr - 4th Qtr)
o C4I Model: Develop a DOD-wide C4I simulator to support mission test, training and operational exercises. ($230K)(1st Qtr - 4th Qtr)
$4.211M Total

(U) FY98 Plans:
o Integrated Communication Data Base (ICDB)($369K)(1st Qtr - 4th Qtr)
o C4I Simulation Integration ($985K)(1st Qtr - 4th Qtr)
o C4I/DII Assessment ($465K)(1st Qtr - 4th Qtr)
o Joint Staff Support ($1,611K)(1st Qtr - 4th Qtr)
o Integrated Network Assessments ($550K)(1st Qtr - 4th Qtr)
o C4I Model($230K)(1st Qtr - 4th Qtr)
$4.797M Total

(U) FY99 Plans:
o Integrated Communication Data Base (ICDB)($309K)(1st Qtr - 4th Qtr)
o C4I Simulation Integration ($1,220K)(1st Qtr - 4th Qtr)
o C4I/DII Assessment ($556K)(1st Qtr - 4th Qtr)
o Joint Staff Support ($1,966K)(1st Qtr - 4th Qtr)
o Integrated Network Assessments ($585K)(1st Qtr - 4th Qtr)
o C4I Model($250K)(1st Qtr - 4th Qtr)
$4.883M Total

Acquisition Strategy: SETA support contract (CPFF-LOE) was competitively awarded and consists of a base year and four option years. FFRDC support is procured sole source through the sponsoring Service (e.g., the Army for MITRE)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E61 MILSATCOM and Defense Information Infrastructure (DII) Planning	4.329	4.211	4.797	4.883	5.053	5.227	5.226	5.353	Contg	Contg

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	4.113	4.671	4.749	4.780
Appropriated Value	4.279	4.671		
Adjustments to Appropriated Value	.050	-.460		
Adjustments to Budget Year Since FY 1997 President's Budget			.048	.103
Current Budget Submit/President's Budget (FY 1998)	4.329	4.211	4.797	4.883

Change Summary Explanation:

FY96 and FY97 changes due to below threshold reprogramming and Congressional adjustment to Defense-Wide Investment Appropriation.

Funding: FY98 and FY99 changes are due to revised fiscal guidance.

Schedule: N/A

Technical: N/A

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99
O&M	3.244	3.549	3.390	3.433

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project E61 MILSATCOM and Defense Information Infrastructure (DII) Planning	4.329	4.211	4.797	4.883	5.053	5.227	5.226	5.353	Contg	Contg

D. Schedule Profile

Fiscal Year actual and planned events by quarter.

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Execute option year of SETA support contract		X			X					X				X		
Execute FFRDC support (MIPRs)	X					X			X				X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications/E61/MILSATCOM

A. Project Cost Breakdown ($000)

	FY96	FY97	FY98	FY99
Project Cost Categories				
Modeling & Simulation	4,329	4,211	4,797	4,883
Total	4,329	4,211	4,797	4,883

B. Budget Acquisition History and Planning Information: N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
PE 0303126K/Long Haul Communications

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H20 Defense Information System Network (DISN) Acquisition	1.131	7.496	6.200	6.800	0	0	0	0	0	21.627

A. Mission Description & Budget Item Justification: DISN provides the Warfighters and the warfighting Commanders in Chief (CINCs), Joint Task Force (JTF) Commanders and Combined Task Force (CTF) Commanders with a robust C4I information transfer infrastructure. This infrastructure is the only subset of the Defense Information Infrastructure (DII) primarily providing transport. DISN will provide the Warfighters with U.S. Government controlled, secure, switched voice and data, imagery, video teleconferencing, and dedicated point-to-point connectivity. It directly supports national defense C4I decision support requirements, Corporate Information Management (CIM) functional businesses, and U.S. efforts to maintain the world-wide lead in defensive information warfare. This project supports the acquisition of the DISN Services for CONUS, Hawaii Information Transfer System (HITS), Deployable, Pacific, Europe, Information Dissemination Management (IDM), and Integrated Communications Database (ICDB).

(U) FY 1996 Accomplishments:

- o Provide acquisition technical support to CONUS. ($272K) (1st Qtr - 4th Qtr)
- o Provide Mobile Satellite Services (MSS) technical support. ($172K) (1st Qtr - 4th Qtr)
- o Perform ITSDN Testing to Deployed. ($208K) (1st Qtr - 4th Qtr)
- o Develop Systems Design OCONUS (Pacific & Europe). ($479K) (1st Qtr - 4th Qtr)

$1.131M Total

(U) FY 1997 Plans:

- o Develop security firewalls for fixed Mobile Satellite Services (MSS) gateway. ($1459K) (1st Qtr - 2nd Qtr)
- o Conduct feasibility study and design for Deployable MSS gateway. ($1290K) (1st Qtr)
- o Demonstrate (as a proof of concept) DOD's capability to interface with commercial fiber optics cable operations. Establishment of this capability will free the space segment to support operations, while fiber supports the high capacity administrative and logistics requirements. ($4542K) (2nd Qtr - 4th Qtr)
  - oo Develop the foundation to advance DISN capabilities to meet the JTF high bandwidth requirements and provide integrated services.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H20 Defense Information System Network (DISN) Acquisition	1.131	7.496	6.200	6.800	0	0	0	0	0	21.627

oo Develop strategy to support DOD bandwidth surge capabilities in future commercial transoceanic cable laying projects.
oo Develop concept of operations for expanding transoceanic fiber based communications infrastructure inland where a high bandwidth infrastructure does not exist.
oo Communicate DOD needs to rapidly deploy a fiber based global infrastructure for industry to include in future R&D programs.
oo Demonstrate capability to expand fiber optic links from existing commercial cable heads to newly established cable heads and rapidly deploy a high bandwidth infrastructure to support the JTF.

o Provide technical support to DISN architecture and integration group and continue requirements gathering and assessment in support of post-JSMB efforts. ($205K) (2nd Qtr)

$7.496M Total

(U) FY 1998 Plans:

o Advanced concept development of a DoD Information Dissemination Management (IDM) capability. ($6.200M) (2nd - 4th Qtr)

(U) FY 1999 Plans:

o Continue development of a DoD IDM capability and begin testing IDM concepts. ($6.800M) (3rd - 4th Qtr)

Acquisition Strategy:

FY96: FFRDC Support (MITRE)

FY97: FFRDC Support (MITRE), MSS Contract Award, SAIC Support

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H20 Defense Information System Network (DISN) Acquisition	1.131	7.496	6.200	6.800	0	0	0	0	0	21.627

B. Program Change Summary

	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget (FY 1997)	2.131	7.558	0	0	13.307
Appropriated Value	1.244	7.558			
Adjustments to Appropriated Value	- .113	- .062			
Adjustments to Budget Year Since FY 1997 President's Budget			6.200	6.800	
Current Budget Submit/President's Budget (FY 1998)	1.131	7.496	6.200	6.800	21.627

Change Summary Explanation:

Funding: FY96 and FY97 changes due to below threshold reprogrammings and Congressional adjustments. FY98 and FY99 changes are due to initiative on Information Dissemination Management.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	Total Cost
O&M	7.324	9.626	4.488	5.458	5.524	5.469	Cont

D. Schedule Profile

(U) FY 1996

MITRE Award	1st Qtr

(U) FY 1997

MITRE Award	1st Qtr
MSS Contract Award and SAIC Award	2nd Qtr
Global Fiber/TAC Interface Contract Award	TBD

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications/H20 DISN Acquisition

A. Project Cost Breakdown ($000)

	FY96	FY97	FY98	FY99
Engineering and Technical Services	1,131	7,496	6,200	6,800
Total	1,131	7,496	6,200	6,800

B. Budget Acquisition History and Planning Information:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior To FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget To Complete	Total Program
Product Development Organizations											
MITRE	MIPR	01 Oct 94	2284	2284	1361	923	0	0	0	0	2284
All other contract						208	7496	6200	6800		
		Subtotal Contracts				1131	7496	6200	6800		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H80 Defense Message System (DMS)	2.584	*	0	0	0	0	0	0	Contg	Contg

A. Mission Description & Budget Item Justification: The purpose of this project is to provide system engineering to ensure that the Joint Staff (JS) and OSD (C3I) validated messaging requirements are satisfied through the use of a COTS-based, multi-level secure messaging and directory service. The DMS provides the defense community with a more interoperable, cost effective messaging/directory service than that which is in place today. Current support is focused on developing secure messaging/directory/management services through requirements definition and refinement; target component Developmental, Initial and Final Operational Test and Evaluation (DT&E, IOT&E and FOT&E); developing transitional interoperability requirements and components/services; technology insertion and service demonstrations; and influencing industry to include DMS features as part of their standard product offerings. * This project is funded in PE0303129K beginning in FY1997.

(U) FY 1996 Accomplishments:

- o Redsign DMS Target Architecture and Implementation Strategy (TAIS) to reflect changes in security products/solutions, additional definition of Joint Task Force (JTF) and tactical user/environment, and program milestones. Work with DMS vendor to finalize initial topology, design, network sizing, planning, and phasing for the networks, including DISN transport. ($716K) (1st Qtr - 4th Qtr)
- o Support DMS Test and Evaluation (T & E) efforts including finalization of Compliancy Definition, Site Acceptance Recommendations, and observation, analysis/evaluation of IOT&E test execution. ($220K) (1st Qtr - 4th Qtr)
- o Develop and promote DOD/DMS requirements and positions on data communications protocol issues via military and civilian, national and international standards fora. Feeds into this effort include participation in Joint Warrior Interoperability Demonstration (JWID), Electronic Commerce/Electronic Data Interchange (EC/EDI), and other integration/demonstration efforts. ($1108K) (1st Qtr - 4th Qtr)
- o Develop user registration strategy/plan, finalize management staffing analysis for LCC, refinement of management concepts via management capability prototyping. ($540K) (1st Qtr - 4th Qtr)

$2.584M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H80 Defense Message System (DMS)	2.584	*	0	0	0	0	0	0	Contg	Contg

(U) FY 1997 Plans:

This project has been transferred to PE 0303129K.

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	2.589	0	0	0
Appropriated Value	2.850			
Adjustments to Appropriated Value	-.266			
Adjustments to Budget Year Since FY 1997 President's Budget				
Current Budget Submit/President's Budget (FY 1998)	2.584	0	0	0

Change Summary Explanation:

Funding: FY96 reduction due to Congressional adjustments.
*FY97 funding is in PE 0303129K.

Schedule: N/A

Technical: N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H80 Defense Message System (DMS)	2.584	*	0	0	0	0	0	0	Contg	Contg

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03
O&M	20.510	35.620	37.109	38.967	24.228	17.642	18.008	18.433
PROCUREMENT	27.825	41.362	44.470	44.289	29.719	20.592	21.076	21.606

D. Schedule Profile

(U) FY 1996

Acquisition Milestones
- Pre-MAISRC (DISA Internal) (2 Qtr)
- MAISRC (MS III) (3 Qtr)

Engineering Milestones
- TAIS Redesign (1 Qtr)
- API Standard (1 Qtr)
- EC/EDI Capabilities Report (2 Qtr)/Test Plan (3 Qtr)
- DMS Security Architecture (classified) (3 Qtr)
- Tactical Standardized Profile (draft) (3 Qtr)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications/H80/DMS

A. Project Cost Breakdown ($000)

	FY96	FY97	FY98	FY99
Project Cost Categories				
a. Engineering and Technical Services	2,584	0	0	0
Total	2,584	0	0	0

B . Budget Acquisition History and Planning Information

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget To Complete	Total Program
Product Development Organizations										
Booz-Allen	MIPR and/or PR	15 Nov 94	3697	3697	1022	0	0	0	Contg	Continuing
Support and Management Organizations										
MITRE	MIPR	01 Oct 94	13005	13005	1562	0	0	0	Contg	Continuing
			Subtotal Contracts		2584	0	0	0		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project W90 White House Situation Support Staff	.446	.454	.463	.457	.471	.485	.496	.507	Contg	Contg

A. Mission Description and Budget Item Justification:

This project ensures that full level crisis management capabilities are provided to the President, Vice President, the National Security Advisor and his staff. This effort emphasizes information exchange and display and procedures. This project is part of the National Security Information and Situation Management System (NSI & SMS)

FY1996 Accomplishments

o Continued development of Decision Support Systems for the White House Situation Room. ($446K) (1st Qtr - 3rd Qtr)

(U) FY 1997 Plans:

o Continue development of Decision Support Systems for the White House Situation Room. ($454K) (2nd Qtr - 3rd Qtr)

(U) FY 1998 Plans:

o Continue development of Decision Support Systems for the White House Situation Room. ($463K) (2nd Qtr - 3rd Qtr)

(U) FY 1999 Plans:

o Continue development of Decision Support Systems for the White House Situation Room. ($457K) (2nd Qtr - 3rd Qtr)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project W90 White House Situation Support Staff	.446	.454	.463	.457	.471	.485	.496	.507	Contg	Contg

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	.445	.467	.464	.459
Appropriated Value	.483	.467		
Adjustments to Appropriated Value	-.037	-.013		
Adjustments to Budget Year since FY 1997 President's Budget			-.001	-.002
Current Budget Submit/President's Budget (FY 1998)	.446	.454	.463	.457

Change Summary Explanation:

Funding: FY96 and FY97 reductions are due to Congressional adjustment to Defense-wide Investment Appropriation.

Schedule: N/A
Technical: N/A

C. Other Program Funding Summary:

	FY96	FY97	FY98	FY99	To Complete	Total Cost
Procurement Line P-1	2.235	1.600	1.851	1.739	Contg.	Contg.
O&M	2.352	2.827	2.723	3.053	Contg.	Contg.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE PE 0303126K/Long Haul Communications					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project W90 White House Situation Support Staff	.446	.454	.463	.457	.471	.485	.496	.507	Contg	Contg

D. Schedule Profile

(U) FY1996
T&E Milestones:
Continue development of Decision Support Systems for the White House Situation Room (3rd qtr FY96)

(U) FY1997
Contract Milestones:
Contract/Study to be delivered (3rd qtr FY97)

(U) FY1998
Contract Milestones:
Contract/Study to be delivered (3rd qtr FY98)

(U) FY1999
Contract Milestones:
Contract/Study to be delivered (3rd qtr FY99)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: Februray 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** PE 0303126K/Long Haul Communications/W90/WHSSS

A. Project Cost Breakdown ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Engineering and Technical Services	446	454	463	457

B. Budget Acquisition History and Planning Information: N/A

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RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Support of the NCS/P.E. 0303127K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Total 0303127K Cost	3.486	3.808	4.552	4.545	4.507	5.358	5.473	5.602	Cont.	Cont.
Enhanced Satellite Capability/N092	.439	.428	.519	.421	.421	.435	.444	.444	Cont.	Cont.
Interoperability/N088	1.476	1.558	1.759	1.849	1.849	2.648	2.651	2.776	Cont.	Cont.
Information Assurance/N094	.250	.503	.521	.525	.525	.525	.599	.599	Cont.	Cont.
Advanced Intelligent Network/N091	1.117	1.115	1.298	1.280	1.242	1.280	1.300	1.304	Cont.	Cont.
NS/EP Telecommunications Integration Support/N095	.204	.204	.455	.470	.470	.470	.479	.479	Cont.	Cont.

A. Mission Description and Budget Item Justification

This program element supports Executive Order 12472 of 3 April 1984 which assigns the NCS the mission of assisting the President, the National Security Council, the Office of Science and Technology Policy, and the Office of Management and Budget, in exercising their wartime and non-wartime telecommunications functions and responsibilities, and coordinating the planning for, and provisioning of, National Security and Emergency Preparedness (NS/EP) telecommunications for the federal government under all circumstances. To attain this objective, there are several National Security Decision Directives which provide additional guidance to the NCS which require that initiatives be developed that will improve the survivability and interoperability of the commercial telecommunications systems that support national security and emergency preparedness requirements, enhance the survivability and endurability of U.S. commercial satellites, and provide communications support for Government agencies which have responsibilities to carry out their essential functions in any emergency. Additionally, this program element will support programs which will help to ensure that the evolving National Information Infrastructure will meet the needs of government NS/EP users. Enhanced Satellite Capability explores developing satellite technologies and applications which include experiment preparation and terminal modification to experiment with NASA's Advanced Communications Technology Satellite (ACTS), preparing secure voice experiments over American Mobile Satellite Corporation Mobile Satellite (MSAT), and the analysis of the newly proposed low earth systems. Interoperability supports the Federal Telecommunications Standards Program, and ensures interoperability among emerging government communications systems. Information Assurance (formerly Network Security) supports the Public Switched Network (PSN) in mitigating hacker threats. Advanced Intelligent Network employs newly developed processing capabilities to tailor the extensive telecommunications resources of the PSN. NS/EP Telecommunications Integration (formerly a subset of AIN), provides a test and evaluation program to assess and evaluate the operational readiness and capabilities of NS/EP telecommunications programs, initiatives, and emerging technologies. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Enhanced Satellite Capability (ESC)/N092	.439	.428	.519	.421	.421	.435	.444	.444	Cont.	Cont.

A. Mission Description & Budget Item Justification:

This project will provide greatly enhanced and cost-effective telecommunications for all operational environments with the incorporation of new satellite communication technologies. ESC will acquire knowledge of evolving technologies; support development of National Security Telecommunications Advisory Committee (NSTAC) initiatives; evaluate new commercial satellite capabilities; assure that industry is aware of NS/EP requirements and stress the importance of these features in new systems; develop concepts and architectures for acquiring advanced satellite communications service and performing test and evaluation of acquired capabilities. Regarding acquisition strategy, work will continue under existing contract vehicles.

FY1996 Accomplishments:

- O Conduct experiments utilizing an ACTS High Data Rate (HDR) terminal to test SONET, Broadband ISDN (BISDN), and ATM technologies in the KA Spectrum of band width. ($154K) (1st Qtr - 4th Qtr)
- 0 Research potential of developing satellite technologies and systems: low earth orbit (LEO) and geostationary orbit satellites, and continue experimentation. ($131K) (1st Qtr - 4th Qtr)
- O Identify and determine candidate NS/EP National Information Infrastructure (NII) requirements (priority access, secure voice) that can be served via a satellite platform and experimentation. ($154K) (1st Qtr - 4th Qtr) $.439M Total

FY1997 Plans:

- O Analyze and document results of NCS ACTS High Data Rate Experiments. ($59K) (1st Qtr - 4th Qtr)
- O Perform experimentation of NS/EP NII requirements and summarize results. Emphasis of experimentation will be targeted toward evolving Mobile Satellite Systems and influencing their design to include NS/EP desired features ($225K) (1st Qtr - 4th Qtr)
- O Perform analysis of inventory and evaluate industry activities for the potential of meeting NS/EP requirements ($144K) (1st Qtr - 4th Qtr) $.428M Total

FY1998 Plans:

- 0 Support development of NS/EP capabilities (e.g., priority, security) on developing mobile satellite systems. ($150K) (1st Qtr - 4th Qtr)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Enhanced Satellite Capability/N092	.439	.428	.519	.421	.421	.435	.444	.444	Cont.	Cont.

- o Perform testing and experimentation of NS/EP capabilities on existing and developing mobile satellite systems. ($128K) (1st Qtr - 4th Qtr)
- o Conduct experiments utilizing emerging satellite systems to demonstrate the interoperability with other wireless systems and capabilities. ($125K) (1st Qtr - 4th Qtr)
- o Continue project planning of research, testing, evaluation, recommendations, and implementation of new technologies. ($116K) (1st Qtr - 4th Qtr) $.519M Total

FY 1999 Plans:

- o Validate the ability of operational and developing mobile satellite systems to support NS/EP users. ($100K) (1st Qtr - 4th Qtr)
- o Demonstrate and verify the interoperability between wireless systems, including satellite, cellular, and PCS technologies. ($221K) (1st Qtr - 4th Qtr)
- o Continue implementation of NS/EP functional requirements in developing and planned mobile satellite systems. ($100K) (1st Qtr - 4th Qtr) $.421M Total

B. Program Change Summary

	FY 1996	FY1997	FY1998	FY1999
Previous President's Budget (FY 1997)	.499	.479	.519	.421
Appropriated Value	.597	.479		
Adjustments to Appropriated Value	-.158	-.051		
Adjustments to Budget Year Since FY 97 President's Budget				
Current President's Budget (FY 1998)	.439	.428	.519	.421

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Enhanced Satellite Capability (ESC)/N092	.439	.428	.519	.421	.421	.435	.444	.444	Cont.	Cont.

Change Summary Explanation
Funding: FY96 and FY97 reductions due to Congressional adjustments.

Schedule: N/A
Technical: N/A

C. Other Program Funding Summary: N/A

D. Schedule Profile

FY96 - 3rd quarter: Analysis of developing satellite systems and operational mobile satellite systems applicable to NS/EP users.
FY97 - 3rd quarter: Analysis of operational mobile satellite systems and their relationship to the NS/EP community.
FY98 - 3rd quarter: Analysis of developing satellite systems and operational mobile satellite systems applicable to NS/EP users.
FY99 - 3rd quarter: Analysis of operational mobile satellite systems and their relationship to the NS/EP community.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System (NCS)/0303127K/Enhanced Satellite Capability (N092)

A. Project Cost Breakdown ($000)

Project Cost Categories	FY1996	FY1997	FY1998	FY1999
Engineering & Technical Service	439	428	519	421
Total	439	428	519	421

B. Budget Acquisition History and Planning Information ($000)

Performing Organizations

	Budget FY1996	Budget FY1997	Budget FY1998	Budget FY1999	Total Program
Support & Management Organization	110	113	174	122	Cont.
Test & Evaluation Organization	329	315	345	299	Cont.
Total Project	439	428	519	421	

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Interoperability/N088	1.476	1.558	1.759	1.849	1.849	2.648	2.651	2.776	Cont.	Cont.

A. Mission Description & Budget Item Justification:

This project analyzes new telecommunications technologies and their effects on interoperability of government communications and conducts related technical evaluations and standards development. Supports the Federal Telecommunications Standards Program. Ensures interoperability among emerging government communication systems, including information systems, by providing the required analyses to the NCS member organizations and other government agencies through the development of initial specification and correlation of standards for specific types of communication and information systems; the design of initial automated methods for application of standards to systems; the refinement and evaluation of program objectives in evolving technology environment. Regarding acquisition strategy, new reimbursable orders will be used.

FY1996 Accomplishments:

- O Develop techniques and analyses to implement national security and emergency preparedness (NS/EP) requirements in emerging standards for wide-band networks and wireless services of the National Information Infrastructure. ($626K) (1st Qtr - 4th Qtr)
- 0 Develop strategies and detailed specification for methods of congestion control in asynchronous transfer mode (ATM) networks, to help ensure reliable NS/EP communications ($400K) (1st Qtr - 4th Qtr)
- O Develop analytical methods for determining NS/EP quality requirements for multi-media communications over the National Information Infrastructure ($450K) (1st Qtr - 4th Qtr) $1.476M Total

FY1997 Plans:

- O Develop additional and updated techniques for reliable and secure NS/EP communications in wide-band and wireless networks. ($652K) (1st Qtr - 4th Qtr)
- O Develop additional and updated methods and proposed standards for flow controlling asynchronous transfer mode congestion to help ensure reliable NS/EP communications ($441K) (1st Qtr - 4th Qtr)
- O Develop analyses, methods, and standards for assessing quality of multi-media NS/EP communications ($465K) (1st Qtr - 4th Qtr) $1.558M Total

FY1998 Plans:

- 0 Continue development of network management standards for congestion control in NS/EP services on high speed networks. ($450K) (1st Qtr - 4th Qtr)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Interoperability/N088	1.476	1.558	1.759	1.849	1.849	2.648	2.651	2.776	Cont.	Cont.

- o Develop analyses and contributions to standards foras to support NS/EP services priority at intelligent network trigger detection points ($459K) (1st Qtr - 4th Qtr)
- o Assessment of emerging technology and NS/EP applications ($350K) (1st Qtr - 4th Qtr)
- o Continue development of reliable and secure techniques for wireless networks and services ($500K) (1st Qtr - 4th Qtr) $1.759M Total

FY 1999 Plans:

- o Continue to resolve impediments to interoperability of systems supporting government communications. ($450K) (1st Qtr - 4th Qtr)
- o Continue to analyze network management and congestion control of emerging high-speed digital networks to identify and solve NS/EP communication issues. ($400K) (1st Qtr - 4th Qtr)
- o Continue to assess emerging technology and NS/EP application ($399K) (1st Qtr - 4th Qtr)
- o Develop analyses and contributions in support of the development of video teleconferencing and multi-media standards ($600K) (1st Qtr - 4th Qtr) $1.849M Total

B. Program Change Summary

	FY 1996	FY1997	FY1998	FY1999
Previous President's Budget (FY 1997)	1.544	1.507	1.584	1.640
Appropriated Value	1.573	1.507		
Adjustments to Appropriated Value	-.097	.051		
Adjustments to Budget Year Since FY 97 President's Budget			.175	.209
Current President's Budget (FY 1998)	1.476	1.558	1.759	1.849

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Interoperability/N088	1.476	1.558	1.759	1.849	1.849	2.648	2.651	2.776	Cont.	Cont.

Change Summary Explanation
Funding: FY96 reduction due to congressional adjustments.
FY97 change due to below threshold reprogramming.
FY98 and FY99 changes due to revised fiscal guidance.
Schedule: N/A
Technical: N/A

C. Other Program Funding Summary:

	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Total Cost
O&M	2.971	3.289	3.377	3.500	3.500	3.500	3.500	3.500	Cont.

D. Schedule Profile

FY96 - 3rd quarter: Receive report from Institute for Telecommunications Science on algorithm developed to quantify quality of multi-media transmission, from a user's perspective.
FY97 - 2nd quarter: Receive report from National Institute of Standards and Technology on rapid (< 1 second) restoral of multi-megabit switched digital circuits.
FY98 - 4th quarter: Receive reports on analyses and contributions on NS/EP applications to multi-media standards.
FY99 - 4th quarter: Receive reports and assessments of emerging technology for NS/EP applications.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System (NCS)/0303127K/Interoperability (N088)

A. Project Cost Breakdown ($000)

Project Cost Categories	FY1996	FY1997	FY1998	FY1999
Engineering & Technical Service	1,476	1,558	1,759	1,849
Total Project	1,476	1,558	1,759	1,849

B. Budget Acquisition History and Planning Information ($000)

Performing Organizations

	Budget FY1996	Budget FY1997	Budget FY1998	Budget FY1999	Total Program
Test & Evaluation Organization	1,163	1,209	1,418	1,490	Cont.
Product Development Organization	313	349	341	359	Cont.
Total Project	1,476	1,558	1,759	1,849	Cont.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Information Assurance/N094	.250	.503	.521	.525	.525	.525	.599	.599	Cont.	Cont.

A. Mission Description & Budget Item Justification:

This project, formerly titled Network Security, was initiated to mitigate the hacker threat posed to NS/EP telecommunications carried via the Public Switched Network (PSN). The research gained from this project will be used to develop a consistent framework of guidelines that will be useful to government and industry in assuring that critical software supporting and/or controlling telecommunications switches can be trusted to perform as required in support of PSN. Regarding acquisition strategy, new reimbursable orders will be used.

FY1996 Accomplishments:

- Develop software tools useful in identifying and eliminating security vulnerabilities from large computer programs such as those used in communications systems ($125K) (1st Qtr - 4th Qtr)
- Evaluate security tools and techniques relevant to communication systems and provide guidelines for protecting communications systems from computer intruders ($125K) (1st Qtr - 4th Qtr) $.250M Total

FY1997 Plans:

- Develop additional tools to identify and eliminate security vulnerabilities in large computer programs such as those used in communications systems. Update previously developed tools for application to emerging computer systems ($301K) (1st Qtr - 4th Qtr)
- Evaluate additional security tools and techniques relevant to communications systems and provide updated guidelines ($202K) (1st Qtr - 4th Qtr) $.503M Total

FY 1998 Plans:

- Research and evaluate the application of existing and emerging software packages and other tools that enhance security in communications and information systems that support NS/EP ($300K) (1st Qtr - 4th Qtr)
- Develop additional tools and procedural guidelines for NS/EP network security ($221K) (1st Qtr - 4th Qtr) $.521M Total

FY 1999 Plans:

- Continue researching and evaluating software tools for enhancing security in NS/EP telecommunications and information systems ($300K) (1st Qtr - 4th Qtr)
- Continue developing tools and guidelines for protecting NS/EP systems as new threats and vulnerabilities emerge. ($225K) (1st Qtr - 4th Qtr) $.525M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Information Assurance/N094	.250	.503	.521	.525	.525	.525	.599	.599	Cont.	Cont.

B. Program Change Summary

	FY 1996	FY1997	FY1998	FY1999
Previous President's Budget (FY 1997)	.499	.503	.521	.525
Appropriated Value	.499	.503		
Adjustments to Appropriated Value	-.249			
Adjustments to Budget Year Since FY 97 President's Budget				
Current Budget Submit/President's Budget (FY 1998)	.250	.503	.521	.525

Change Summary Explanation
Funding: FY96 adjustment due to below threshold reprogramming.

C. Other Program Funding Summary

	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Total Cost
O&M	2.164	2.111	2.073	2.714	3.120	3.316	3.393	3.593	Cont.

D. Schedule Profile

FY96 - 4th quarter: Beta test version of "Decomposition Slicing" tool for analyzing effects of maintenance changes in large computer programs
FY97 - 4th quarter: Evaluations of security features in switches performed by the Telecommunications Security Analysis Center
FY98 - 4th quarter: Evaluations of emerging software tools for intrusion monitoring and detection in large computer and switching systems
FY99 - 4th quarter: Software tools and procedures for enhancing NS/EP network security

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System (NCS)/0303127K/Information Assurance (N094)

A. Project Cost Breakdown ($000)

Project Cost Categories	FY1996	FY1997	FY1998	FY1999
Engineering & Technical Service	250	503	521	525

B. Budget Acquisition History and Planning Information: N/A

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Advanced Intelligent Network/N091	1.117	1.115	1.298	1.280	1.242	1.280	1.300	1.304	Cont.	Cont.

A. Mission Description & Budget Item Justification:

This project is required to employ newly developed processing capabilities to tailor the extensive telecommunications resources of the existing Public Switched Network (PSN), which includes the Local Exchange Carrier (LEC) and Inter Exchange Carrier (IEC) Networks, thus enhancing connectivity and survivability of services for essential government users during periods of emergency. Advanced Intelligent Network (AIN) is an evolving PSN capability consisting of signaling systems, switches, computer processing, databases and transmission media. This research will result in the utilization of these components, in a customized set of network services that can be flexibly, rapidly and cost effectively configured by customers upon demand on an as needed basis. Regarding acquisition strategy, work will continue under current contract vehicles.

FY1996 Accomplishments:

- o Evaluate AIN industry developments and capabilities for potential applications to NS/EP telecommunications ($200K) (1st Qtr - 4th Qtr)
- o Determine AIN relationships to evolving National Communications System (NCS) requirements for advanced intelligent capabilities and data services, define applications for implementation into OMNCS initiatives ($250K) (1st Qtr - 4th Qtr)
- o Research AIN interoperability with emerging technologies such as Integrated Services Digital Network (ISDN), Asynchronous Transfer Mode (ATM) and Personal Communications (PCS), for potential integrated voice, data, wireline and wireless services ($250K) (1st Qtr - 4th Qtr)
- o Analyze AIN Bellcore generic requirements for potential NS/EP considerations and influence AIN implementation as the technology becomes standardized ($220K) (1st Qtr - 4th Qtr)
- o Research mediated access FCC issues for further development of AIN switches and elements ($197K) (1st Qtr - 4th Qtr)

$1.117M Total

FY1997 Plans:

- o Research and develop AIN candidate configurations of potential voice and data AIN services in support of NS/EP emerging requirements and those necessary to support emergency operations on the NII ($225K) (1st Qtr - 4th Qtr)
- o Plan for and demonstrate proof of concept strategies for offering AIN services and demonstrate interoperability across the

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Advanced Intelligent Network/N091	1.117	1.115	1.298	1.280	1.242	1.280	1.300	1.304	Cont.	Cont.

Public Switched Network (PSN) across multiple service providers and with other technologies such as ISDN, ATM and PCS ($335K) (1st Qtr - 4th Qtr)

- o Assess AIN survivability, reliability, interoperability and security concerns for NS/EP voice and data applications and influence industry to act on NS/EP concerns ($275K) (1st Qtr - 4th Qtr)
- o Follow-on to FY96 initiatives to plan demonstrations that remain current with planned industry capabilities and issues, and influence the design of AIN services to be responsive to the needs of the NS/EP community ($280K) (1st Qtr - 4th Qtr) $1.115M Total

FY1998 Plans:

- o Identify new intelligent network capability and set 2 and 3 standards applications for NS/EP ($218K) (1st Qtr - 4th Qtr)
- o Conduct proof of concept demonstration of new services as they apply to Government Emergency Telecommunications Service (GETS) ($645K) (1st Qtr - 4th Qtr)
- o Assess AIN integration opportunities with DISN ($435K) (1st Qtr - 4th Qtr) $1.298M Total

FY 1999 Plans:

- o Conduct AIN network interoperability testing across multiple carriers ($640K) (1st Qtr - 4th Qtr)
- o Assess AIN third party implementations for NS/EP ($205K) (1st Qtr - 4th Qtr)
- o Determine AIN applications for GETS Network Management ($435K) (1st Qtr - 4th Qtr) $1.280M Total

B. Program Change Summary

	FY 1996	FY1997	FY1998	FY1999
Previous President's Budget (FY 1997)	1.191	1.421	1.946	1.985
Appropriated Value	1.393	1.421		
Adjustments to Appropriated Value	-.276	-.306		
Adjustments to Budget Year Since FY 97 President's Budget			-.648	-.705
Current President's Budget (FY 1998)	1.117	1.115	1.298	1.280

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Advanced Intelligent Network/N091	1.117	1.115	1.298	1.280	1.242	1.280	1.300	1.304	Cont.	Cont.

Change Summary Explanation

Funding: FY96 adjustment due to below threshold reprogramming.
FY97 adjustment represents an administrative breakout of Project N095, NS/EP Telecommunication Integration Support.
FY98 and FY99 changes due to realignment of effort to project N095, Telecommunications Integration Support, and revised fiscal guidance.

Schedule: N/A
Technical: N/A

C. Other Program Funding Summary: N/A

D. Schedule Profile

FY96 - 4th quarter: Contract Award - 1 July 1996
AIN Multimedia Applications for NS/EP
FY97 - 2nd quarter: Develop AIN Open Network Architecture and Demonstrations
FY98 - 4th quarter: AIN Integration with DISN
FY99 - 4th quarter: AIN Interoperability with GETS demonstration

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Support of the National Communications System (NCS)/0303127K/Advanced Intelligent Network (N091)

A. Project Cost Breakdown ($000)

Project Cost Categories	FY1996	FY1997	FY1998	FY1999
Engineering & Technical Service	1,117	1,115	1,298	1,280
Total	1,117	1,115	1,298	1,280

B. Budget Acquisition History and Planning Information ($000)

Performing Organizations

	Budget FY1996	Budget FY1997	Budget FY1998	Budget FY1999	Total Program
Support & Management Organization	393	446	449	440	Cont.
Product Development Organization	724	669	849	840	Cont.
Total Project	1,117	1,115	1,298	1,280	

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NS/EP Telecommunications Integration Support/N095	.204	.204	.455	.470	.470	.470	.479	.479	Cont.	Cont.

A. Mission Description & Budget Item Justification:

This project is a breakout from project N091, Advanced Intelligent Network. This project will assess the readiness and capabilities of existing and planned NS/EP telecommunications programs, initiatives, services, and emerging technologies to meet national requirements. It will provide essential information for decision-making and assessment of acquisition risks. Develop for consideration by the NCS Committee of Principals (COPs) and the executive agent test and exercise programs and procedures of evaluation of the capability of the nation's telecommunications resources to meet national security or emergency preparedness telecommunications requirements.

FY1996 Accomplishments:

- Develop Test and Evaluation Master Plans (TEMPS) for evaluating program performance of emerging communications technologies ($100K) (1st Qtr - 4th Qtr)
- Report on test and evaluation on existing NCS NLP and baseline programs designed to meet national requirements. ($104K) (1st Qtr - 4th Qtr) $.204M Total

FY1997 Plans:

- Evaluate exercises and training events to determine capabilities needed to respond to NS/EP emergencies. ($204K) (1st Qtr - 4th Qtr) $.204M Total

FY 1998 Plans:

- Conduct and report on test and evaluation of readiness and capabilities of OMNCS programs, plans and procedures in accordance with NS/EP functional requirements. ($151K) (1st Qtr - 4th Qtr)
- Provide test and evaluation as required for NCS National Level Program (NLP), primary asset and management system support ($152K) (1st Qtr - 4th Qtr)
- Assess NS/EP telecommunications required features and their possible expansion for NS/EP telecommunications application. ($152K) (1st Qtr - 4th Qtr) $.455M Total

FY 1999 Plans:

- Assess emerging technology, existing plans to transition, and the applicability of industry services and assets for NS/EP telecommunications demonstrations ($156K) (1st Qtr - 4th Qtr)

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Support of the National Communications System(NCS)/P.E.0303127K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
NS/EP Telecommunications Integration Support/N095	.204	.204	.455	.470	.470	.470	.479	.479	Cont.	Cont.

- O Assess the utility of NS/EP communications through associated technology demonstrations ($157K) (1st Qtr - 4th Qtr)
- O Provide test and evaluation assessments in accordance with the NS/EP architecture and NCS strategic plan on programs, initiatives, products and services ($157K) (1st Qtr - 4th Qtr) $.470M Total

B. Program Change Summary

	FY 1996	FY1997	FY1998	FY1999
Previous President's Budget (FY 1997)	*	*	*	*
Appropriated Value				
Adjustments to Appropriated Value				
Adjustments to Budget Year Since FY 97 President's Budget				
Current Budget Submit/President's Budget (FY 1998)	.204	.204	.455	.470

Change Summary Explanation
* This project is an administrative breakout from Project N091, Advanced Intelligent Network.

C. Other Program Funding Summary: N/A

D. Schedule Profile

FY98 Contract Award - 1 October 1998
FY99 Contract Award - 1 October 1999

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Support of the National Communications System (NCS)/0303127K/NS/EP Telecomm Integration Support/N095

A. Project Cost Breakdown ($000)

Project Cost Categories	FY1996	FY1997	FY1998	FY1999
Engineering & Technical Service	204	204	455	470
Total	204	204	455	470

B. Budget Acquisition History and Planning Information ($000)

Performing Organizations

	Budget FY1996	Budget FY1997	Budget FY1998	Budget FY1999	Total Program
Support & Management Organization	50	50	91	94	Cont.
Product Development Organization	154	154	364	376	Cont.
Total Project	204	204	455	470	

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RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | DATE: February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Defense Message System/PE 0303129K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H80, Defense Message System (DMS)	*	1.353	0	0	0	0	0	0	0	1.353

A. Mission Description & Budget Item Justification: *This project is not a new start. Prior to FY 1997, it was funded in PE0303126K. The purpose of this project is to provide system engineering to ensure that JS and OSD (C3I) validated messaging requirements are satisfied through the use of a COTS-based, multi-level secure messaging and directory service. The DMS provides the defense community with a more interoperable, cost effective messaging/directory service than that which is in place today. Current support is focused on developing secure messaging, directory, and management services through requirements definition and refinement; target component Developmental, Initial and Final Operational Test and Evaluation (DT&E, IOT&E and FOT&E); developing transitional interoperability requirements and components/services; technology insertion and service demonstrations; and influencing industry to include DMS features as part of their standard product offerings. This program element is under budget activity 07 because it supports operational systems development.

(U) FY 1996 Accomplishments:
Work is performed in PE0303126K.

(U) FY 1997 Plans:
o Perform engineering, specification development, and deployment assistance to support LRD, IOC, and Post IOC for sensitive but unclassified messaging, directory, security, and service management capabilities across strategic as well as tactical environments, and extending beyond DMS to include EC/EDI, GCCS/GCSS, DTS, and others.($652K) (1st - 4th Qtr)
o Support the Post IOC test and evaluation effort through Technical Insertion Environment scenario development, execution, & results analysis and finalization of revisions to Functional Security and Performance (FSP) criteria and compliancy definition. ($251K) (3rd - 4th Qtr)
o Perform system lifecycle/evolution engineering to account for growth, policy and requirements changes, MISSI and commercial product changes. ($250K) (1st - 4th Qtr)
o Develop and promote DOD/DMS requirements and positions on data communications protocol issues via military and civilian, national and international standards fora. ($200K) (1st - 4th Qtr)
$1.353M Total
(U) FY 1998 Plans: This project has transitioned to O&M appropriation.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Defense Message System/PE 0303129K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Project H80 Defense Message System (DMS)	*	1.353	0	0	0	0	0	0	0	1.353

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	*	2.532	2.674	2.745
Appropriated Value		2.532		
Adjustments to Appropriated Value		-1.179		
Adjustments to Budget Year Since FY 1997 President's Budget			-2.674	-2.745
Current Budget Submit/President's Budget (FY 1998)		1.353	0	0

Change Summary Explanation:

Funding: * FY96 : Work is performed in PE0303126K.
FY97 reduction is due to Congressional adjustment to Defense-wide Investment Appropriation and below threshold reprogramming.
FY98 and FY99: Project has transitioned to O&M appropriation.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03
O&M	20.510	35.620	37.109	38.967	24.228	17.642	18.008	18.433
PROCUREMENT	27.825	41.362	44.470	44.289	29.719	20.592	21.076	21.606

D. Schedule Profile

(U) FY 1997

Engineering Milestones: Finalized Tactical Standardized Prototype(4 Qtr)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Defense Message System/PE 0303129K

A. Project Cost Breakdown

	FY96	FY97	FY98	FY99
Project Cost Categories ($000)				
a. Engineering and Technical Services	0	1,353	0	0
Total	0	1,353	0	0

B. Budget Acquisition History and Planning Information

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget To Complete	Total Program
Product Development Organizations :										
Other Contracts					0	251	0	0	0	251
Support and Management Organizations:										
MITRE	Procurement Work Directive (PWD)				0	1,102	0	0	0	1,102
	Total				0	1,353	0	0	0	1,353

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RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Minimum Essential Emergency Communications Network (MEECN)/0303131K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Total Program Element (PE) Cost	2.620	2.110	2.381	2.450	2.566	2.686	2.743	2.862	Contg	Contg
Strategic C3 Support/T70	2.361	1.882	2.127	2.179	2.254	2.329	2.379	2.479	Contg	Contg
Contingency Planning for the President/T71	.259	.228	.254	.271	.312	.357	.364	.383	Contg	Contg

A. Mission Description and Budget Item Justification:

This program focuses on ensuring the implementation of national policy requiring Nuclear Command, Control and Communications (NC3) systems; support positive control of nuclear forces, and connectivity between National Command Authorities (NCA) and strategic and other appropriate forces to assure adequate command and control is maintained throughout all phases of conflict and instability. This support also provides informed decision-making linkage between the NCA and the Commanders-in-Chief (CINC) of the Unified and Specified Commands. DISA performs this task as Nuclear C3 (NC3) Systems Engineer. It specifically ensures a balanced, integrated capability is maintained. This project provides direct long range and specialized support to ASD(C3I) and Joint Staff (JS) for determining which programs should be supported and/or canceled, as well as supports fail safe and risk reduction. This program element is under Budget Activity 07 because it involves efforts supporting operational systems development.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE Minimum Essential Emergency Communications Network (MEECN)/0303131K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Strategic C3 Support/T70	2.361	1.882	2.127	2.179	2.254	2.329	2.379	2.479	Contg	Contg

A. Mission Description & Budget Item Justification:

This project has four elements: strategic planning, operational assessments, communications plans, and engineering. Together, these elements perform all of the functions of the NC3 systems engineer and all of the NCA and Nuclear C3 support for ASD(C3I). The first element is Strategic Planning which is done for ASD(C3I) and the Joint Staff. These are the long range plans and vulnerability assessments done to ensure NCA and NC3 are always adequate under all conditions of stress or war. It evaluates the operational capability for the Nuclear Command and Control System (NCCS), i.e., strengths and weaknesses and determines the best investment strategy to evolve the current NCCS to achieve the desired capability. Threats--from terrorist activities--to regional--to global are considered. Fiscal constraints and other top level guidance are also significant factors influencing these plans. The second element is Operational Assessments of the fielded C3 systems and weapons platforms. This assessment is the sole means for positive verification of the communications plans, procedures, operations orders, training, equipment and system configuration from end-to-end. It includes both strategic, theater-to-national level C3 interfaces into the NC3 systems. The tests are performed in an operational setting with Joint Chiefs of Staff (JCS), CINC and nuclear forces worldwide. The third element of this project is to maximize the operational readiness of the National Military Command System (NMCS) by developing communications plans, procedures, operations orders and Battle Staff certification, and keeping these plans and procedures accurate as policy and forces change. Under this element, Battle Staff proficiency is verified. The fourth element of this project provides engineering guidance and participates in all NC3 system life cycle systems engineering related functions. It includes mission and functional technical requirements definition; alternative designs and solutions; program policy and guidance; subsystem and network integration; modeling; test and evaluation; development, deployment, installation and problem isolation. This element resolves design, engineering, performance and interoperabiy issues for critical strategic systems.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** Minimum Essential Emergency Communications Network (MEECN)/0303131K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Strategic C3 Support/T70	2.361	1.882	2.127	2.179	2.254	2.329	2.379	2.479	Contg	Contg

(U) FY 1996 Accomplishments:

- o Reduced NC3 Operational Assessments/Positive Command and Control (Sep 96; $1,238K).
- o Selected communications plans updating and certifications (Sep 96; $433K).
- o Identified NC3 communications requirement for Proliferation (Sep 96; $529K).
- o Commenced validating new architecture implementing Nuclear Posture Review (NPR) recommendations (Sep 96; $161K).

$2.361M Total

(U) FY 1997 Plans:

- o Continue reduced NC3 Operational Assessments/Positive Command and Control (Sep 97; $1,092K).
- o Continue selected communications plans updating and certifications (Sep 97; $320K).
- o Complete NC3 communications requirement for Proliferation (Sep 97; $414K).
- o Validate new architecture to implement Commercial-Off-The-Shelf (COTS) equipment into NC3 (Sep 97; $56K).

$1.882M Total

(U) FY 1998 Plans:

- o Continue reduced NC3 Operational Assessments/Positive Command and Control (Sep 98; $1,212K).
- o Continue selected communications plans updating and certifications (Sep 98; $340K).
- o Complete NC3 communication requirement for Proliferation (Sep 98; $447K).
- o Validate new architecture to implement COTS equipment into NC3 (Sep 98; $128K).

$2.127M Total

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)									DATE: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					R-1 ITEM NOMENCLATURE Minimum Essential Emergency Communications Network (MEECN)/0303131K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Strategic C3 Support/T70	2.361	1.882	2.127	2.179	2.254	2.329	2.379	2.479	Contg	Contg

(U) FY 1999 Plans:

- o Continue reduced NC3 Operational Assessments/Positive Command and Control (Sep 99; $1,155K).
- o Continue selected communications plans updating and certifications (Sep 99; $545K).
- o Complete NC3 communication requirement for Proliferation (Sep 99; $349K).
- o Validate new architecture to implement COTS equipment into NC3 (Sep 99; $130K).

$2.179M Total

Acquistion strategy: MITRE Corporation, McLean, VA; Electrospace Systems, Inc., Arlington, VA; Sciences Applications International Corporation (SAIC), McLean, VA; Naval Space and Warfare Systems Command (SPAWAR), Washington, DC.

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	2.361	2.075	2.227	2.340
Appropriated Value	2.047	2.075		
Adjustments to Appropriated Value	+.314	-.193		
Adjustments to Budget Years Since FY97 President's Budget			-.100	-.161
Current Budget Submit/President's Budget (FY98)	2.361	1.882	2.127	2.179

Change Summary Explanation:

FY96 increase due to below threshold reprogramming.

FY97 decrease due to congressional adjustment to Defense-wide investment appropriation.

FY98 and FY99 decrease due to revised fiscal guidance.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Minimum Essential Emergency Communications Network (MEECN)/0303131K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Strategic C3 Support/T70	2.361	1.882	2.127	2.179	2.254	2.329	2.379	2.479	Contg	Contg

C. Other Program Funding Summary:

	FY96	FY97	FY98	FY99	Total Cost
Operation and Maintenance:	.923	.993	.928	.951	Contg

D. Schedule Profile:

Events cited below occur in each fiscal year (1996-1999).

1st Qtr - Strategic Mobile Command Center Operation Order completed for Joint Staff (JS).
1st Qtr - Strategic Communications Assessment (Polo Hat) completed for JS.
1st Qtr - JS/CINC Staff Assistance Exercise (CINCSPACE, CINCSTRAT, National Airborne Operation Center).
1st Qtr - ASD(C3I) "NC3 Review" Report.
1st Qtr - Non-Strategic Communications Exercise completed for JS.
1st Qtr - Final NC3 System Description completed for JS.
2nd Qtr - NC3 Systems Engineer Annual Report to ASD(C3I).
2nd Qtr - JS/CINC Staff Assistance Exercise (CINCPAC).
2nd Qtr - Strategic Communications Assessment (Polo Hat) completed for JS.
2nd Qtr - Non-Strategic Communications Evaluation CINCEUR.
3rd Qtr - Complete Fiber Communications System (FCS).
3rd Qtr - Strategic Communications Assessment (Polo Hat) completed for JS.
3rd Qtr - Emergency Communications Procedures CJCS Emergency Action Procedures (EAP) Vol 7 completed for JS.
4th Qtr - Complete Early Pentagon Connectivity Modernization.
4th Qtr - NMCS/DOD Emergency Communications Plan completed for JS.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Minimum Essential Emergency Communications Network (MEECN)/ 0303131K/Strategic C3 Support (T70)

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	2,361	1,882	2,127	2,179
TOTAL	2,361	1,882	2,127	2,179

B. Budget Acquisition History and Planning Information:

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Multiple Performing Activities	SS/C CPAF CPFF MIPR WR					2,361	1,882	2,127	2,179	Contg	Contg
TOTAL PROJECT						2,361	1,882	2,127	2,179		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit) | **DATE:** February 1997

APPROPRIATION/BUDGET ACTIVITY
RDT&E, Defense Wide/07

R-1 ITEM NOMENCLATURE
Minimum Essential Emergency Communications Network (MEECN)/ 0303131K

COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Contingency Planning for the President (CPP)/T71	.259	.228	.254	.271	.312	.357	.364	.383	Contg	Contg

A. Mission Description & Budget Item Justification:

All aspects of this project are classified and require special access. Therefore, information on this project is not contained in this document but can be obtained upon request.

B. Program Change Summary:

	FY96	FY97	FY98	FY99
Previous President's Budget (FY97)	.259	.236	.255	.272
Appropriated Value	.222	.236		
Adjustments to Appropriated Value	.037	-.008		
Adjustments to Budget Year Since FY97 President's Budget			-.001	-.001
Current Budget Submit/President's Budget (FY98)	.259	.228	.254	.271

Change Summary Explanation:

FY96 change due to below threshold reprogramming.
FY97 decrease due to Congressional adjustment to Defense-wide investment appropriation.
FY98-99 decrease due to revised fiscal guidance.

C. Other Program Funding Summary:

Information can be provided upon request.

D. Schedule Profile:

N/A

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** Minimum Essential Emergency Communications Network (MEECN)/ 0303131K/Contingency Planning for the President (T71)

A. Project Cost Breakdown: ($000)

Project Cost Categories	FY96	FY97	FY98	FY99
a. Systems Engineering	259	228	254	271
TOTAL	259	228	254	271

B. Budget Acquisition History and Planning Information:

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Miscellaneous						259	228	254	271	Contg	Contg
Government Furnished Property: N/A											
TOTAL PROJECT						259	228	254	271		

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C4I for the Warrior/0303149K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Joint C3I Surveillance & Reconn./D8A	0	2.851	0	0	0	0	0	0	0	2.851

A. Mission Description & Budget Item Justification: The Joint Command, Control, Communications, Computers, Intelligence Surveillance and Reconnaissance (C4ISR) Battle Center will assimilate demonstrations and experiments of large scale engineering required for architecture development of Joint warfighting systems integration which leverage C4ISR. The Center grew out of the FY1995 Chairman of the Joint Chiefs of Staff (CJCS) initiative to address the need to provide comprehensive joint warfighting capability that maintains a competitive military advantage dependent on the ability to effectively field evolutionary systems and equipment which assure joint operational capability dominance by quickly organizing and testing innovative C4ISR concepts. The Center will also ensure that as new C4ISR concepts surface, these concepts will be developed to share all C4ISR information with precision force generators which will engender a powerful environment for Joint operational innovations. Industry driven technology advancements dictate rapid insertion into the DoD C4ISR infrastructure to maintain this competitive advantage. The Center will support experiments in mission with actual battle scenarios and assessment specific parameters by utilizing the latest technology insertion and applications to provide a consistently improving state of readiness for the joint warfighter. This program element is under Budget Activity 07 because it supports operational systems development.

(U) FY 1996 Accomplishments: N/A

(U) FY 1997 Plan:

o Establish the technical and operational infrastructure organic/unique to the Joint C4ISR Battle Center mission and functions. (Completed) ($2.851M Total)

(U) FY 1998 Plans:

o This project has been transferred to the Joint Staff begining in FY 1998.

RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07					**R-1 ITEM NOMENCLATURE** C4I for the Warrior/0303149K					
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
Joint C3I Surveillance & Reconn./D8A	0	2.851	0	0	0	0	0	0	0	2.851

B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget (FY 1997)	N/A	2.907	2.884	2.861
Appropriated Value		2.907		
Adjustments to Appropriated Value		-.056		
Adjustments to Budget Year Since FY 1997 President Budget			-2.884	-2.861
Current Budget Submit/President's Budget (FY 1998)		2.851	0	0

Change Summary Explanation:

Funding: FY97 change due to Congressional adjustment to Defense-Wide Investment Appropriation.
FY98 and FY99 changes due to functional transfer of project to the Joint Staff.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99
O&M	0	11.383M	0	0
Procurement	0	4.814M	0	0

D. Schedule Profile

Fiscal Year actual and planned events by quarter.

	FY97				FY98	FY99
	1	2	3	4		
SETA support contract	X		X			
FFRDC support Contract	X					

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide/07	**R-1 ITEM NOMENCLATURE** C4I for the Warrior/0303149K/Joint C3I Surveillance & Reconn./D8A

A. Project Cost Breakdown ($000)

	FY96	FY97	FY98	FY99
Systems Engineering	0	2,851	0	0

B. Budget Acquisition History and Planning Information:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99
All Other Contracts					0	0	2,851	0	0
Subtotal Contracts					0	0	2,851	0	0
In House Engineering & Technical Support: N/A									
TOTAL PROJECT					0	0	2,851	0	0

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DEFENSE INVESTIGATIVE SERVICE

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Defense Investigative Service
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999	Sec
				Thousands of Dollars				
131	0305127V	Foreign Counterintelligence Activities	7	402	412	419	418	U
		Operational Systems Development		402	412	419	418	
Total		Defense Investigative Service		402	412	419	418	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE February 1997				
APPROPRIATION/BUDGET ACTIVITY Defense Investigative Service (DIS): RDT&E, Defense-wide/BA 7				R-1 ITEM NOMENCLATURE National Foreign Intelligence Program 0305127V				
COST (in Millions)	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Small and Miscellaneous Grants Program (No project number)	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5

A. Mission Description and Budget Item Justification

The RDT&E funds contained in the DIS budget are administered by the Department of Defense Polygraph Institute (DoDPI). These funds are to provide grants for master's and doctoral degree students and funding to academic and private insitutions for research in forensic psychophysiology. The research program has three Congressionally mandated research areas: (1) evaluate the validity of polygraph techniques, (2) conduct research on polygraph countermeasures, and (3) conduct developmental research to improve polygraph technology. Research falls into four major categories: (1) computerization of polygraph test results, (2), new physiological measures and equipment, (3) new test formats and procedures, and (4) miscellaneous grants to construct a computerized data base that contains studies and statistics on polygraph studies.

B. Program Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999	Total Costs
FY 1997 President's Budget	0.4	0.4	0.4	0.4	1.7
Appropriated Value	0.4	0.4	0.4	0.4	1.7
Adjustments to Appropriated Value					
a. Section 8125 (Inflation Reduction)	(0.0002)	0	0	0	(0.0002)
b. Section 8129 (Management Reduction)	(0.0005)	0	0	0	(0.0005)
c. General Reduction	(0.0001)	0	0	0	(0.0001)
d. Section 8136 (General Reduction)	0	(0.0008)	0	0	(0.0008)
e. Nonpay Purchases Inflation (PBD 604)	0	0	(0.0001)	(0.0002)	(0.0003)
Adjustments	0.4	0.4	0.4	0.4	1.7

C. Other Program Funding Summary

The Operation and Maintenance, Defense-wide appropriation is charged for the salaries and support costs for seven polygraph researchers at the DoD Polygraph Institute.

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7

D. Schedule Profile

There are no scheduled acquisition, program, T&E, or contract milestones.

Exhibit R-2

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DEFENSE LOGISTICS AGENCY

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Defense Logistics Agency
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1996	FY 1997	FY 1998	FY 1999	Sec
38	0603712S	Generic Logistics R&D Technology Demonstrations	3	13,883	19,357	17,267	17,788	U
53	0603753S	Electronic Commerce Resource Centers	3			14,972		U
	Advanced Technology Development			13,883	19,357	32,239	17,788	
110	0605798S	Defense Support Activities	6	16,858	13,121	5,992	6,056	U
111	0605801S	Defense Technical Information Center	6	39,950	43,382	46,930	48,171	U
112	0605803S	R&D in Support of DoD Enlistment, Testing and Evaluation	6		1,887	8,285	8,410	U
	RDT&E Management Support			56,808	58,390	61,207	62,637	
147	0708011S	Industrial Preparedness	7	3,788	6,101	8,720	8,732	U
	Operational Systems Development			3,788	6,101	8,720	8,732	
Total	Defense Logistics Agency			74,479	83,848	102,166	89,157	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
TOTAL PROGRAM ELEMENT	13.883	19.357	17.267	17.788	18.210	18.594	19.081	19.604	Cont.	Cont
#1: User-Source Link	3.477	4.404	4.800	3.900	3.900	0.000	0.000	0.000	0.000	20.481
#2: Rule-based Decisions	2.686	2.912	2.300	2.300	1.900	0.000	0.000	0.000	0.000	12.098
#3: Material Acquisition: Electronics	4.875	4.759	4.400	5.000	5.500	6.100	6.300	6.500	Cont.	Cont.
#4: Advanced Logistics Support	2.845	2.730	3.000	3.800	3.900	1.900	0.000	0.000	Cont	Cont
#5: Advanced Technology Integrator	0.000	1.592	1.800	1.860	2.100	2.500	2.600	2.700	Cont.	Cont.
#6 Future Logistics R&D Requirements	0.000	0.000	0.000	0.000	0.000	7.147	9.181	9.404	Cont	Cont
#7 On Demand Manufacturing	0.000	0.000	0.967	0.928	0.910	0.947	1.000	1.000	Cont	Cont
#8 MetalCasting	0.000	1.970	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.970
#9 Military Cargo Methods	0.000	0.990	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.990

A. Mission Description & Budget Item Justification: The DoD logistics vision calls for providing flexible, cost effective and prompt materiel support, logistics information and services; achieving the leanest possible infrastructure and the employment of the best commercial and government sources and practices. The DLA Logistics R&D program will develop and demonstrate high risk, high payoff technology that will provide a significantly higher level of support at lower costs, than would be otherwise attainable. The DLA program is a key part of the DARPA/DLA Advanced Logistics Program. Focused Logistics is one of the five basic tenants of Joint Vision 2010. The DLA logistics R&D program contributes directly to achieving JV 2010's vision of logistics "support in hours or days versus weeks." The objective of the Advanced Logistics Program is to provide a collaborative environment which will allow the Operations community (J3) and Logistics planning community (J4), TRANSCOM and DLA to seamlessly interact on operations planning and execution of war time operations. In addition, DLA will use the same system in peace time to significantly reduce Logistics Response Time and reduce the cost of DLA operations while maintaining readiness.

#1 USER-SOURCE LINK: Effort links DoD parts consumers with suppliers, enabling users to decide on price, quality, packaging, quantity, and ordering. Effort will significantly reduce DLA's overhead and inventory costs as more direct vendor deliveries will be attainable.

#2 RULE-BASED DECISIONS: Automates decision processes in buying, cataloging and item management that are strictly rule-based, to increase turnarounds and decreasing labor costs. First thrust concentrates on procurement activities, followed by item management and cataloging functions.

#3 MATERIAL ACQ: ELECTRONICS: Will fund continued enhancement of Generalized Emulation of Microcircuits effort and continue the Advanced Microcircuit Emulation (AME) which started in FY 97 . Program reduces weapons system support costs by providing an alternative to circuit board redesigns and lifetime buys. To date, GEM has delivered 14,000 microcircuits of 75 different types to 31 different weapon systems.

#4 ADVANCED TECHNOLOGY LOGISTICS SUPPORT NETWORK (ATSN): Effort develops a total logistics approach to applying advanced decision supports to center's goals well into the next century. Emphasis on cost-effective resourcing for wartime needs, customer choices, and fast, predictable deliveries.

#5 ADVANCED TECHNOLOGY INTEGRATOR: Will demonstrate prototypes of new mat'l handling & distribution equipment in a DoD depots prior to full scale implementation. Targets are storage, distribution and receiving processes, incorporating automatic identification technologies.

#6 FUTURE LOGISTICS R&D REQUIREMENTS: These funds will accelerate the transition of technology to the DLA, so that dramatic improvements in supply support can be undertaken. The alternative is for the Agency to slowly follow in the footsteps of Commercial supply practices, rather than to be the leader in Logistics efficiency, effectiveness and military readiness.

#7 ON DEMAND MANUFACTURING: This cycle time reduction initiative will establish commercial manufacturing capabilities to acquire parts "on demand". Contracting relationships will be established to obtain small quantities of military unique items of low demand, with significantly lower costs and greatly improved response time.

#8 METALCASTING: Cuts costs and reduces lead times of spare parts, by developing concurrent engineering teams to exploit ability of casting technology to reduce part count, tooling costs, and machining costs. In future years will be transitioned to Manufacturing Technology (PE 0708011S).

#9 MILITARY CARGO METHODS: Congressional add to study private sector transport of containerized munitions and third party logistics.

B. Program Change Summary:

	Cost in Millions			
	FY 96	FY97	FY98	FY99
President's Budget Submission:	11.539	18.162	19.570	19.650
Adjustment to Appropriated Value:	2.344	1.195	-2.303	-1.862
Current Budget Submission	13.883	19.357	17.267	17.788

Change Summary Explanation:

Funding: FY96 net adjustment reflects +2.850 Below-Threshold -Programming from IP/Mantech (PE #0808011S) Apparel Reserch Network Program to support ATSN, -$17K OUSD General Reduction, -$463K withdrawal of funds for application to other DoD priority items, and -$26K rescission of inflation savings pursuant to the 1996 Omnibus Appropriations Act (PL104-134). FYs 98/99 net adjustment(s) reflect(s) -$2M shift to IP/Mantech (PE#0708011S) in each year to support a robust Metalworking Program, and -$264 in FY98 & -$204K in FY99 for realignment to DTIC (PE#0605801S) to correctly distribute military and civilian pay rates. FY 97 adjustment of $1.195 reflects net result of +$2M Congressional add for Metalcasting, +$1M Congressional add for Military Cargo Methods and -$1.805 in FFRDC/Non-FFRDC, General Reductions,and Canceled Funds. FY 98 and 99 adjustments reflect inflation adjustments.
Schedule: No Significant Changes

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY02	FY03	COST TO COMP	TOTAL
#1: USER-SOURCE LINK	3.477	4.404	4.800	3.900	3.900	0.0	0.0	0.0	0.0	20.481

A. Mission Description and Justification:

User-Source Link will dramatically change the current logistical system as it exists today. DLA will offer users choices on sourcing, packaging, quality levels and shipping that were previously decided by our Inventory Control Points. The user will also be able to place the order on a pre-negotiated price schedule established by DLA. This will be accomplished by linking the user of parts with the suppliers. The initial phase will involve linking users to suppliers through a set of query servers. This will eliminate the need for suppliers to continually provide product information updates to the Government. Instead, the query servers will go to the suppliers organic product databases and retrieve the information for the user. The final phase of this effort will involve the use of "Agents." Software agents will travel between suppliers catalogs retrieving the information requested by the user without the use of query servers.

This project is needed to provide the DoD's customers with the information they need to make an informed buying decision. It will enable DLA to significantly reduce its overhead costs which are ultimately passed on to our customers. More direct vendor deliveries will result from this link which will reduce inventories. The use of suppliers part data will reduce the need for establishing NSNs and other cataloging data. Post-acquisition support problems and the resources necessary to solve them will go down as the user can interactively make their specific requirements known.

(U) Program Accomplishments and Plans:

(U) FY 1996:

- Develop data gathering tools and extend and apply techniques for semi-autonomous capture, search and retrieval of data in disparate defense and commercial logistics sources.

(U) FY 1997:

- Demonstrate data gathering tools and automated supply tools.

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	3.751	4.882	5.843	3.872
Adjustment to Appropriated Value:	-.274	-.478	-1.043	.028
Current Budget Submission:	3.477	4.404	4.800	3.900

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3				Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#1: USER-SOURCE LINK	3.477	4.404	4.800	3.900	3.900	0.000	0.000	0.000	0.000	20.481

C. Other Program Funding Summary:

- No funding dependencies on other programs.
- Related Programs: ARPA's FAST program (PE #62301E); ARPA's Advanced Logistics ProgramP.E.).

D. Schedule Profile:

US LINK will be an Advanced Concept Technology Demonstration involving participation of DLA Inventory Control Points and Navy/Army/AF customer sites.

	96				97				98				99		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Identify DLA beta-test sites	X	X														
Identify DoD Component beta-test sites		X	X													
Phase I Solicitation			X	X	X											
Phase I Award						X										
Phase I: Taxonomy software development						X	X	X								
Phase I: Query-server software development						X	X	X	X							
Phase I: DLA beta-test initial demo									X	X	X	X				
Phase I: Army/Navy/AF/USMC beta-test demo											X	X				
Phase II: Agent Development Solicitation & Awd												X				
Phase II: Agent Beta Testing														X	X	X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#2: Automate Rule-based Decisions	2.686	2.912	2.300	2.300	1.900	0.000	0.000	0.000	0.000	12.098

A. Mission Description & Budget Item Justification

Over 97% of DLA's procurements involve small purchases. Small purchases are very straightforward and lend themselves to automation. 20% of these actions are currently performed untouched by human hands. Because the remainder are mostly based on sets of rules, further automation could result in as many as 70% of all buys being automated. The second phase of this effort would address rule based decisions in cataloging and item management processes. Significant labor savings will result through the automation of many of these currently manual processes. The research will involve identification of those rule-based decisions that lend themselves toward automation, resolution of overlapping or conflicting rules, software development, demonstration, beta-site testing, feedback analysis and corrective action.

(U) Program Accomplishments and Plans:

(U) FY 1996:

- Develop tools for obtaining information for rapid procurement decisions, and intelligent decision processes.
- Information fusion technology to support decision making.

(U) FY 1997:

- Demonstrate natural language processing for automation formulation of contracts.
- Develop technology for rapid reconfiguration of decision processes.

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	2.897	3.222	3.310	3.388
Adjustment to Appropriated Value:	-.211	-.310	-1.010	-1.088
Current Budget Submission :	2.686	2.912	2.300	2.300

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#2: Automate Rule-based Decisions	2.686	2.912	2.300	2.300	1.900	0.0	0.0	0.0	0.0	12.098

C. Other Program Funding Summary:

- No funding dependencies on other programs.
- Related Programs: ARPA's Intelligent Integration of Information (I-3) program (PE #62301E) (Knowledge Sharing Initiative.

D. Schedule Profile:

Automate a vast array of business processes throughout the buying and cataloging community that involve rule-based decision making. Increase automated procurements from 20%-60%. Cut manual intervention rate on automated buys by 90%. Output will be a significantly reduced DLA overhead rate due to labor savings.

	96				97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Establish field focal pts	X															
Identify potential applications	X	X	X													
Solicitation		X	X													
Contract Award			X	X												
Conceptual Design of Decision Support Sys.					X	X	X									
Detailed design							X	X	X							
Design review/acceptance									X	X						
Coding										X	X	X	X	X	X	
System Integration and test										X	X	X	X	X	X	X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#3: Material Acquisition: Electronics	4.875	4.759	4.400	5.000	5.500	6.100	6.300	6.500	Cont.	Cont.

A. Mission Description & Budget Item Justification

Develop a capability to emulate most obsolete digital integrated circuits (ICs) in the federal catalog using a single, flexible manufacturing line. DoD has estimated that $2.9B is spent every five years in redesigning circuit card assemblies. Much of these redesigns are driven by IC obsolescence. The commercial suppliers of ICs typically terminate production lines every 5 years, moving on to the next generation of ICs. Because DoD maintains weapons systems much longer than 5 years, this creates an obsolescence problem that can only be overcome through buying excessive inventories of parts before the production lines close or redesigning the next higher assembly to eliminate the obsolete part. DLA, as the manager of over 80% of the IC supply class, must have a capability to manufacture these devices. This project will develop this capability and expand it to the succeeding generations of obsolete ICs through the Advanced Microcircuit Emulation program.

(U) Program Achievements and Plans:

(U) FY 1996:

- Development and demonstration of emulated microcircuits needed for the following systems: AWACS, TRIDENT, APG-65(F-18); JTIDS; APG-70, ALR-56C(F-15); F-14; F-16; LANTIRN; C-17, AEGIS, JSTARS; SPACE SHUTTLE; BSY-2; Defense Electronic Supply Center (DESC) Various Users.
- Developing GEM devices; 58 new part types; 13,000 pieces.
- Achievements: MIL-PRF-38535 Compliance (QML); High Speed arrays; Higher Voltage Arrays.

(U) FY 1997:

- Development and demonstration of emulated microcircuits needed for the following systems: F-14; F-15; F-16; F-18; JTIDS; UYK-43; UYK-44; AEGIS; JSTARS, SPACE SHUTTLE; TRIDENT; BSY-2; AWACS; CG-47; DESC(Various Users).
- Developing GEM devices: 66 New Part Types; 17,000 devices.
- Achievements: Field GEM Production Program (next Generation Emulation) begins emulates micro controllers & microprocessors, ASICs, LSI, VLSI, and Analog Devices.

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	4.891	5.273	5.452	5.614
Adjustment to Appropriated Value:	-.016	-.514	-1.052	- .614
Current Budget Submission:	4.875	4.759	4.400	5.000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to COMP	TOTAL
#3: Material Acquisition: Electronics	4.875	4.759	4.400	5.000	5.500	6.100	6.300	6.500	Cont.	Cont.

C. Other Program Funding Summary: No funding dependencies on other programs. No related programs.

D. Schedule Profile: The DoD will spend $5.9 billion on system redesign every 5 years according to OSD estimates. Much of these costs are in response to microcircuit obsolescence cases. The Generalized Emulation of Microcircuits (GEM) Program will eliminate the need to redesign in many cases by producing a form, fit, and function "drop-in" replacement for the old microcircuits using current technology. GEM addresses microcircuits built in the 1960's-70's. AME will address 1980's obsolescence.

	96				97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GEM Statement of Work																
GEM Dem/Val solicitation																
GEM Dem/Val award		X														
Qualify 2K ROM array	X	X	X													
Qualify high voltage array	X	X														
Scale BiCMOS process to 1.2 micron		X	X	X												
Attain QML certification		X	X	X												
Advance Microcircuit Emulation (AME) solicitation and Award			X	X	X											
Proof of concept of analog, microwave and ASIC emulation						X										
Cost Reduction for ASIC emulations						X	X	X	X	X	X	X	X	X	X	X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL
#4: Advanced Technology Logistics Support Network	2.845	2.730	3.000	3.800	3.900	1.900	0.000	0.000	Cont	Cont

A. Mission Description and Budget Item Justification

Advanced Technology Logistics Support Network initiative will reduce DoD inventory requirements by substituting immediate access to commercial sector inventories for stocks held in a DoD warehouses. Its objectives include creating a virtual inventory by tapping into worldwide commercial inventories; providing a full array of leveraged prices; providing a variety of delivery methods; providing graphics and on line help which will allow customers to fully explore an item's specifications, warranty and past performance; and creating a seamless catalog which integrates commercial catalog data with DLA negotiated prices. The program proposal seeks to allow DoD customers to conduct business on the Internet; utilize application scanners to remove the barriers of software language; link databases across government and industry via hyperlink technologies; and finally use hypertext markup language to merge government database information onto the Internet.

The ATSN program has far reaching applicability in allowing DLA and its customers to fully capitalize on the logistics related information technology advancements currently available. The program will bring this advanced technology to both peacetime customer support and mobilization support. These new technologies are critical elements to the achievement of DLA's programmed outyear savings in conjunction with implementation of reengineering initiatives and acquisition reform.

(U) Program Accomplishments and Plans:

(U) FY 1996:

- Develop agent knowledge rover information search/data access technology and deficiency remediation techniques.
- Develop automated supply and sustainment source locating and purchasing tools.

(U) FY 1997:

- Demonstrate virtual inventory access in a distributed environment using state of the art human computer interface tools.
- Develop servers for rapid supply service and integrate with transportation and sustainment servers.

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	0.000	3.027	3.115	4.840
Adjustment to Appropriated Value:	2.845	-.297	-.115	-1.040
Current Budget Submission:	2.845	2.730	3.000	3.800

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL
#4: Advanced Technology Logistics Support Network	2.845	2.730	3.000	3.800	3.900	1.900	0.000	0.000	Cont	Cont

C. Other Program Funding Summary: No funding dependencies on other programs. Related Programs: ARPA's FAST program (PE #62301E); ARPA's Intelligent Integration of Information (I-3) (PE #62301E) program.

D. Schedule Profile: DLA's Defense Personnel Supply Center (DPSC) will manage the ATSN program. Will implement communications network developed under US Link. Objectives include reduction in customer delivery time variances from 50% to 3%, reduced inventories (both retail & wholesale), on-line requisition status, and lower unit prices.

	96				97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Evaluation of standard system																
Analysis of interface requirements																
Solicitation of Readiness/Response BAA's																
Contract Award					X											
Response process modeling and analysis						X	X	X	X							
Process integration/elimination						X	X	X	X	X	X	X	X	X	X	X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#5: ADVANCED TECHNOLOGY INTEGRATOR	0.000	1.592	1.800	1.860	2.100	2.500	2.600	2.700	Cont.	Cont.

Advance Technology Integrator

A. Mission Description & Budget Item Justification:

The DoD has pursued material handling and distribution technologies in the past by identifying a promising commercial technologies and installing them in our depots with little or no analysis. This has led to many disastrous results due to a combination of false industry claims, over desire on the DoD's part to get the latest state-of-the-art systems with no compatibility testing, not fitting the equipment to the application, and inexperienced government personnel. The Advanced Technology Integrator will eliminate this problem by providing a "try before you fly" capability where equipment can be simulated in a live depot environment prior to full-scale implementation. A demonstration center would be created. Tasks would be executed by the center in order to fully evaluate promising technologies or new concepts.

The impact of the Advanced Technology Integrator would be lower depot overhead costs associated with the receiving, storage, and issuing processes.

(U) Program Achievements and Plans:

(U) FY 1996:

- N/A

(U) FY 1997:

- Development of virtual test-bed for depot operations.
- Development and demonstration of freight manifest automation.
- Development of sentinels for in-movement monitoring of materiel.

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	0.000	1.758	1.850	1.936
Adjustment to Appropriated Value:	NA	-.166	-.050	-.076
Current Budget Submission:	0.000	1.592	1.800	1.860

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL
#5: Advanced Technology Integrator	0.000	1.592	1.800	1.860	2.100	2.500	2.600	2.700	Cont.	Cont.

C. Other Program Funding Summary: No funding dependencies on other programs.

D. Schedule Profile: The Advanced Technology Integrator (ATI) is an innovative concept designed to identify gaps in commercial technology prior to acquisition and full scale implementation. ATI will foster the advancement of material handling and automatic identification technologies that will benefit the DLA/DoD distribution community.

	96				97				98				99	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Depot region coordination				X	X	X										
Contract Solicitation							X									
Contract Award (from FY 96 Solicitation)						X										
Performance on FY 96 Awards							X	X	X	X						
Routing technology initial development							X	X	X							
Begin performance on FY 97 Awards								X	X	X	X	X	X	X		

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#6: Future Logistics R&D Requirements	0.000	0.000	0.000	0.000	0.000	7.147	9.181	9.404	Cont.	Cont.

A. Mission Description & Budget Item Justification:

These funds will be used for high risk and high payoff alternatives to the conventional investment programs to improve efficiency and lower costs of acquisition, supply management and distribution.

(U) Program Achievements and Plans:

(U) FY 1996:
- N/A

(U) FY 1997:
- N/A

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	0.000	0.000	0.000	0.000
Adjustment to Appropriated Value:	N/A	N/A	N/A	N/A
Current Budget Submission:	0.000	0.000	0.000	0.000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#6: Future Logistics R&D Requirements	0.000	0.000	0.000	0.000	.0.0	7.147	9.181	9.404	Cont.	Cont.

C. Other Program Funding Summary:
None.

D. Schedule Profile:

	96				97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4				
Begin Logistics Technology Planning				X												
Develop Continuing Logistics Technology Plans				X	X	X	X	X	X	X	X	X	X	X		

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3					Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#7: On Demand Manufacturing	0.0	0.0	0.967	0.928	0.910	0.947	1.000	1.000	Cont.	Cont.

A. Mission Description & Budget Item Justification:

This initiative is necessary to identify and establish commercial manufacturing capabilities so that DLA Centers can acquire parts as they are needed (on demand) rather than investing in excessive stock, or risking non-availability of essential parts when needed. Contracting relationships will be established to obtain small quantities of military unique items of low demand, with significantly lower costs and greatly improved response time. This is an effort to use private sector manufacturers, in addition to all other measures to obtain parts quickly. In FY98 it builds a program related to the USAF Computer Aided Technology Transfer (CATT) program. CATT establishes a network of companies to produce parts in a very short production lead time with minimum administration.

(U) Program Achievements and Plans:

(U) FY 1996:
- N/A

(U) FY 1997:
- N/A

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	0.000	0.000	0.000	0.000
Adjustment to Appropriated Value:	N/A	N/A	0.927	0.928
Current Budget Submission:	0.000	0.000	0.927	0.928

APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3				Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#7: On Demand Manufacturing	0.0	0.0	0.967	0.928	0.910	0.947	1.000	1.000	Cont.	Cont.

C. Other Program Funding Summary:
None.

D. Schedule Profile:

	96				97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Continue Work at Centers to Develop Contractual Vehicles with industry	X	X	X	X	X	X	X	X	X							
Begin funding USAF related efforts (CATT)									X	X	X	X				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 3	Program Element (PE) Name & No 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#8 METALCASTING	0.000	1.970	0.000	0.000	0.000	0.000	0.000	0.000	1.970	1.970

A. Mission Description & Budget Item Justification This is an FY 97 Congressional add to the Manufacturing Technology Program #3 Metalworking (P.E. 0708011S).
The Director's objectives are to improve quality, responsiveness and to eat all inflation in spare parts cost over the POM period. The Metalworking program is a method for attaining these objectives. Metalworking represents over $500 million of spare parts procurements annually, in such federal supply classes as:
3110 Bearings, Antifriction, Unmounted; 3130 Bearings, Mounted;
2815 Engines and Components, Diesel; 2895 Engines and Components, Misc;
2805 Engines, Gasoline, Exc Aircraft; 2810 Gasoline Reciprocating Engines;
2410 Tractors, Full Track; 2420 Tractors, Wheeled;
3930 Truck and Tractors, Self Prop.;
2530 Vehicle Brake, Steering; 2520 Vehicular Power Transmission ;
6004 Rotary Joints;
5280 Tools, Measuring;
6660 Instruments, Metrological;
1650 Aircraft Hydraulic,Vacuum; 1620 Aircraft Landing Gear Comp.; 1630 Aircraft Wheel and Brake Comp.;
2915 Engine Fuel System Comp. Air; 2910 Engine Fuel System Comp. Non Air
4320 Pumps, Power and Hand
Program cuts costs of spare part made from metal.
(U) FY 1997:
Additional components will be converted to castings; foundry process improvements will also be made.

B. Program Change Summary: Cost in Millions

	FY 96	FY 97	FY98	FY99
President's Budget Submission:	0.000	0.000	0.000	0.000
Appropriated Value	N/A	2.000	N/A	N/A
Adjustment to Appropriated Value:	N/A	- .030	N/A	N/A
Current Budget Submission:	0.000	1.970	0.000	0.000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 3				Program Element (PE) Name & No 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL
#8: METALCASTING	0.000	1.970	0.000	0.000	0.000	0.000	0.000	0.000	1.970	1.970

C. Other Program Funding Summary:
None

D. Schedule

	97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4
Casting Conversions:		x	x	x	x							
Benchmarking		x	x	x	x							
Dimensional Capability		x	x	x	x							
Machining Reject Reduction		x	x	x	x							
Welding Repair of Casting		x	x	x	x							
Metal Casting Engineering Systems		x	x	x	x							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Budget Activity 3	Program Element: 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#9 Military Cargo Methods	0.000	0.990	0.000	0.000	0.000	0.000	0.000	0.000	0.990	.990

A. Mission Description & Budget Item Justification: This is a Congressional Add that says: "The conferees believe opportunities exist to use modern cargo handling methods and technology developed in the private sector to improve efficiency, safety and security of moving cargo across the nation and around the world. Of the funds provided...the conferees have designated $1,000,000 only for a not-for-profit trucking research institute engaged exclusively in motor carrier R&D to (1)establish the manner and extent to which private sector land transport experience, equipment, and procedures can be adopted to improve the efficiency, safety and security of loading and transporting military containerized ammunition to DoD load out ports and air cargo facilities; and (2) examine, measure, and inventory the expertise and capability of private sector third party logistics providers to provide the Defense Logistics Agency with cheaper and more efficient logistics services in keeping with the requirements of the Government Performance and Results Act of 1993." DLA plans to use this funding to satisfy this defense requirement via two study efforts with contracts to be let by the Military Traffic Management Command (MTMC) to study movement of ammunition ($700K); and DLA to study use of third party logistics firms ($300K).

(U) **Program Achievements and Plans:**

(U) FY 1996:
- N/A

(U) FY 1997:
- N/A

B. Program Change Summary:

	Cost in Millions FY 96	FY 97	FY98	FY99
President's Budget Submission:	0.000	0.000	0.000	0.000
Appropriated Value:	0.000	1.000	N/A	N/A
Adjustment to Appropriated Value:	N/A	- .010	N/A	N/A
Current Budget Submission:	0.000	0.990	0.000	0.000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 3					Program Element (PE) Name & No 0603712S LOGISTICS R&D TECHNOLOGY DEMONSTRATION						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL	
#9 Military Cargo Methods	0.000	0.990	0.000	0.000	0.000	0.000	0.000	0.000	0.99	0.99	

	97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4
Military Containorized Munitions Transport		x	x									
Third Party Logistics Support		x	x									

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/03	Program Element (PE) Name & No 0603753S ELECTRONIC COMMERCE RESOURCE CENTERS (ECRCs)

COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
TOTAL PROGRAM ELEMENT	-	-	14.972	-	-	-	-	-	14.972	14.972
Electronic Commerce Resource Centers (ECRCs)	-	-	14.972	-	-	-	-	-	14.972	14.972

A. Mission Description & Budget Item Justification: The mission of this program is the transfer of electronic commerce (EC) technologies to small- and medium-sized enterprises (SMEs) through a network of regional deployment centers. This mission is a subset of the overall Acquisition Reform Initiatives. The regional ECRCs provide training and technical assistance to aid SMEs in defense supply chains in making effective use of electronic commerce technologies. The ECRC Technology Hub keeps abreast of EC technologies and ensures that technical consultants in the regional ECRCs are equipped with the latest information and training on EC technologies.

B. Program Change Summary: In the 1996 Department of Defense Appropriations Act, Congress directed, beginning in FY 1997, that the DLA assume responsibility for the funding, management, and control of the ECRC program from the Defense Advanced Research Projects Agency (DARPA). Through FY 1997, DARPA has sufficient funding for the operation of the ECRC program.

	FY96	FY97	FY98	FY99	Total Cost
FY97 President's budget	-	-	-	-	
Appropriated Value	-	-	15.0	-	
Adjustments to Appropriated Value	-	-	- 0.028	-	
FY98 BES/President's budget request	-	-	14.972	-	14.972

(U) Program Accomplishments and Plans:

(U) FY1996: N/A - Program Managed by DARPA

(U) FY1997:

N/A

(U) FY1998:

- Continue to move vendors to take advantage of more complex and/or emerging EC capabilities,
- Focus on two additional DoD supply chains,
- Train 35,000 industry and government personnel nationwide in EC technologies,
- Foster development of a small group of SMEs capable of virtual enterprise activity to serve as a model for others to emulate.

(U) FY1999:

- NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: *0400/03*				Program Element (PE) Name & No 0603753S ELECTRONIC COMMERCE RESOURCE CENTERS (ECRCs)						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
TOTAL PROGRAM ELEMENT	-	-	14.972	-	-	-	-	-	0.0	14.972
Electronic Commerce Resource Centers (ECRCs)	-	-	14.972	-	-	-	-	-	0.0	14.972

C. Other Program Funding Summary:

- None.
- Related Programs: None

D. Schedule Profile:

The Electronic Commerce Resource Center (ECRC) Program management transfers from DARPA to DLA beginning in FY1997.

	96				97				98				99			
ECRC Activities	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Education and Training																
DoD Suppliers					X	X	X	X	X	X	X	X				
DoD Organizations					X	X	X	X	X	X	X	X				
Others					X	X	X	X	X	X	X	X				
Outreach		N/A													N/A	
Outreach Activities					X	X	X	X	X	X	X	X				
Supply Chain Leads					X	X	X	X	X	X	X	X				
Consultation/Technical Support																
DoD Suppliers					X	X	X	X	X	X	X	X				
DoD Organizations					X	X	X	X	X	X	X	X				
Others					X	X	X	X	X	X	X	X				
Technology R&D																
Research					X	X	X	X	X	X	X	X				
Development																

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									Date: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 6						R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. DEFENSE SUPPORT ACTIVITIES PE 0605798S				
COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

A. **Mission Description and Budget Item Justification**

(U) This program element is found in Budget Authority 6, RDT&E Management Support to provide engineering, scientific, and analytical support to the Office of the Director, Defense Research and Engineering (ODDR&E) in its review and oversight of the Science and Technology (S&T) Program and its responsibilities in the Defense Acquisition Process. The primary purpose of the DoD Technology Analysis Office is to provide support in the development of the S&T program and conduct assessments and analyses of the S&T program to ensure maximum utilization of research and development funds to accomplish the overall objectives of the S&T program. Funds are required for personnel compensation, technical and analytical support, equipment, supplies, travel, utilities, communications and facilities.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								Date: February 1997		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 6						R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. DEFENSE SUPPORT ACTIVITIES PE 0605798S				
COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

FY 1996 Plans:

- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in developing strategies and plans to exploit and develop technology. (1.160)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in conducting analyses, developing policies, making recommendations, and developing guidance for S&T plans and programs. (2.439)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in reviewing proposed and approved S&T programs and make recommendations to optimize effectiveness of the DoD investments in S&T. (.824)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in oversight of the technological aspects of the Independent Research and Development and Small Business Innovative Research Programs. (.160)
- Provide technical support on S&T aspects of programs subject to review by the Defense Acquisition Board and S&T pertaining to maintaining a strong industrial base. (.160)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in execution of special interest programs such as the University research programs including the University Research Initiative, the Manufacturing Science and Technology Program, and dual use and technology transition efforts. (1.165)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	Date: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 6	R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. DEFENSE SUPPORT ACTIVITIES PE 0605798S

COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

FY 1997 Plans:

- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in developing strategies and plans to exploit and develop technology. (1.160)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in conducting analyses, developing policies, making recommendations, and developing guidance for S&T plans and programs. (2.079)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in reviewing proposed and approved S&T programs and make recommendations to optimize effectiveness of the DoD investments in S&T. (.922)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in oversight of the technological aspects of the Independent Research and Development and Small Business Innovative Research Programs. (.100)
- Provide technical support on S&T aspects of programs subject to review by the Defense Acquisition Board and S&T pertaining to maintaining a strong industrial base. (.150)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in execution of special interest programs such as synchronizing the Joint Chiefs program requirements, the University research programs including the University Research Initiative, the Manufacturing Science and Technology Program, and dual use and technology transition efforts. (1.165)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									Date: February 1997	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 6						R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. DEFENSE SUPPORT ACTIVITIES PE 0605798S				
COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

FY 1998 Plans:

- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in developing strategies and plans to exploit and develop technology. (1.160)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in conducting analyses, developing policies, making recommendations, and developing guidance for S&T plans and programs. (2.520)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in reviewing proposed and approved S&T programs and make recommendations to optimize effectiveness of the DoD investments in S&T. (.922)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in oversight of the technological aspects of the Independent Research and Development and Small Business Innovative Research Programs. (.075)
- Provide technical support on S&T aspects of programs subject to review by the Defense Acquisition Board and S&T pertaining to maintaining a strong industrial base. (.150)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in execution of special interest programs such as synchronizing the Joint Chiefs program requirements, the University research programs including the University Research Initiative, the Manufacturing Science and Technology Program, and dual use and technology transition efforts. (1.165)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	Date: February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 6	R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. DEFENSE SUPPORT ACTIVITIES PE 0605798S

COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

FY 1999 Plans:

- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in developing strategies and plans to exploit and develop technology. (1.180)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in conducting analyses, developing policies, making recommendations, and developing guidance for S&T plans and programs. (2.564)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in reviewing proposed and approved S&T programs and make recommendations to optimize effectiveness of the DoD investments in S&T. (.922)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in oversight of the technological aspects of the Independent Research and Development and Small Business Innovative Research Programs. (.075)
- Provide technical support on S&T aspects of programs subject to review by the Defense Acquisition Board and S&T pertaining to maintaining a strong industrial base. (.150)
- Provide engineering, scientific, analytical, and managerial support to the ODDR&E in execution of special interest programs such as synchronizing the Joint Chiefs program requirements, the University research programs including the University Research Initiative, the Manufacturing Science and Technology Program, and dual use and technology transition efforts. (1.165)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

Date: February 1997

APPROPRIATION/BUDGET ACTIVITY

RDT&E, Defense-wide/BA 6

R-1 ITEM NOMENCLATURE
Program Element (PE) Name and No.
DEFENSE SUPPORT ACTIVITIES
PE 0605798S

COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

B. Program Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999	Total Cost
Previous President's Budget	5.931	6.011	6.001	6.066	Continuing
Appropriated Value					
Adjustments to Appropriated Value	-.023	-.435	-.009	-.010	
Current Budget Submit/President's Budget	5.908	5.576	5.992	6.056	Continuing

Change Summary Explanation: Change in the FY 96 appropriation reflects an OUSD general reduction of -$7K and a -$16K recission of inflation savings pursant to the 1996 Omnibus Appropriations Act (P.L. 104-134). FY 97 net adjustment reflects -$435K in FFRDC/Non-FFRDC, General Reductions and canceled funds per PBD 633. FYs 98/99 reflect PBD604 Inflation adjustments.

C. Other Program Funding Summary

Section not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

Date: February 1997

APPROPRIATION/BUDGET ACTIVITY

RDT&E, Defense-wide/BA 6

R-1 ITEM NOMENCLATURE
Program Element (PE) Name and No.
DEFENSE SUPPORT ACTIVITIES
PE 0605798S

COST *(In Millions)*	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing
Project Name/No. and Subtotal Cost DoD Technology Analysis Ofc 0004	5.908	5.576	5.992	6.056	6.183	6.350	6.411	6.556	Continuing	Continuing

D. Schedule Profile

Fiscal Year actual planned events by quarter

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Operations	.492	.629	.669	.622	.721	.732	.742	.709	.732	.732	.732	.732	.747	.747	.747	.747
S&T Program Support	.020	.086	1.292	2.098	.010	1.700	.362	.600	.100	1.700	.764	.500	.100	1.700	.768	.500

UNCLASSIFIED

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)				Date: February 1997						
APPROPRIATION/BUDGET ACTIVITY 0400/06				PROGRAM ELEMENT (PE) NAME & NUMBER Defense Support Activities 0605798S						
Cost in Millions	FY 96	FY 97	FY 98	FY 99	FY 00	FY01	FY02	FY03	Cost to Complete	Total Cost
0005 DRAMA/WSSP	3,000	2,379	------	----	----	-----	-----	----	0.0	5,379

A. Mission Description and Budget item Justification

FY96 and FY97 Data Review Analysis and Monitoring Aid (DRAMA)/WSSP

DRAMA is an enabling technology that allows continuous exchange of management data throughout the life cycle of weapon systems. This technology improves and automates existing inventory control and distribution processes. It improves managers access to scheduled maintenance activities and the resulting impact on item demand. The technology developed in DRAMA is being applied to the expansion ot the Weapon System Support Program (WSSP) per DoD IG report number 97-041 dated 10 December 1996. Benefits include reduction in 2nd and 3rd generation shipping delivery cost, time, and storage; reduction of inventory storage facilities and support personnel. DLA historically has operated in a reactive mode relying on historical demand without insight into service programmatic data and scheduled maintenance cycle. The technology injects expert system technology and utilizes trend analysis techniques to place DLA in a cost effective predictive posture. This capability allows DLA to anticipate requirements, analyze performance in the execution of those requirements and accomplish real time support process adjustments as necessary to provide as close to just-in-time materiel support to the user as practical. The described system, coupled with the interactive materiel management databases, will have the capability to interact with mission and design changes as they occur and predict the effect of those changes on the material support requirements of the customer. Feedback information will be provided to both DLA and the customer automatically. The closed loop feed back will be facilitated over the common operating environment infrastructure. This program reflects congressional adds in FYs 96 and 97.

B. Program Change Summary	FY96	FY 97	FY 98	FY99	Total Cost
Previous President's Budget	3,000	------			3,000
Appropriated Value	-----	3,000			3,000
Adjustments to Appropriated Value	-----	-621			
Current Budget Submit/President's Budget	3,000	2,379			5,379

FY 97 funding reflects net adjustments for FFRDC/Non-FFRDC, General Reductions, and Canceled Funds.

C. Other Program Funding Summary N/A

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)			Date: February 1997
APPROPRIATION/BUDGET ACTIVITY 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER Defense Support Activities 0605798S		

Cost in Millions	FY 96	FY 97	FY 98	FY 99	FY 00	FY01	FY02	FY03	Cost to Complete	Total Cost
0005 DRAMA	3,000	2,379	------	----	----	-----	-----	----	0.0	5,379

D. Schedule Profile

Expansion of DRAMA technology into the Weapon Sytems Support Program will be accomplished in two phases.

	FY 96				FY 97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase I - Migrate existing system into the Oracle data base	X	X	X	X	X	X										
Phase II - Interface with interactive materiel management data bases						X	X	X								

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) February 1997

APPROPRIATION ACTIVITY
0400/06 MISSION SUPPORT

R-1 ITEM NOMENCLATURE
DEFENSE TECHNICAL INFORMATION SERVICES
PE 0605801S

COST (In Millions)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Complete	Total Cost
0605801S Defense Technical Information Services	39.950	43.382	46.930	48.171	49.148	50.583	51.611	52.735	Cont.	Cont.
001 Defense Technical Information Center	28.308	31.903	34.624	35.541	36.224	37.266	37.998	38.807	Cont.	Cont.
002 Information Analysis Centers	11.642	11.479	12.306	12.630	12.924	13.317	13.613	13.928	Cont.	Cont.

A. Mission Description and Budget Item Justification: The Defense Technical Information Services Program Element provides resources for the Defense Technical Information Center (DTIC) and the DoD Information Analysis Centers (IACs). DTIC mission and functions provide for the collection, availability, and accessibility of Scientific and Technical Information (STI) and related data on all subjects that contribute to, support, and collectively represent a comprehensive base of scientific and technical knowledge and know-how including data which is restricted, controlled and/or classified. DTIC provides a single point of access for end users seeking DoD information or other relevant information wherever it resides. DTIC also functions as the central activity within the DoD for applying advanced techniques and technology to DoD STI systems and for developing improvements in services and STI transfer effectiveness. The Information Analysis Centers, each devoted to a particular technology area, are part of the program to share information resources in a coordinated manner and further leverage the technology base by maintaining a staff of subject experts to provide in-depth analysis and to create specialized technical information products. The maintenance of a centralized program is a cost effective and efficient means to provide access to and transfer information among DoD personnel, DoD contractors and potential contractors, and other federal agencies and their contractors. By maximizing the existing information resources, the DoD will: cut lead-time throughout the development and acquisition cycles; reduce costs by minimizing duplication; improve the quality of research

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	February 1997
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0400/06 MISSION SUPPORT	DEFENSE TECHNICAL INFORMATION SERVICES PE 0605801S

and contribute to technological superiority. This Program Element is under BA 6, Mission Support, which provides for the support of operations required for use in general research and development and not allocable to specific missions.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) February 1997

APPROPRIATION ACTIVITY
0400/06 MISSION SUPPORT

R-1 ITEM NOMENCLATURE
DEFENSE TECHNICAL INFORMATION SERVICES
PE 0605801S

COST (In Millions)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Complete	Total Cost
001 Defense Technical Information Center	28.308	31.903	34.624	35.541	36.224	37.266	37.998	38.807	Cont.	Cont

Mission Description and Budget Item Justification: The Defense Technical Information Center (DTIC) is a centralized source for Department of Defense current and legacy scientific and technical information and serves as an intermediary and counselors to the DoD community for the implementation of new information technologies. DTIC, in its role as the door to DoD information, collects or electronically connects to sources of information generated by the DoD or relevant to its mission. When centralized collection is appropriate, DTIC catalogs and indexes collected information for its on-line databases, and stores full text documentation either electronically or converts to microfiche. Information is disseminated worldwide to registered users electronically, on paper, or on other physical media. DTIC's role is to ensure that all significant or technological observations, findings, recommendations and results derived from DoD endeavors are accessible to authorized users. DTIC is moving aggressively to fully exploit the benefits of electronic information dissemination of its internal collections as well as developing tools to access external databases, to fully utilize the Internet and its underlying standards and technologies, and to reach end users (scientists, engineers, R&D managers, etc.) in rapidly increasing numbers. This means that systems developed must be easy to use and provide analytical capabilities in order to isolate pertinent information from the sea of data available. Application of NSA security initiatives, to include firewalls and other multi-level security systems, will enable DTIC to provide our closed community of users a single point of entry to commercial, unclassified, controlled and/or classified information resources and to foster collaborative efforts among our geographically dispersed scientific community. DTIC services are available to DoD and it's contractors; other U.S. Government organizations and their contractors and serves more than 4200 organizations located in the United States and overseas.

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FY 1996 ACCOMPLISHMENTS:

- Ongoing Operations - Basic operation of DTIC including the output of products and services, personnel, maintenance of equipment, and payment for support services, i.e personnel processing, building services and maintenance, legal support, etc., paid to other government agencies via Interservice Support Agreements. ($26.575 Millions)
- Improved Access, Dissemination and Use of Information - Examples include: enhanced the operational capabilities of the Electronic Document Management System (EDMS) for electronic input and storage of unclassified documents, and initiated software development for the storage of classified documents; began implementation of OmniPort at DTIC and the Survivability/Vulnerability IAC (SURVIAC) which facilitates timely, accurate and comprehensive identification and retrieval from multiple distributed, heterogeneous data sources in a geographically dispersed network; developed and enhanced new CD-ROM based information products; began implementation of a Marketing Information System to help reach customers and explore potential communities, and developed information centers for the DTIC user conferences and regional offices. Developed and implemented Internet Homepages and electronic versions of press releases - examples include: GulfLINK, BosniaLINK, and Research & Development Descriptive Summaries (RDDS). ($1.733 Millions)

FY 1997 PLANS:

- Ongoing Operations - Basic operation of DTIC including the output of products and services, personnel, maintenance of equipment, and payment for support services, i.e personnel processing, building services and maintenance, legal support, etc., paid to other government agencies via Interservice Support Agreements. ($26.178 Millions)
- Improved Access, Dissemination and Use of Information - Funds efforts to capture information, including full text STI, in the electronic form from contributors and efforts to improve methods to collect, index and store information at DTIC or through remote access. Modernization efforts include implementing electronic input and storage of classified as well as unclassified documents in the Electronic Document Management System, and continued multimedia application development to include the addition of audio/video media and video conferencing. Includes continued utilization of the Internet to disseminate information and tools like OmniPort which provide a user friendly interface to multiple information sources. ($3.200 Millions)

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APPROPRIATION ACTIVITY 0400/06 MISSION SUPPORT	R-1 ITEM NOMENCLATURE DEFENSE TECHNICAL INFORMATION SERVICES PE 0605801S

FY 1997 PLANS CONT.:

●Protection and Access Control - Explores and implements new methods of encryption and authentication to protect classified and unclassified but sensitive information. Funding will support the procurement and integration of Firewalls and other security equipment created by the Multilevel Information Systems Security Initiative program. ($.125 Millions)

● Business Process Reengineering - DTIC is managing this Business Process Reengineering (BPR) effort for the Director, Defense Research and Engineering (DDR&E). Effort consists of reengineering S&T processes to achieve greater mission effectiveness and standardizing business management data to promote interoperability, minimize duplication, and enhance information available to the decision maker at all levels. ($2.400 Millions)

FY 1998 PLANS:

● Ongoing Operations - Basic operation of DTIC including the output of products and services, personnel, maintenance of equipment, and payment for support services, i.e personnel processing, building services and maintenance, legal support, etc., paid to other government agencies via Interservice Support Agreements. ($27.453 Millions)

● Improved Access, Dissemination and Use of Information - DTIC will begin development of a Virtual Electronic Information Warehouse that will identify key government and commercial information resources and present them in a customized, integrated manner that includes digitized video, audio, numeric, and image information to foster collegial effort in specific DTIC communities. Develop and test an interface to facilitate the exchange of electronic documents between DTIC, its contributors, and its customers. Complete system specification and software development for Full Operating Capability (FOC) of EDMS. FOC includes implementing new search and retrieval capabilities, electronic delivery of documents, and multi-level security. ($4.196 Millions)

● Protection and Access Control - Complete development and implementation of a Secure Gateway Client and Secure Network that will provide a multi-level secure front end to remote databases. Funding also includes development and operational testing of a multi-level secure version of OmniPort. ($.375 Millions)

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FY 1998 PLANS CONT.:

- Business Process Reengineering - Continue management of BPR effort for the Director, Defense Research and Engineering (DDR&E). Efforts consist of reengineering S&T processes to achieve greater mission effectiveness and standardizing business management data to promote interoperability, minimize duplication, and enhance information available to the decision maker at all levels. ($2.600 Millions)

FY 1999 PLANS:

- Ongoing Operations - Basic operation of DTIC including the output of products and services, personnel, maintenance of equipment, and payment for support services, i.e personnel processing, building services and maintenance, legal support, etc., paid to other government agencies via Interservice Support Agreements. ($28.641 Millions)
- Improved Access, Dissemination and Use of Information - DTIC continues its efforts to improve the capture and distribution of information in the electronic form and to move to paperless information management. Modernization efforts include electronic delivery of full text STI, begin integration of color processing into the production system, and initiate full operational capability of the Electronic Document Management System. Plans also include developing electronic collaboratoriums that provide a means for disparate communities to address common problems using advanced information technologies. Collaboratoriums will include virtual electronic information warehouses, desk-top video conferencing, and tools to discover, customize, and present relevant information using Intranet and Internet environments. ($3.780 Millions)
- Protection and Access Control - Efforts to implement the NSA's Multilevel Information System Security Initiative expand to provide secure communications for both system high and multi-level secure systems. Plans include an operational capability for a multi-level secure front-end to remote databases. ($.420 Millions)

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FY 1999 PLANS CONT.:

● Business Process Reengineering - Continue management of BPR effort for the Director, Defense Research and Engineering (DDR&E). Efforts consist of reengineering S&T processes to achieve greater mission effectiveness and standardizing business management data to promote interoperability, minimize duplication, and enhance information available to the decision maker at all levels. ($2.700 Millions)

B. **Program Change Summary**

	Cost in Millions				Total
	FY 96	FY 97	FY 98	FY 99	Cost
FY 97 President's Budget Submission	28.770	33.272	34.345	35.306	Cont.
Appropriated Value	28.658	33.272	34.345	35.306	
Adjustment to Appropriated Value					
a. Civilian pay raise adjustment			+.258	+.200	
b. Internal Reprogramming to IACs	-.350				
c. Congressional Undistributed		-1.369			
d. Inflation Adjustment			-.084	-.100	
e. Pay Adjustment			+.105	+.135	
FY 98/99 President's Budget Submission	28.308	31.903	34.624	35.541	Cont.

Change Summary Explanation:

Funding: No significant changes.

Schedule: No significant changes.

Technical: No significant changes.

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APPROPRIATION ACTIVITY	R-1 ITEM NOMENCLATURE
0400/06 MISSION SUPPORT	DEFENSE TECHNICAL INFORMATION SERVICES PE 0605801S

C. **Other Program Funding Summary:** No related efforts.

D. **Schedule Profile:**

	FY 96				FY 97				FY 98				FY 99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Electronic Document Management System (EDMS):																
Initiate interim capability software development	X															
Complete development of interim capability						X										
Complete Interim capability							X									
Prepare system specifications for Full Operational Capability										X						
Develop software design and prepare security specifications											X					
Initiate Full Operational Capability software development												X				
Virtual Electronic Information Warehouse																
Implement initial community system										X						
Conduct user testing											X					
Incorporate changes												X				
Transition system(s) to operations												X				

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	FY 96				FY 97				FY 98				FY 99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
OmniPort																
Initial development of enhanced and expanded OmniPort tools	X															
Initial operational system implementation for one IAC and DTIC		X														
Complete operational testing of enhanced security (limited)							X									
Initial operational system implementation for selected IACs/OSD sites							X									
Complete operational testing of automated configuration mgt tools										X						
Obtain approval for "production" as a product for IACs and OSD									X							
Upgrade enhanced security capabilities (limited)											X					
Complete developmental testing of Multi-level secure version													X			
Upgrade existing implementations with Multi-level secure version														X		
Complete operational testing of advanced tools															X	
Upgrade existing implementations with advanced tools																X

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0400/06 MISSION SUPPORT

R-1 ITEM NOMENCLATURE
DEFENSE TECHNICAL INFORMATION SERVICES
PE 0605801S

COST (Millions)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Complete	Total Cost
002 Information Analysis Centers	11.642	11.479	12.306	12.630	12.924	13.317	13.613	13.928	Cont.	Cont.

A. Mission Description and Budget Item Justification: The IACs are contractor operated research organizations chartered by OSD to collect, analyze, synthesize and disseminate worldwide scientific and technical information in specialized fields to prevent re-inventing research and to promote standardization within these fields. The IACs are staffed with subject experts to provide compilation of information, synthesize and evaluate it for relevancy to specific inquiries, supply in-depth analysis services and create specialized technical information products. IACs respond to technical inquiries, prepare state-of-the-art reports, handbooks and databooks, perform technology assessments, and support exchange of information among scientists, engineers, and practitioners of disciplines within the scope of the IAC. The DoD IAC program continues to experience significant growth. This growth can be attributed to DoD customers recognizing that IACs can be used to synthesize existing information and provide expert technical advice resulting in better use of diminishing RDT&E and procurement resources. There are 23 DoD IACs, 6 operated within the Army (using Army personnel to perform IAC functions), 2 by the Air Force, 1 by the Navy, 1 by Defense Special Weapons Agency (DSWA) and 13 funded and managed by DTIC. This project funds the basic operations described above for the DTIC managed IACs as well as the IAC Program Management Office (PMO) located at Ft. Belvoir. The program office provides management and oversight of the 13 DTIC funded IACs. The PMO also promotes DoD IAC awareness, acts as liaison between government and contractors, writes and implements policy, establishes infrastructure and maintenance, and provides operational forces technical support. Acquisition functions performed by PMO include primary contracting officers functions and contracting officers technical representative functional oversight. DTIC and its IAC program are the central source for scientific and technical information and support for the Defense research community and war fighting commands.

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FY 1996 ACCOMPLISHMENTS:

- Funded personnel and operational costs for the IAC Program Management Office. Efforts included the reprocurement of six IACs, which combined compatible IACs to maximize resources, increased DoD IAC awareness through presentations at Symposiums and Command Level Briefings, and implemented the initial phase of the electronic Office Filing System (OFS) to work towards a paperless office. Hosted the DoD IAC Technical Symposium and Business Meeting to bring together the DoD IACs and other government agency IACs in a common forum of sharing technologies in order to minimize duplication and share best practices in IAC operation standards ($2.526 Millions).
- Provided basic operational support for 15 contractor operated IACs ($9.116 Millions).

Examples of accomplishments include:

- Conducted Alpha test of the Technical Area Task (TAT) Tracker and Reporting System at two IACs. TAT Tracker automates all processes associated with the acquisition process related to IAC taskings.
- Developed, Improved, enhanced and standardized IAC Homepages to facilitate access to information.
- Transitioned and brought to full operation, the newest IAC, the Defense Modeling Simulation and Tactical Technology Information Analysis Center (DMSTTIAC).
- Initiated working groups to investigate the requirement to provide program support to the DoD Information Warfare community. A group of existing IACs would serve as the DoD focal point for the capture of STI in this technical area.

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FY 1997 PLANS:

- Funds personnel and operational costs for the IAC Program Management Office. Plans include raising IAC awareness in all three services by waging a vigorous campaign of education and information to encourage use of IAC expertise. To promote efficiency, the PMO will continue consolidation of IACs from 15 to 13, during a period of expected increase in user's growth of at least 25%. Two additional technologies - Advanced Coatings and Organic materials - will be added. PMO will host an Information Center Symposium to bring DoD and other government agency IACs together in a common forum to minimize duplication and strengthen U.S. government research, information, and analysis. This will create an infrastructure that provides DoD IACs an opportunity to acquire Scientific and Technical Information from non-DoD IACs. PMO will expand promotion efforts to include both the acquisitions and operations communities. This effort promotes communication among the communities thereby merging operational requirements with available technologies to shorten acquisition lead time and more closely relate research and development to the needs of the warfighter. Continue expanding OFS to include receipt of electronically transmitted documents and integration with other office programs ($1.809 Millions).
- Provides basic operational support for the DTIC sponsored, contractor operated IACs ($9.670 Millions).

Examples of planned accomplishments include:

- Enhancement and expansion of the traditional roles of the IAC.
- Development of knowledge based tools which allow the end user to connect with relevant information.
- Greater use of electronic communication through Internet, OmniPort and TAT Tracker expansions.
- Implement the Technical Area Task (TAT) Tracker and Reporting Systems at all of the IACs.
- Analysis and development of performance metrics and measures. Review of managerial accountability, flexibility, budgeting and preparation of performance measurement documents for the IAC program, in compliance with GPRA.
- Reprocurement of 5 IACs, includes contract close-outs and transfer of databases and equipment to new contractors.

Establishment of Information Assurance Technology IAC requested by Joint Staff, ASD/C3I, NSA, DISA & DDR&E to support DoD's newest and most critical technology threat.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	February 1997
APPROPRIATION ACTIVITY 0400/06 MISSION SUPPORT	R-1 ITEM NOMENCLATURE DEFENSE TECHNICAL INFORMATION SERVICES PE 0605801S

- Establish InteLINKs at Secret and Top Secret levels.

FY 1998 PLANS:

● Funds personnel and operational costs for the IAC Program Management Office. Promote and expand IAC awareness, continue to host numerous Information Center Symposiums to bring all DoD and other government agency IACs together into a common forum, and promote cooperative teaming of IAC capabilities. Expansion of IAC awareness in DoD and non DoD communities for the purpose of broadening our information collection capabilities. Automate internal Office Filing System (OFS) to accept delivery of data from multiple external databases and link OFS to GPRA information collection and analysis. Develop tools for application of information transfer at TOP SECRET level (compartmental) for InteLINK ($2.636 Millions).

● Provides basic operational, technical monitor, and security office support for DTIC sponsored, contractor operated IACs ($9.670 Millions). Examples of planned accomplishments include:

- Expand DMSTTIAC to incorporate the growing needs of the Modeling & Simulation communities and support to acquisition and training communities including CINCs.
- Integration of OFS and TAT Tracker with the capability to track and generate work unit information and technical report documentation through a seamless process.
- Pursue development and/or establishment of an automated, secure acquisition system environment to facilitate the acquisition process, lessen cycle times, and lower reprocurement costs.
- Enhance and expand TAT Tracker to serve as a acquisition tracking tool for other DoD activities.
- Implement a system of metrics to measure outcomes for the IAC program in compliance with the GPRA.
- Pursue the development of the ability to monitor foreign capabilities through links established with DoD operational and intelligence communities.
- Continued enhancements to the IAC hub and home pages including automated feedback forms and automated responses to requests for information.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	February 1997
APPROPRIATION ACTIVITY	R-1 ITEM NOMENCLATURE
0400/06 MISSION SUPPORT	DEFENSE TECHNICAL INFORMATION SERVICES PE 0605801S

- Re-compete 3 DoD IACs.

FY 1999 PLANS:

• Funds personnel and operational costs for the IAC Program Management Office, to include the promotion and expansion of IAC awareness, host annual scientific and technical IAC Information Symposiums, completion of the Office Filing System for a paperless office environment, and conduct competitive reprocurements of new and existing IACs ($2.673 Millions).

• Provides basic operational, technical monitor and security office support for the DTIC sponsored, contractor operated IACs ($ 9.957 Millions). Examples of planned accomplishments include:

- Enhancement and continued monitoring of secure systems.
- Establishment and/or enhancement of foreign exchange of authorized information through links previously established with DoD operational and intelligence communities.
- Acquire and/or incorporate technology to access, receive and/or disseminate information from multiple databases, simultaneously.
- Include the collection and reporting of performance measurement data in the automated, secure acquisition program being developed. Integrate or interface new programs with TAT Tracker and OFS.
- Acquire technology to link the warfighter directly to IAC databases and inquiry services for real-time on-line access.
- Pursue implementation of state of the art electronic technologies to meet requirements of IAC user communities.
- Implement Information Warfare stealth tools to automate and disseminate classified information through secure networks.
- Pursue, identify, develop and/or implement new and innovative technologies with potential for overcoming existing barriers to information communication among the IAC user communities.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) February 1997

APPROPRIATION ACTIVITY
0400/06 MISSION SUPPORT

R-1 ITEM NOMENCLATURE
DEFENSE TECHNICAL INFORMATION SERVICES
PE 0605801S

B. Program Change Summary

	Cost in Millions				Total
	FY 96	FY 97	FY 98	FY 99	Cost
President's Budget Submission	11.316	11.966	12.345	12.680	Cont.
Appropriated Value	11.292	11.966	12.345	12.680	
Adjustment to Appropriated Value					
a. Civilian pay raise adjustment			.006	.004	
b. Internal Reprogramming	+.350				
c. Congressional Undistributed		-.487			
d. Inflation Adjustment			-.045	-.054	
FY 98/99 Budget Submission	11.642	11.479	12.306	12.630	Cont.

Change Summary Explanation:

Funding: No significant changes.
Schedule: No significant changes.
Technical: No significant changes.

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Not Applicable.

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RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
Total PE Cost	7,950*	7,053	8,285	8,410	8,573	9,210	9,324	9,533	Continuing	Continuing
0001 Joint Service Training & Readiness Systems & Development	3,757	3,337	3,649	3,707	3,796	4,089	4,141	4,197	Continuing	Continuing
0002 Defense Training Resource Analysis	2,955	2,614	2,867	2,912	2,962	3,211	3,254	3,300	Continuing	Continuing
0003 DoD Enlistment Processing and Testing	1,238	1,102	1,769	1,791	1,815	1,910	1,929	2,036	Continuing	Continuing

A. Mission Description and Budget Item Justification: (See Enclosures)
Funding reflects the partial realignment funds from the Defense Manpower Data Center (DMDC) Defense Support Activity to the DoD Human Resources Field Activity (DHRFA) beginning in FY97 (partial funds (1,887) moved) with total funding moved from DMDC to DHRFA for FY98-03. The Department approved the merger of Defense Manpower Data Center (DMDC) and Defense Civilian Personnel Management Service to form a single field activity the Defense Human Resources Field Activity. FY 96 and FY 97 funding reflects funds previously requested under DMDC's Defense Support Activity Program Element Code.

*FY 97 Funding split: 5,166 (DSA-PE0605798S); 1,887(new DoD HRFA-PE).

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
Total PE Cost	7,950	7,053	8,285	8,410	8,573	9,210	9,324	9,533	Continuing	Continuing
0001 Joint Service Training & Readiness Systems & Development	3,757	3,337	3,649	3,707	3,796	4,089	4,141	4,197	Continuing	Continuing
0002 Defense Training Resource Analysis	2,955	2,614	2,867	2,912	2,962	3,211	3,254	3,300	Continuing	Continuing
0003 DoD Enlistment Processing and Testing	1,238	1,102	1,769	1,791	1,815	1,910	1,929	2,036	Continuing	Continuing

A. Mission Description and Budget Item Justification

0001 The Joint Service programs were established by the Secretary of Defense to improve the training and readiness of the Active and Reserve Components. The PE is located in Budget Activity 6, RDT&E Management Support to expedite the prototype development of new training and readiness technologies and Joint Service training and readiness systems to improve the training and readiness effectiveness and enhance the performance of the military forces. It also facilitates the sharing of training and readiness information, while allowing for the transfer of emerging and innovative technologies among the Services and private sector.

0002 This project supports the Defense Human Resources Field Activity (DHRFA) and DoD training managers (OSD, Joint Staff, Unified Commands, and the Services) in promoting more efficient and effective use of training resources, increasing the effectiveness of military training and enhancing the readiness and performance of the military forces. Projects analyze the contributions to readiness of various training techniques and programs and use the results to expedite new training concepts and procedures that increase unit effectiveness or decrease costs. Emphasis is placed on developing analytical tools and systematic methodologies to improve training resource allocations.

0003 The project is located in Budget Authority 6, RDT&E Management Support, to administer testing programs which enable the Armed Services to select highly qualified military recruits. The DoD uses a single test, the Armed Services vocational Aptitude Battery (ASVAB) to determine eligibility of military applicants and to report recruit quality data to Congress. High quality recruits are obtained from administering the ASVAB annually to approximately 600,000 applicants for Military Service as part of the DoD Enlistment testing program, and to 1 million students in the DoD Student Testing program. Each Service also uses ASVAB test forms developed in this program as part of their in-service testing programs.

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	**PROGRAM ELEMENT (PE) NAME & NUMBER:** Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
Total PE Cost	7,950	7,053	8,285	8,410	8,573	9,210	9,324	9,533	Continuing	Continuing
0001 Joint Service Training & Readiness Systems & Development	3,757	3,337	3,649	3,707	3,796	4,089	4,141	4,197	Continuing	Continuing
0002 Defense Training Resource Analysis	2,955	2,614	2,867	2,912	2,962	3,211	3,254	3,300	Continuing	Continuing
0003 DoD Enlistment Processing and Testing	1,238	1,102	1,769	1,791	1,815	1,910	1,929	2,036	Continuing	Continuing

A. Mission Description and Budget Item Justification: (Continued)

0003 New ASVAB test forms and related support materials are implemented every four years. This allows DoD to make measurement improvements as well as decrease the likelihood of test compromise. Ongoing RDT&E efforts control functions include development and evaluation of procedures (1) reduce or eliminate threats to the validity of the ASVAB test scores generated; (2) improve the efficiency of the test development, calibration, and validation process; and (3) improve selection and classification decisions made by each Service through more effective use of test score information. In addition, periodic assessments are required to provide DoD manpower planners and Congress with information on aptitude trends in the population from which recruits are drawn.

B. Program Change Summary

	FY 96	FY 97	FY 98	FY99	Total Cost
Previous President's Budget	7,981	7,785	8,312	8,441	Continuing
Adjustments to Appropriated Value	- 31	- 732	- 27	- 31	
Current Budget Submit/President's Budget	7,950	7,053	8,285	8,410	Continuing

Change Summary Explanation: FY96 net adjustment reflects a - $9K OUSD general reduction and a - $22K rescission of inflation savings pursuant to the 1996 Omnibus Appropriations Act (P.L. 104-134). FY97 net adjustment reflects -$732K in FFRDC/Non-FFRDC, General Reductions, and Canceled Funds. Note: $1887K realigned to new DoD HRFA. FYs 98/99 reflect reductions for Inflation adjustments.

C. Other Program Funding Summary (N/A)

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0001 Joint Service Training & Readiness Systems & Development	3,757	3,337	3,649	3,707	3,796	4,089	4,141	4,197	Continuing	Continuing

A. Mission Description & Budget Item Justification

0001 The Joint Service programs were established by the Secretary of Defense to improve the training and readiness of the Active and Reserve Components. The PE is located in Budget Activity 6, RDT&E Management Support, to expedite the prototype development of new training and readiness technologies and Joint Service training and readiness systems to improve the training and readiness effectiveness and enhance the performance of the military forces. It also facilitates the sharing of training and readiness information, while allowing for the transfer of emerging and innovative technologies among the Services and private sector.

B. Program Change Summary	FY96	FY97	FY98	FY99	TOTAL COST
Previous President's Budget	3,784	3,682	3,661	3,721	Continuing
Adjustments to Appropriated Value	- 27	-345	- 12	- 14	
Current President's Budget Submission	3,757	3,337	3,649	3,707	Continuing

C. Other Program Funding Summary **(N/A)**

D. Schedule Profile

Prior Year Accomplishments (3,757)

- o Completed a report on cost analysis and training effectiveness data on Multi-Dimensional Team Trainer
- o Evaluated the cost and effectiveness of multi-media technologies applied to training
- o Evaluated the utility of automated performance data collection in large scale simulated exercises
- o Developed policies and procedures to minimize DoD resources required to meet Congressional mandates for the transfer of training technologies to non-DoD applications

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0001 Joint Service Training & Readiness Systems & Development	3,757	3,337	3,649	3,707	3,796	4,089	4,141	4,197	Continuing	Continuing

FY1997 Plans (3,337)

- o Continue developing a library of joint operations templates defining tasks included in conducting joint exercises
- o Develop technology to provide distributed training to Joint Task Force staffs
- o Continue development of technology to link Joint Mission Essential Task Lists to measurable standards and conditions in order to analyze joint service training requirements
- o Develop a system to monitor, assess and report joint readiness
- o Develop implementation plans for new distance learning technologies across DoD and civilian agencies

FY 1998 Plans (3,649)

- o Demonstrate distributed interactive simulation capability for joint combat support operations
- o Develop methods to reengineer individual training processes
- o Develop procedures to conduct simulated joint fire support training
- o Build a system to archive joint training effectiveness data

FY 1999 Plans (3,707)

- o Evaluate distributed interactive simulation used to train for joint training
- o Continue development of procedures to conduct simulated joint fire support training
- o Continue building a system to archive joint training effectiveness date
- o Oversee implementation of methods developed to reengineer individual training processes
- o Develop analytical tools to relate readiness to resources

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0002 Defense Training Resource Analysis	2,955	2,614	2,867	2,912	2,962	3,211	3,254	3,300	Continuing	Continuing

A. Mission Description & Budget Item Justification

0002 This project supports the Defense Manpower Data Center (DMDC) and DoD training managers (OSD, Joint Staff, Unified Commands and the Services) in promoting more efficient and effective use of training resources, increasing the effectiveness of military training and enhancing the readiness and performance of the military forces. Projects analyze the contributions to readiness of various training techniques and programs and use the results to expedite new training concepts and procedures that increase unit effectiveness or decrease costs. Emphasis is placed on developing analytical tools and systematic methodologies to improve training resource allocations.

B. Program Change Summary

	FY96	FY97	FY98	FY99	TOTAL COST
Previous President's Budget	2,971	2,892	2,877	2,923	Continuing
Adjustments to Appropriated Value	- 16	- 278	- 10	- 11	
Current President's Budget Submission	2,955	2,614	2,867	2,912	Continuing

C. Other Program Funding Summary (N/A)

D. Schedule Profile

Prior Year Accomplishments (2,955)

- Completed an analysis of the current institutional training infrastructures of the Services, identifying areas which are candidates for reengineering and which offer potential savings
- Designed and built an analytical decision support tool that links key collective/unit training data to resource requirements
- Developed analytical tools and methods to expedite the implementation of more cost-effective training concepts that enhance individual and unit performance

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	**PROGRAM ELEMENT (PE) NAME & NUMBER:** Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0002 Defense Training Resource Analysis	2,955	2,614	2,867	2,912	2,962	3,211	3,254	3,300	Continuing	Continuing

FY 1997 Plans (2,614)

- o Generate an improved mechanism to predict readiness and sustainability postures for given resource levels
- o Develop an advanced set of modules relating train-up time to resources needed to achieve this level
- o Begin developing a new decision support system to track unit training events to collective unit training resources

FY 1998 Plans (2,867)

- o Develop a system to provide resources, facilities and simulations for effective Service-level and joint training
- o Demonstrate methods to estimate future resource needs for readiness
- o Develop guidelines for using networked simulation to improve mission readiness through rehearsal and risk assessment.

FY 1999 Plans (2,912)

- o Continue development of a system to provide resources, facilities and simulations for effective Service-level and joint training
- o Develop comprehensive DoD strategy to gain full benefit from embedded training technologies
- o Develop recommendations to increase the use of private-sector in performing training functions
- o Examine opportunities for training consolidation

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0003 DoD Enlistment Processing and Testing	1,238	1,102	1,769	1,791	1,815	1,910	1,929	2,036	Continuing	Continuing

A. Mission Description & Budget Item Justification

0003 The primary mission is to test and implement more accurate methods of assessing aptitudes required for military enlistment, success in training, and performance on the job. Also, it includes implementing methods that are useful in the identification of persons with the high aptitudes required by today's smaller and technically more demanding military.

B. Program Change Summary	FY96	FY97	FY98	FY99	TOTAL COST
Previous President's Budget	1,226	1,211	1,774	1,797	Continuing
Adjustments to Appropriated Value	12	-109	-5	-6	
Current President's Budget Submission	1,238	1,102	1,769	1,791	Continuing

C. Other Program Funding Summary (N/A)

D. Schedule Profile

Prior Year Accomplishments (1,238)

DoD Enlistment Testing Program (ETP)

- o Began implementation of CAT-ASVAB in the MEPS.
- o Completed research on a new Computer Literacy Test.
- o Began implementation of test specification changes.
- o Completed research on ASVAB score use.
- o Completed research of new spatial tests.

DoD Student Testing Program (STP)

- o Developed all new material for the ASVAB 23/24 Career Exploration Program.
- o Completed research for new spatial tests.

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0003 DoD Enlistment Processing and Testing	1,238	1,102	1,769	1,791	1,815	1,910	1,929	2,036	Continuing	Continuing

FY 1997 Plans (1,102)

DoD Enlistment Testing Program (ETP)

- o Develop and calibrate new test items for the next generation of CAT-ASVAB forms.
- o Implement new CAT-ASVAB Forms 3/4.

DoD Student Testing Program (STP)

- o Implement new ASVAB 23/24 Career Exploration Program materials and documents.
- o Begin development of major revision of the DoD STP document called *Military Careers*.
- o Implement new ASVAB Forms 23/24.

FY 1998 Plans (1,769)

DoD Enlistment Testing Program (ETP) (1.061 million)

- o Implement computerized and paper & pencil forms.
- o Implement new ASVAB test order.
- o Implement new ETP norms.

DoD Student Testing Program (STP) (.708 million)

- o Implement material for the ASVAB 23/24 Career Exploration Program, i.e., ASVAB 18/19 Counselor Manual, Exploring Careers: The ASVAB Student Workbook, and Technical Manual for the ASVAB 18/19 Career Exploration Program.
- o Implement new ASVAB test order.
- o Implement new STP norms.

RDT&E BUDGET JUSTIFICATION SHEET (R-2 Exhibit)	DATE: FEBRUARY 1997
APPROPRIATION/BUDGET ACTIVITY: 0400/06	PROGRAM ELEMENT (PE) NAME & NUMBER: Defense Human Resources Field Activity: 0605803S

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
0003 DoD Enlistment Processing and Testing	1,238	1,102	1,769	1,791	1,815	1,910	1,929	2,036	Continuing	Continuing

FY 1999 Plans (1,791)

Enlistment Testing Program (ETP)

- o Continue development of new computerized and paper-and-pencil ASVAB forms.
- o Continue development of on-line calibration procedures.
- o Prepare for implementation of new normative information.
- o Continue development of procedures to detect compromise and item parameter drift on computer adaptive tests.

Student Testing Program (STP)

- o Continue development of new ASVAB Career Exploration Program materials and documents.
- o Continue revision of Military Careers.
- o Continue development of new ASVAB forms.
- o Prepare for implementation of new normative information.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 7				Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
TOTAL PROGRAM ELEMENT	3.788	6.101	8.720	8.732	8.444	8.263	8.962	8.969	Cont	Cont
#1: Combat Rations	1.887	1.752	2.040	1.900	1.900	1.858	1.800	1.800	Cont	Cont
#2: Apparel Research Network	0.000	2.597	2.780	2.877	2.600	2.581	1.900	2.000	Cont	Cont
#3: Metalworking	1.901	1.752	3.900	3.955	3.944	3.824	5.262	5.169	Cont	Cont

A. Mission Description & Budget Item Justification:

The DLA Corporate Plan Goal #2 - Improve the process of delivering logistics support, includes the following. How?

Promote technological advancements in every part of the logistics process. Each of the programs are part of the Joint Logistics Commander's Joint Director of Laboratories Manufacturing Science and Technology Panel's Strategic plan.

The manufacturing science and technology program promotes technological advancements in the area of materiel acquisition.

The Plan includes a commitment to beat inflation in the prices our customers pay while meeting readiness needs. DLA will maintain a customer price change rate below the rate of inflation, reduce our cost recovery rate as a part of that customer price, and ensure an average price increase that is less than 1% per year between now and FY 2001.

Manufacturing Science and Technology develops and applies cost saving, time saving processes and equipment for military clothing, combat rations and weapons systems metal parts bought by DLA. MS&T projects are done at DLA suppliers, equipment vendors, and research organizations.

#1 COMBAT RATIONS ADVANCED MANUFACTURING TECHNOLOGY DEMONSTRATION (CRAMTD): Effort to develop or adopt and demonstrate state-of-the-art technology for the manufacture of combat rations to enhance modernization, to reduce cycle time, production cost and leadtime, while improving quality variety, and surge capacity of ration producers. This program is represented in the JDLs Advanced Industrial Practices Plan.

#2 Apparel Research Network: ARN develops and implements advanced technology throughout the logistics chain. It concentrates on achieving customer driven uniform manufacturing by establishing electronic links among all participants in the supply chain from the end user to the fabric supplier. This program is part of the JDL Engineering and Manufacturing System Panel Strategic Plan. Beginning in FY96, the program name become Apparel Research Network (ARN).

#3 METALWORKING: Metalworking will develop cost-saving castings machine tools, and tooling for needed weapons system spare parts. This program is part of the JDL Metals Processing and Fabrication Sub-Panel's Strategic Plan.

B. Program Change Summary: COST IN MILLIONS

	FY 96	FY 97	FY 98	FY 99
President's Budget Submission	6.659	6.831	6.740	6.755
Adjustment to Appropriated Value	-2.871	-.730	1.980	1.977
Current Budget Submission	3.788	6.101	8.720	8.732

Change Summary Explanation:

Funding: FY 96 net adjustment reflects -$2,850K below threshold programming to Log R&D Program (PE #0603712S) to support ATSN, -$7K OUSD General Reduction, and -$14K recision of inflation savings per the FY 96 Omnibus Appropriations Act (PL104-134) reducing total budget authority from $6,659K to $3,788K in FY96. FY 97 net adjustment reflects -$730K in FFRDC/Non-FFRDC, general reductions, and canceled funds. FYs 98 and 99 adjustments reflect inflation adjustments and $2M shift from Log R&D PE to support a robust Metalworking program.

Schedule: No Significant Changes

Technical: No Significant Changes

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: 0400/07 RDT&E Defense Wide/budget Activity 7				Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY03	COST TO COMP	TOTAL
#1:COMBAT RATIONS	1.887	1.752	2.040	1.900	1.900	1.858	1.800	1.800	CONT	CONT

COMBAT RATIONS

A. Mission Description and Justification:

DLA buys about $150 million worth of Combat Rations annually. The product has been military unique, with a limited industrial base capable of producing variety and quantities needed for surge, and dependent on orders from Government to remain viable. This initiative will ensure that DLA can continue to support warfighters with combat rations properly. The program, in values Partners developing new technology for implementation in their plants, after demonstrations conducted at Rutgers University, unifying the civilian and military manufacturing processes.

(U) Program Accomplishments and Plans:

(U) FY 1996:

* Complete competitive awards for Combat Rations Network - awards to rations producers. Universities and equipment manufacturers.
* Develop strategic plan - quality.
* Continue to assist implementation into Combat Rations industrial base past efforts.
* Implement vendor quality management system.

(U) FY 1997:

* Finish business case for CORANET.
* Continue work on technology order.

B. Program Change Summary: Restructure to emphasize implementation of an existing program.

COST IN MILLIONS

	FY 96	FY 97	FY 98	FY 99
President's Budget Submission	1.903	1.963	1.937	1.925
Adjustment to Appropriated Value	-0.016	-.211	.103	-.025
Current Budget Submission	1.887	1.752	2.040	1.900

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: 0400/07 RDT&E Defense Wide/Budget Activity 7				Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#1: COMBAT RATIONS	1.887	1.752	2.040	1.900	1.900	1.858	1.800	1.800	0.0	13.337

C. Other Program Funding Summary:
- None.
- Related Programs: None.

D. Schedule Profile:

CRAMTD was an Advanced Manufacturing Technology Demonstration program conducted by Rutgers University under contract from the Defense Personnel Support Center. The FY96 program (CORANET) is a follow on to CRAMTD which expired in May '96.

	96				97				98				99			
CORANET Protects Current by Identified:	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Use of Management Tools in CIM Environment				X	X	X	X	X	X	X	X	X	X	X	X	X
Machine Visition Inspection of Combat Rations				X	X	X										
Polymeric Tray Seal Integrity Testing				X	X	X	X	X								
Implementation of CIM Process Modules				X	X	X	X	X	X	X						
Engineered Material Handling - Placeable Items				X	X	X	X	X								
Quality/Process Monitoring Sensors in CIM				X	X	X	X	X								
Horizontal Form/Fill/Seal Ration Production				X	X	X	X	X	X	X	X	X	X	X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				FEBRUARY/97
APPROPRIATION/BUDGET ACTIVITY RDT&E Defense Wide/Budget Activity 7	R-1 ITEM NOMENCLATURE NUMBER/PROJECT NUMBER 0708011S MANUFACTURING TECHNOLOGY			
A. Project Cost Breakdown Combat Rations Project Cost Categories a. Manufacturing Process Research and Development	FY96 1.887	FY97 1.752	FY98 2.040	FY99 1.900

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	FEBRUARY/97
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense Wide/Budget Activity 7**	R-1 ITEM NOMENCLATURE NUMBER/PROJECT NUMBER **0708011S MANUFACTURING TECHNOLOGY**

B. Budget Acquistion History and Planning Information
Performing Organizations

Contractor or Government	Contractor Method/Type	Award or Obligation	Performing Project Activity	FY96	FY97	FY98	FY99	Budget to Complete	Total Program
Performing Activity	**Or Funding Vehicle**	**Date**	**EAC**						
Rutgers	Cost	6/11/96	N/A	1.887	1.752	2.040	1.900	Cont	Cont
Ohio State	Cost	7/3/96							
Texas A&M	Cost	7/11/96							
Wash State	Cost	7/3/96							
IITR	Cost	7/11/96							
Government Furnished Property N/A									
R&DA for MIL Rations	Cost	7/24/96							
Right Away Foods	Cost	7/11/96							
Shelf Stage Foods	Cost	8/14/96							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 7				Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#2: Apparel Research Network	0.000	2.597	2.780	2.877	2.600	2.581	1.900	2.00	Cont	Cont

Apparel Research Network (ARN)

A. Mission Description & Budget Item Justification

The Department of Defense, through the Defense Logistics Agency, purchases an average of $1 billion of clothing and textile items per year. Our current leadtime is up to 15 months and our current inventory acquisition value is over $2 billion. ARN is a Manufacturing Technology program to improve the responsiveness of the industrial base that supplies the clothing items to the Military Services. It enables the small business oriented apparel producers to access state-of-the-art technologies through its R&D and technology transfer mechanism. The goal of this program is to reduce the average apparel leadtime from 6 months to 6 weeks and to reduce the inventory carrying costs by 50%. A 50% reduction in carrying cost would reduce the cost to the customer by 20%.

(U) Program Accomplishments and Plans:

(U) FY 1996:

* Complete strategic plan - focus areas identified: Developmental and Design, Pre-Production and Production, Ordering & Distribution Development and Design Business Case complete sharing $8.6M 1yr savings after implementation.
* Complete baselining of Army and AirForce special measurement services (Mens & Womens).

(U) FY1997:

* Demonstrate a 14 day special measurement dress coat.
*Complete demonstration of cost effective small quantity unique production (for example Marine Corps maternity uniforms).
* Complete business cases for Pre-Production and Production focus groups.
* Initiate research project programs for Design and Development focus areas.

B. Program Change Summary:

COST IN MILLIONS

	FY 96	FY 97	FY 98	FY 99
President's Budget Submission	2.853	2.905	2.866	2.905
Adjustment to Appropriated Value	-2.853	-.308	-.086	-.028
Current Budget Submission	0.000	2.597	2.780	2.877

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 7					Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY					
COST (MILLIONS)	FY96	FY 97	FY 98	FY 99	FY 00	FY 01	FY02	FY03	COST TO COMP	TOTAL
#2: Apparel Research Network	0.0	2.597	2.780	2.877	2.600	2.581	1.900	2.000	Cont	Cont

C. Other Program Funding Summary:
- None.
- Related Programs:

D. Schedule Profile:

	96				97						98			99		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Operate Clemson Demo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Operate CalPoly Demo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Design for Manufacturing/Alteration	x	x	x	x	x	x	x	x	x	x	x	x				
Advanced Pre-Production Development	x	x	x	x	x	x										
Advanced Production Development	x	x	x	x	x	x	x									
Advanced Distribution Development	x	x	x	x	x	x	x	x	x	x						
Special Measurement Processes	x	x	x	x	x	x	x	x	x	x	x					

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	FEBRUARY/97
APPROPRIATION/BUDGET ACTIVITY RDT&E Defense Wide/Budget Activity 7	R-1 ITEM NOMENCLATURE NUMBER/PROJECT NUMBER 0708011S MANUFACTURING TECHNOLOGY

A. Project Cost Breakdown

Apparel Research Network

Project Cost Categories	FY 96	FY 97	FY98	FY99
a. Manufacturing Process Research and Development	0	2.597	2.780	2.877

RDT&PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	FEBRUARY/97
APPROPRIATION/BUDGET ACTIVITY RDT&E Defense Wide/Budget Activity 7	R-1 ITEM NOMENCLATURE NUMBER/PROJECT NUMBER 0708011S MANUFACTURING TECHNOLOGY

B. Budget Acquistion History and Planning Information
Performing Organizations

Contractor or Government Performing Activity		Contractor Method/Type Or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Budget FY96	Budget FY97	Budget FY 98	Budget FY 99	Budget to Complete	Total Program
Anthropology Research Project, Inc.	Cyberware	EDI Integration	12/09/94								
Auburn University	Florida International University	Cost	01/23/95	N/A	N/A	0	2.597	2.780	2.877	Cont	Cont
Beecher Research Company	Georgia Institute of Technology		12/09/94								
CAL POLY University - Pomona	Haas Tailoring Co.		03/16/95								
Charles Gilbert Associates, Inc.	Jet Sew Technologies, Inc.		02/17/95								
Clarity, Inc.	NCSU		12/09/94								
Clemson University	Southern Tech		03/16/95								
Philadelphia College of Tex &Sci	Ohio University		12/09/94								
Rensselaer Polytechnic Institute	University of Wisconsin - Stout		02/09/94								
University of Southwestern Louisana			02/16/95								
Wizdom Systems, Inc.			05/10/95								
			12/13/94								
			12/09/94								
			02/27/95								
			12/09/94								
			12/23/94								
			12/09/94								
			01/12/95								
			12/20/94								

Government Furnished Property N/A

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 7					Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	COST TO COMP	TOTAL
#3: METALWORKING	1.901	1.752	3.900	3.955	3.944	3.824	5.262	5.169	Cont.	Cont

A. Mission Description & Budget Item Justification

The Director's objectives are to improve quality, responsiveness and to eat all inflation in spare parts cost over the POM period. The Metalworking program is a method for attaining these objectives. Metalworking represents over $500 million of spare parts procurements annually, in such federal supply classes as:
3110 Bearings, Antifriction, Unmounted; 3130 Bearings, Mounted;
2815 Engines and Components, Diesel; 2895 Engines and Components, Misc;
2805 Engines, Gasoline, Exc Aircraft; 2810 Gasoline Reciprocating Engines;
2410 Tractors, Full Track; 2420 Tractors, Wheeled;
3930 Truck and Tractors, Self Prop.;
2530 Vehicle Brake, Steering; 2520 Vehicular Power Transmission ;
6004 Rotary Joints;
5280 Tools, Measuring;
6660 Instruments, Metrological;
1650 Aircraft Hydraulic,Vacuum; 1620 Aircraft Landing Gear Comp.; 1630 Aircraft Wheel and Brake Comp.;
2915 Engine Fuel System Comp. Air; 2910 Engine Fuel System Comp. Non Air
4320 Pumps, Power and Hand

Production lead times on key weapons systems such as the Armored Amphibious Vehicle, the Bradley Fighting Vehicle, the Armored Combat Engineers vehicle, the Abrams tank, or the Multiple Launch Rocket System typically exceed 200 days. Metalworking will reduce these lead times and cut costs in three interrelated areas: castings, tooling, and machining. We will develop new techniques for making castings, holding the castings for machining (tooling) and doing the machining faster and more efficiently.

(U) FY 1996:
* Foundry Process research in casting dimensional capability improvement, weld repair of casting and machinery reject redution underway.
* Integrate advanced machine tool technology into Defense Supply Center - Richmond Product line.
* tooling and casting conversions for MIAI breech handle, light vehicle tow bar system, refueling socket segment, comanche reservoir manfold and F-22 fuel duct underway.

(U) FY 1997:
* Establish casting assistance centers at key DLA Supply Centers and Service Engineering centers.
* Conduct research in fast cooling for smaller volume production, visualization software for die casting, reducing Naval compoent costs via corronous resistant copper based and reliable production of high alloy and stainless steel casting.
* Develop agile machine tool with 10x improvement in accuracy and speed, for machinery helicopter motor compoents.
* Develop next generation spindle, grinding, and vibration damping technology for retrofit to DoD machine tools.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE: FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY: RDT&E Defense Wide/Budget Activity 7				Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY						
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL
#3: METALWORKING	1.901	1.752	3.900	3.955	3.944	3.824	5.262	5.169	Cont.	Cont.

B. Program Change Summary:

COST IN MILLIONS

	FY 96	FY 97	FY 98	FY 99
President's Budget Submission	1.903	1.963	1.937	1.925
Adjustment to Appropriated Value	-.002	-.211	1.963	2.030
Current Budget Submission	1.901	1.752	3.900	3.955

Machine Tool projects started in FY93/94 have been successfully completed.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE: FEBRUARY 1997					
APPROPRIATION/BUDGET ACTIVITY: 0400/07					Program Element (PE) Name & No 0708011S MANUFACTURING TECHNOLOGY					
COST (MILLIONS)	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	Cost to Comp	TOTAL
#3: METALWORKING	1.901	1.752	3.900	3.955	3.944	3.824	5.262	5.169	Cont	Cont

C. Other Program Funding Summary: No funding dependencies on other programs.

D. Schedule Profile: Machine tools for small quantity spare parts" will start in FY 98. American Metalcasting Consortium will continue through FY99.

	96				97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Casting Conversions:	X															
Technology Transfer	X															
Benchmarking	X	X	X													
Dimensional Capability	X	X	X													
Machining Reject Reduction	X	X	X	X					X	X	X					
Welding Repair of Casting	X	X	X	X					X	X	X					
Metal Casting Engineering Systems	X	X	X	X												

Tooling Technology:
Best Tooling for Casting
Best Tooling for CNC
Machine Tools for Small Qty spare parts

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	FEBRUARY/97
APPROPRIATION/BUDGET ACTIVITY RDT&E Defense Wide/Budget Activity 7	R-1 ITEM NOMENCLATURE NUMBER/PROJECT NUMBER 0708011S MANUFACTURING TECHNOLOGY

A. Project Cost Breakdown

Metalworking

Project Cost Categories	FY 96	FY 97	FY 98	FY 99
a. Manufacturing Process Research and Development	1.901	1.752	3.900	3.955

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN	FEBRUARY/97
APPROPRIATION/BUDGET ACTIVITY RDT&E Defense Wide/Budget Activity 7	R-1 ITEM NOMENCLATURE NUMBER/PROJECT NUMBER 0708011S MANUFACTURING TECHNOLOGY

B. Budget Acquisition History and Planning Information
Performing Organizations

Contractor or Government Performing Activity	Contractor Method /Type or Funding Vehicle	Award or Obligation Date	Performing Project Activity EAC	FY96	FY97	FY98	FY99	Budget to Complete	Total Program
Mass Institute of Tech	GRANT		N/A		*				0.0
South Carolina Research Authority	SHARE	10-26-94	N/A		*	*			0.0
Edison Materials Tech Center	SHARE	01-27-95	N/A		*				0.0
			TOTALS	1.901	1.752	3.900	3.955	Cont	Cont

Government Furnished Property N/A

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DEFENSE SPECIAL WEAPONS AGENCY

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Defense Special Weapons Agency
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1996	FY 1997	FY 1998	FY 1999	Sec
19	0602715H	Defense Special Weapons Agency	2	227,320	192,298	211,971	221,702	U
		Applied Research		227,320	192,298	211,971	221,702	
37	0603711H	Verification Technology Demonstration	3	32,308	25,485	83,370	50,232	U
		Advanced Technology Development		32,308	25,485	83,370	50,232	
Total		Defense Special Weapons Agency		259,628	217,783	295,341	271,934	

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Research and Development Project Listing
FY 1998/1999 Biennial Budget Estimates
February 1997

Program Element: #0602715H
Mission Area: #540 - Defense Special Weapons Agency

Title: Defense Special Weapons Agency
Budget Activity: Applied Research

($ in Thousands)		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY2003
President's Budget (3/96)		227,964	195,131	212,640	222,693	223,501	228,945	0	0
POM Submission		227,374	195,131	212,640	222,693	223,501	228,935	233,985	239,212
Current Budget Submission		227,320	192,298	211,971	221,702	222,277	226,500	231,384	236,913
Project	Title								
AB	Test & Simulation Technology	49,431	45,435	56,357	56,470	54,965	53,007	54,018	55,081
AC	Weapon Systems Lethality	49,159	39,611	48,138	51,295	48,086	48,821	50,057	51,268
AE	Weapon Safety & Operational Support	25,488	24,896	30,499	33,416	34,282	37,109	37,926	38,755
AF	Weapon System Operability	46,230	40,167	45,845	48,247	51,474	53,605	55,136	57,271
AG	Scientific Computations & Information Systems	17,122	15,549	19,013	19,458	19,278	19,240	19,281	19,321
AI	Hard Target Tunnel Defeat and NTS Sustainment	9,390	5,148	9,712	10,427	11,821	12,365	12,613	12,864
AL	Classified Program	3,000	2,994	2,407	2,389	2,371	2,353	2,353	2,353
AM	Combating Terrorism	4,000	6,498	0	0	0	0	0	0
AN	Thermionics	10,000	3,000	0	0	0	0	0	0
AQ	Deep Digger	0	2,000	0	0	0	0	0	0
AR	Johnston Atoll Remediation	0	2,000	0	0	0	0	0	0
AX	TOPAZ International Program	8,500	0	0	0	0	0	0	0
AY	Bioenvironmental Hazards Research	5,000	5,000	0	0	0	0	0	0
Total		227,320	192,298	211,971	221,702	222,277	226,500	231,384	236,913

Research and Development Project Listing
FY 1998/1999 Biennial Budget Estimates
February 1997

Program Element: #0603711H
Mission Area: #540 - Defense Nuclear Agency

Title: Verification Technology Demonstration
Budget Activity: Advanced Technology Development

($ in Thousands)

		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY2003
President's Budget (3/96)		32,527	26,199	29,343	30,536	31,299	32,835	0	0
POM Submission		32,527	26,199	29,343	30,536	31,299	32,835	33,557	34,280
Current Budget Submission		32,308	25,485	81,370	50,232	43,838	42,996	43,648	44,493
Project	Title								
CA	Strategic Arms Control Technology	10,636	8,219	8,072	9,378	10,242	11,373	11,615	11,889
CB	Conventional Arms Control Technology	10,559	10,162	9,505	8,141	8,091	8,295	8,473	8,673
CC	Chemical Weapons Convention Technology	11,113	7,104	9,494	10,785	10,720	12,888	13,163	13,473
CD	Nuclear Arms Control Technology	0	0	54,299	21,928	14,785	10,440	10,397	10,458
Total		32,308	25,485	81,370	50,232	43,838	42,996	43,648	44,493

DEFENSE SPECIAL WEAPONS AGENCY

SPECIAL ACCESS PROGRAMS

Program Element/Project, Title

0602715H/AL, Classified Program

R-2 exhibits are not required for this project due to classification.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE February 1997			
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2						R-1 ITEM NOMENCLATURE Defense Special Weapons Agency; 0602715H			
COST (In Millions)	**FY1996**	**FY1997**	**FY1998**	**FY1999**	**FY2000**	**FY2001**	**FY2002**	**FY2003**	**Cost to Complete**
Total 0602715H Cost	227.3	192.3	212.0	221.7	222.3	226.5	231.4	236.9	Continuing
Project AB Test & Simulation Technology	49.4	45.4	56.5	56.5	55.0	53.0	54.0	55.1	Continuing
Project AC Weapon Systems Lethality	49.2	39.6	48.1	51.3	48.1	48.8	50.1	51.2	Continuing
Project AE Weapon Safety & Operational Support	25.5	24.9	30.5	33.4	34.3	37.1	37.9	38.7	Continuing
Project AF Weapon System Operability	46.2	40.2	45.8	48.2	51.4	53.6	55.1	57.3	Continuing
Project AG Scientific Computations & Information Systems	17.1	15.6	19.0	19.5	19.3	19.2	19.3	19.3	Continuing
Project AI Hard Target Tunnel Defeat and NTS Sustainment	9.4	5.1	9.7	10.4	11.8	12.4	12.6	12.9	Continuing
Project AL Classified Program	3.0	3.0	2.4	2.4	2.4	2.4	2.4	2.4	Continuing
Project AM Combating Terrorism	4.0	6.5	0	0	0	0	0	0	Complete
Project AN Thermionics	10.0	3.0	0	0	0	0	0	0	Complete
Project AQ Deep Digger	0	2.0	0	0	0	0	0	0	Complete
Project AR Johnston Atoll Remediation	0	2.0	0	0	0	0	0	0	Complete
Project AX TOPAZ International Program	8.5	0	0	0	0	0	0	0	Terminated
Project AY Bioenvironmental Hazards Research	5.0	5.0	0	0	0	0	0	0	Complete

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	R-1 ITEM NOMENCLATURE Defense Special Weapons Agency; 0602715H

A. Mission Description and Budget Item Justification

This program develops the technology base needed to support national security issues relevant to nuclear and other advanced weapons and force application technologies. Program initiatives include the development, upgrade, and maintenance of advanced nuclear weapons effects simulators to address weapon systems operability issues; conventional weapon targeting and strike planning tools for regional contingencies; battle damage prediction/assessment of conventional strikes against fixed hardened facilities; and predictive models for dispersion and transport of hazardous particles generated by attacks of Weapons of Mass Destruction (WMD) facilities. These projects also serve to support sustainment of a core nuclear competence in the national industrial base. Efforts encompass:

-Support for national security policy implementation.
-Support to CINCs in nuclear force structure, logistics, operations and stockpile programs.
-Quantitative assessments of nuclear weapons systems with development and maintenance of nuclear weapons system safety databases.
-Development, upgrade, and operation of simulators (radiation, blast, thermal, radio frequency propagation and optical/infrared background effects) to characterize operability of military systems during and after exposure to nuclear disturbed environments.
-Physical and functional characterization of hardened underground structure designs and associated vulnerabilities.
-Determination of nuclear and conventional weapons effectiveness against fixed targets. Emphasis is on targeting technical support, hard target kill criteria, and damage assessment methodologies.
-Utilization of weapons effects information to support development of adaptive targeting methodologies.
-Support of high-performance computing capability to maintain and upgrade the Agency's predictive codes in radiation hydrodynamics, structural dynamics, and electromagnetic propagation supporting nuclear and conventional weapons effects assessments and their impact on weapon system lethality, operability, and safety.

The 6.2 programs under this Program Element (0602715H) are divided into thirteen projects. It should be noted that information concerning Project AL is classified per DoD Directive 0-5205.7, Para B.2.f.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	R-1 ITEM NOMENCLATURE Defense Special Weapons Agency; 0602715H

Project AB - Test & Simulation Technology - Development of effective, survivable, and affordable weapon systems requires a robust testing and simulation capability to support acquisition managers and decision makers. This project develops, provides and maintains unique DoD test and simulation facilities and enabling technologies that are used by the defense agencies, the Services and other federal agencies to evaluate the impact of hostile environments from conventional, nuclear and other special weapons on military or civilian systems and targets. These facilities provide blast, thermal, electromagnetic pulse, ionizing radiation and radio frequency propagation environments and testbeds to support DoD and national test requirements. This project leverages fifty years of testing expertise to investigate weapons effects and target response to a spectrum of hostile environments that could be created by proliferant nations or terrorist organizations with access to advanced conventional or weapons of mass destruction (nuclear, biological and chemical).

The project includes the upgrade of existing simulators to extend their utility and life, the decommissioning of obsolete simulators, and the development of new simulators, when required, to compensate as much as possible for the lack of underground testing (UGT). Additionally, it provides the innovative, enabling technologies that make simulator enhancements and new facilities technically feasible and cost effective. Specific programs in this project include: decommissioning of one radiation test center in California and two in Maryland; consolidation at existing test centers in California (1) and Tennessee (1), including the development, construction and checkout of the new DECADE x-ray facility; development of communications and radar propagation effects simulators, and infrared and optical scene generators; partnership with Sandia National Laboratories (DOE) to develop technologies in energy storage, power flow, plasma switches, debris shields, and radiation sources that are applicable to stockpile stewardship and DoD strategic systems sustainment; characterization, optimization and operation of the Large Blast/Thermal Simulator (LBTS) at White Sands Missile Range (WSMR), including the demonstration of a non-ideal airblast simulation capability; operation and maintenance of the ARES electromagnetic pulse (EMP) facility at Kirtland AFB; and target defeat assessments for precision-guided and special weapons against Weapons of Mass Destruction (WMD) related targets.

The project provides test beds for full- and sub-scale tests that focus on weapon-target interaction with fixed hardened facilities to include hardened above-ground bunkers, cut-and-cover facilities and deep underground tunnels. This effort supports the Services'

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	R-1 ITEM NOMENCLATURE Defense Special Weapons Agency; 0602715H

Project AB - Test & Simulation Technology (cont'd)

requirements for hard target defeat testing and emphasizes teaming with the Services to assess weapon-target interaction of existing and developmental weapon systems. Specific activities include test bed design and construction, instrumentation and data collection, test coordination and execution, and post-test analysis and documentation.

This project relies on hardening and simulation technologies (Testable Hardware and Above Ground Testing(AGT)/UGT Correlation) funded under Project AF and supports the evaluation of weapons lethality accomplished in Projects AC and AI. Funded programs support JCS Joint Warfighting Capabilities: Control Space, Counterproliferation, Discriminate Attack, Global Reach and Situational Awareness, and also provide support to STRATCOM, EUCOM, USFK (PACOM) and ACOM.

FY 1996 Accomplishments

Test & Simulation ($20,925K)

- Continued Radar Nuclear Effects Corruptor and Simulator (RNECS) development, completed and incorporated 512x512 Nuclear Optical Dynamic Display System (NODDS) emitter array into the Nuclear IR Clutter Simulator (NICS).
- Continued disturbed atmospheric environment communication simulator development.
- Achieved LBTS Final Operational Capability.
- Continued ARES EMP facility operations and customer test support.
- Continued Tri-Service thermal test facility operations and customer test support, and characterized Non-Ideal Airblast (NIAB) simulation capability of LBTS.
- Provided high explosive (HE) simulation development, test support, and maintained the test facilities at White Sands Missile Range (WSMR) and at Kirtland AFB.
- Completed testing of seven Navy ship systems.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	R-1 ITEM NOMENCLATURE Defense Special Weapons Agency; 0602715H

Project AB - Test & Simulation Technology (cont'd)

FY 1996 Accomplishments

Applications of Nuclear Weapons Expertise ($15,578K)

Provided Nuclear Effects Links Simulator test support to the High Capacity Trunk Radio (HCTR) Program, and evaluated Defense Satellite Communications System connectivity for the Tactical Warning/Attack Assessment (TW/AA) assessment. Tests of the Universal Modem and tests for an integrated sensors program were continued.

Continued precision weapons testing in support of the Air Force, Army, and Navy hard target defeat test requirements.

Provided analytical support to ground shock, anti-penetration, lethality tests, and developed NIAB and LBTS calculational model.

U.S./Allied Survivability & Operability in Nuclear/Special Weapon Environments ($1,212K)

Finished construction of rogue state WMD facility mockup testbed at the Permanent High Explosives Test Site (PHETS).

Completed construction and testing of a quarter-scale structure for testing of weapon lethality and WMD collateral effects.

Evaluated communication system and advanced focal planes for Space Based Infrared System, evaluated Theater Missile Defense (TMD) and National Missile Defense (NMD) focal planes, communications and radar systems, and conducted communication/radar atmospheric effects hardware-in-the-loop testing for operability.

Test Facility Decommissioning ($3,942K)

Closed the Aurora simulator and initiated closure of the Blackjack simulators.

Weapon/Target Interaction ($528K)

Provided testbeds and instrumentation for ground shock, protective design, anti-penetration, and weapons lethality.

Rehabilitated target structures to support additional testing of precision weapons.

Radiation Simulators ($7,246K)

Completed DECADE Performance Assessment program.

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Project AB - Test & Simulation Technology (cont'd)

FY 1996 Accomplishments

Completed DECADE Facility at the Arnold Engineering Development Center (AEDC); installation of data acquisition system and simulator support systems ongoing.

Characterized and documented a high-fidelity warm x-ray source on Modular Bremsstrahlung Source (MBS); improved shot repeatability on the Double Eagle simulator; improved power flow on the Phoenix simulator; and transferred improved debris shield technology.

Conducted debris shield and diagnostic testing, and completed the insulator and longer life output switch testing, along with a demonstration of high-current inductive energy driven soft x-ray sources.

Initiated plasma, imaging, and current diagnostics development.

Supported operations of Phoenix, Casino/Tactical Gamma Simulator (TAGS), Double Eagle, Pithon, and MBS radiation simulators.

FY 1997 Plans

Test & Simulation ($20,202K)

Continue to operate radiation simulators at Physics International and begin operation at the AEDC.

Close Phoenix and Casino/TAGS at the Naval Surface Warfare Center; complete closure of Blackjack simulators.

Provide HE simulation infrastructure and test support, and maintain PHETS facility at WSMR and Chestnut Site at Kirtland AFB.

Complete RNECS development and begin initial operational tests, complete Advanced Channel Simulator (ACS) development and begin initial operational tests, evaluate advanced sensor focal planes in NICS, provide advanced SATCOM Simulation Test Support. Continue communication/radar atmospheric effects simulator participation in operability assessment/warfighting exercises, and evaluate Upgraded Early Warning Radar (UEWR) operability for NMD.

Deliver NODDS chips to Navy for advanced radar and sensor fusion for Maverick missile evaluations.

Continue LBTS operation and maintenance; conduct blast/thermal development testing.

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Project AB - Test & Simulation Technology (cont'd)

Continue operation of Tri-Service test facility, evaluate advanced thermal test needs/incorporate fidelity improvements.

Test Navy ship decking and 1/4- scale masts, Air Force satellite antenna mast (SPACECOM), and initial Israeli sub-scale structure.

Continue testing of vehicle types as identified by the U.S. Army Nuclear and Chemical Agency.

Weapon/Target Interaction ($4,334K)

Conduct ground shock, structural response, protective design, anti-penetration, and lethality tests.

Construct test target facilities, provide utilities and maintain the construction capability infrastructure needed for the counterproliferation (CP), hard target defeat (HTD), and Hard and Deeply Buried Target (HDBT) programs.

Continue to develop signature requirements and munitions effectiveness assessment for hard target defeat.

Radiation Simulators ($20,549K)

Begin DECADE bremsstrahlung radiation source installation.

Continue soft x-ray sources development for DECADE, larger area (10 times increase) debris shields, and bremsstrahlung spectral diagnostics.

Optimize DECADE module bremsstrahlung performance.

Install low-voltage, warm x-ray source, fast risetime hot x-ray source, and mixed gas cold x-ray source on Double Eagle at Physics International, and develop gamma/beams capability for AEDC.

Counterproliferation ($350K)

Construct industrial targets for the assessment of WMD Component damage, target response, and collateral effects for conventional weapons and enhanced payloads.

FY 1998 Plans

Test & Simulation ($22,403K)

Continue to operate Double Eagle, Pithon, and MBS simulators.

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Project AB - Test & Simulation Technology (cont'd)

Begin planning evaluation of feasibility to close Double Eagle and Pithon simulators and development of gamma/beams machine(s).

Continue to provide HE simulation infrastructure and test support, and maintain PHETS facility at WSMR and Chestnut Site at Kirtland AFB.

Complete RNECS development for TMD and begin initial operational tests, complete ACS development and begin initial operational tests, evaluate advanced sensor focal planes in NICS, provide advanced SATCOM Simulation Test Support to assess TMD architecture communications link operability, continue communication/radar atmospheric effects simulator participation in operability assessment/warfighting exercises, and evaluate TMD Ground-Based Radar (GBR) operability.

Continue advanced SATCOM Simulation Test Support to MILSATCOM and Universal Modem.

Evaluate off-the-shelf technology for improvements in thermal and pressure diagnostics capabilities of LBTS. Test three Navy ship deckings, one United Kingdom communications shelter and continue testing an Israeli sub-scale structure.

Weapon/Target Interaction ($8,580K)

Continue to execute ground shock, structural response, protective design, anti-penetration, and lethality tests in support of customer requirements.

Continue to construct and rehab test target facilities, provide utilities and maintain the construction infrastructure needed for the CP, HTD, and HDBT programs.

Continue to develop signature requirements and munitions effectiveness assessment for hard target defeat.

Radiation Simulators ($25,124K)

Complete bremsstrahlung installation and begin installation of soft x-ray capability for DECADE simulator.

Develop improved fidelity source for Nuclear Weapons Effects (NWE) testing on the DECADE simulator, plasma imaging and current diagnostics, and high-current, long-time implosion soft x-ray sources.

Improve radiation sources and instrumentation on the DECADE simulator.

Begin very large (500cm^2) debris shield development for cold x-ray testing.

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Project AB - Test & Simulation Technology (cont'd)

Counterproliferation ($250K)

Continue construction of industrial targets for the assessment of WMD Component damage, target response, and collateral effects for conventional weapons and enhanced payloads.

FY 1999 Plans

Test & Simulation ($24,276K)

Continue to operate the Double Eagle, Pithon, and MBS simulators. Continue planning for close-out, if appropriate, of Double Eagle, Pithon, and MBS simulators.

Continue to provide HE simulation infrastructure and test support, and maintain PHETS facility at WSMR and Chestnut Site at Kirtland AFB.

Complete RNECS development for NMD and begin initial operational tests.

Develop advanced optical scene generation/projection and mitigation techniques for TMD GBR in a nuclear-disturbed environment, provide advanced SATCOM/UEWR Simulation Test Support to assess NMD architecture operability.

Continue communication/radar atmospheric effects simulator participation in operability assessment/warfighting exercises.

Evaluate NMD GBR for operability, and continue advanced SATCOM Simulation Test Support to MILSTAR and Global Positioning System upgrades.

Complete evaluation of NMD target acquisition and tracking algorithms against improved NODDS IR scene and evaluate for fusion with RNECS.

Complete modifications to LBTS for blast and thermal diagnostics. Test one Navy ship decking and six Israeli tactical systems.

Weapon/Target Interaction ($9,765K)

Continue to execute ground shock, structural response, protective design, anti-penetration, and lethality tests in support of customer requirements.

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Project AB - Test & Simulation Technology (cont'd)

Continue to construct and rehab test target facilities, provide utilities and maintain the construction capability infrastructure needed for the CP, HTD, and HDBT programs.

Continue to develop signature requirements and munitions effectiveness assessment for hard target defeat.

Radiation Simulators ($21,979K)

Continue simulator consolidation efforts and soft x-ray radiation source capability on the DECADE simulator.

Continue DECADE preplanned product improvement program and evaluate need for second DECADE module. Begin operation of Gamma/beams machine(s).

Improve risetime of hot x-ray source on DECADE.

Demonstrate argon soft x-ray sources, and high-fidelity bremsstrahlung source on the DECADE simulator.

Initiate improved radiation source spectral diagnostics development.

Counterproliferation ($450K)

Begin rehab of industrial targets for the assessment of WMD Component damage, target response, and collateral effects for conventional weapons and enhanced payloads.

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Project AC - Weapons Systems Lethality - Building upon core DSWA nuclear competencies in nuclear effects and target response, this project addresses the lethality of the full spectrum of weapons, including nuclear and advanced conventional weapons, against the target base of today and tomorrow -- ranging from ultra-hard underground facilities to above ground, unhardened surface facilities and other special facilities that may be associated with the production, storage or deployment of weapons of mass destruction. Helping to maintain the continued effectiveness of the nuclear deterrent, this project also seeks to provide decision makers and warfighters expanded conventional weapon options against well-protected, high-priority targets. The program relies extensively on advanced numerical methods, as well as laboratory scale experiments, intermediate and full-scale field tests and operational test data to quantify functional and physical damage criteria and collateral effects. Project results will be provided to operational planners through analytic prediction tools, multimedia hypertext databases, and technical manuals. Central to this support is an automated expert system to assist in pre-strike target planning and post-strike battle damage assessment. Technology developed in this project will also enable civil agencies to assess engineering designs to mitigate direct and collateral damage from terrorist attacks such as occurred at the Oklahoma City Federal Building and Khobar towers attack in Saudia Arabia. Additionally, the technology developed directly supports force protection issues.

On a broader scale, improvements in weapon effects and target response codes will be used to upgrade and expand physics-based modeling and simulation in support of Distributed Interactive Simulation (DIS) under Project AE. These improved codes include: coupled finite difference-finite element codes, structure-medium interaction codes, groundshock propagation codes suitable for jointed and/or layered media and high fidelity gas dynamic codes capable of predicting the transport of hazardous aerosol clouds over complex terrain. The understanding of weapon-target interaction resulting from this project will support the generation of weapon system requirements for the changing worldwide target base and provide a quantitative basis for planning contingency operations against high value targets. It will also improve the understanding of target/weapon interactions and their consequences for battle damage prediction and assessment. This project also includes the Electro-Thermal Chemical (ETC) gun advanced technology and projectile lifting body programs per Memorandum of Agreement (MOA) with the Navy; ETC gun technologies for the direct-fire applications, per MOA with the Army; the development of microwave source technology for warfighter applications; and the development of high energy density capacitors for compact energy storage on mobile weapon platforms.

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Project AC - Weapons Systems Lethality (cont'd)

Project AB, Test & Simulation Technology, provides the testbeds to support weapons lethality tests in this project. The computer tools and databases developed under this project support the execution of Project AI. This project supports the following JCS Joint Warfighting Capabilities: Counterproliferation, Discriminate Attack, and Global Reach.

FY 1996 Accomplishments

Nuclear Weapons Effects Phenomenology ($3,563K)

Supported DoD (STRATCOM) evaluations of nuclear and conventional weapons capabilities to counter ultra hard targets.
Assessed nuclear effects against ultra hard targets.
Developed a weapons output library for each fuzing system in the stockpile for use in weapons effects models.
Completed source output calculations/W76 (nuclear weapon model) coupling curves.
Distributed two volumes of non-US nuclear weapon outputs.
Developed a computer model which STRATCOM used to analyze dust effects on the aircraft engines in SIOP 96.

Application of Nuclear Weapons Expertise ($13,503K)

Developed and completed evaluation of several high energy density dielectric materials for capacitive storage.
Designed and constructed a test article using Project AB testbeds and executed a test series to quantify the synergistic lethality effects of blast and fragments on hardened targets.
Completed small-scale lab tests to define the penetration limits for advanced penetrators and developed and validated a cumulative damage model for concrete.
Developed damage models for Munition Effects Assessment (MEA). Tunnel lethality module added to MEA.

Enhanced Payloads Options ($925K)

Provided non-ideal airblast analytical support to the response testing of Army battlefield equipment for United States Army Nuclear Chemical Agency (USANCA).

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Project AC - Weapons Systems Lethality (cont'd)

Weapon Target Interaction ($5,772K)

Completed the Joint Service Manual for the Design and Analysis of Hardened Structures (DAHS).
Produced a preliminary CD-ROM version of the DAHS manual, called Protective Structures Analysis and Design System (PSADS).
Executed, using AB testbeds, a test series that evaluated survivability issues associated with hardened fixed structures.
Released Hazard Assessment and Consequence Analysis (HASCAL), versions 1.0 and 2.0 (Beta).
Conducted tests at Nevada Test Site (NTS) and Norway which developed databases for tunnel portal closure attack.
Developed preliminary UNIX PORT for HASCAL.
Incorporated cloud-shine algorithm into HASCAL.

Bomb Damage Assessment ($1,001K)

Supported the DIPOLE PRIDE demonstrations of battle damage assessments on a well-controlled test article using infrared and seismic signatures.

US/Allied Survivability and Operability in Nuclear/Special Weapon Environments ($2,896K)

Updated the Joint Munitions Effectiveness Manual, Structural Response, DAHS manual with an expert design advisor.

Electro-Thermal Chemical Gun ($7,716K)

Began the technology transfer to the U.S. Army and Navy for their Airborne Tactical Data System and follow-on Engineering and Manufacturing Development.
Completed wind tunnel testing of projectile designs.

Nuclear/Other Advanced Weapons Effects ($13,178K)

Developed High-Power Radio Frequency (RF) test system, and completed lab demonstration.
Began advanced RF source development and continued foreign asset testing.
Explored High Power Microwave (HPM) associated technology designed for defense of friendly assets.
Continued to develop and apply computerized weapons effects models for the defeat of hard targets and tunnels.

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Project AC - Weapons Systems Lethality (cont'd)

Developed computerized weapon effects model for attacking multiple rocket launchers (MRLs).

Modeling and Simulation ($605K)

Expanded the Virtual Interactive Target (VIT) to include weapons storage facilities, other hard targets, and 14 additional weapon types. Displayed weapon effects on dynamic terrain. Established VIT capability in DSWA Modeling and Simulation Center.

FY 1997 Plans

Nuclear Weapons Effects Phenomenology ($6,253K)

Develop concepts and requirements for demonstrating nuclear weapons capabilities to achieve damaging mechanical effects to very hard or very deep targets.

Develop non-ideal airblast phenomenology to support USANCA warfighting issues and to assist STRATCOM in target planning.

Apply airblast phenomenology to enhance understanding of the consequence of a terrorist weapon detonation.

Develop a weapons output library for potential proliferants' weapons for use in weapons effects models.

Complete W87 and W88 (nuclear weapon models) Coupling Curves.

Complete initial draft of non-US weapon output volume on tactical weapons.

Application of Nuclear Weapons Expertise ($12,354K)

Develop the processing capability for scaled up manufacturing of a high energy density dielectric material.

Conduct static outdoor demonstration of electromagnetic effects on weapons systems.

Begin to explore HPM hardening technology for advanced applications.

Conduct static outdoor demonstration of Electromagnetic (EM) effects on weapons systems.

Begin Alternate Source Development.

Complete long pulse HPM megawatt class source.

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Project AC - Weapons Systems Lethality (cont'd)

Construct breadboard and brassboard pulse power supplies to drive the new high density capacitor.
Develop a target damage model for advanced conventional ICBM warheads.
Initiate an effort to define the vulnerability of nuclear reactors and nuclear re-processing facilities to weapons effects.
Develop a design module to resist advanced warhead concepts.
Validate predictive methods for advanced warheads MEA. Incorporate advanced warheads into MEA.
Start design and analysis of hardened structures.
Expand MEA software to additional fixed targets and weapons.
Deliver advanced fluid/structural computational codes.

Weapon/Target Interaction ($13,854K)

Re-design and renovate a test article using Project AB testbeds and execute a test program to define the vulnerability of components, subsystems and systems found in high value fixed targets including tunnels.
Develop fragility models for the components in high value fixed targets including tunnels.
Initiate a field test program to define the penetration limits for advanced penetrators into weathered granite.
Expand the targeting methodology for the hard-to-defeat targets by including additional lethality models.
Produce a final CD-ROM version of the DAHS manual (PSADS).
Initiate work on the Automated Design Advisor for the DAHS Manual.
Begin gun testing of composite projectile flight body for indirect fire.
Complete advanced ETC indirect fire cartridge testing.
Begin full-scale testing of ETC direct fire cartridges for the M256 main tank gun.
Release nuclear source terms for HASCAL, version 2.0, including bio-kinetic models for human response, medium resolution local weather model, and refine source expulsion models, both UNIX and PC based.
Expand the VIT to include additional weapons and target types and integrate operational bombing ranges. Provide weapon effects visualization capability to Synthetic Theater of War (STOW) Distributed Interactive Simulation (DIS) exercise.

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Project AC - Weapons Systems Lethality (cont'd)

Procure specialized hardware/software for integration of weapons effects, structural response, nuclear phenomenology aides in DIS/High Level Architecture (HLA) environment.

US/Allied Survivability and Operability in Nuclear/Special Weapon Environments ($520K)

Complete analysis tool for STRATCOM to assess aircraft dust survivability for planned Single Integrated Operation Plan (SIOP) routes.

Test and Simulation ($6,630K)

Initiate effort to remove the artificial cut off of dynamic pressure environments in the height-of-burst (HOB) weapon effects code for STRATCOM.

Develop geologic models needed for nuclear MEA targeting and treaty verification.

FY 1998 Plans

Nuclear Weapons Effects Phenomenology ($8,710K)

Develop simulation methods to demonstrate nuclear weapons capabilities, to include damaging target effects upon ultra hard, very deep targets.

Complete development of non-ideal airblast phenomenology to support USANCA warfighting issues and assist STRATCOM in weapon use.

Apply nuclear phenomenology to enhance understanding of the consequence of a terrorist weapon detonation.

Develop a weapons output library for potential proliferants' weapons for use in weapons effects models.

Complete 2D modeling of U.S. and selected foreign weapon outputs and coupling.

Application of Nuclear Weapons Expertise ($14,670K)

Validate a target damage model for advanced conventional ICBM warheads.

Expand program to define the weapons effects vulnerability of nuclear reactors and nuclear re-processing facilities to additional reactor types.

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Project AC - Weapons Systems Lethality (cont'd)

Construct prototype compact power distribution source.
Conduct modified live-fire outdoor demonstration of EM effects on weapons systems.
Develop HPM hardening technology for Command and Control Warfare (C2W).
Begin to explore HPM associated technology for Command and Control Warfare (C2W).
Begin to develop advanced long pulse HPM source technology.

Weapon/Target Interaction ($17,206K)

Complete a test program to define the vulnerability of components, subsystems and systems found in high value fixed targets.
Complete the development of fragility models for components.
Complete work on the Automated Design Advisor for the DAHS Manual.
Continue work on precision experiments for data gaps in DAHS methodologies, which expand to new methodologies.
Complete gun testing of long-range composite projectile flight body.
Begin integration study of ETC technology incorporation into Army tank system.
Release heavy water reactor damage model.
Support project VULCAN. Produce vulnerability and collateral effects with complete nuclear fuel facilities module.
Provide technical support, hardware/software to integrate weapons effects, target response codes into distributive environment.
Continue advanced ETC indirect fire testing and continue full-scale testing of ETC direct fire cartridges, M256 main tank gun.

US/Allied Survivability and Operability in Nuclear/Special Weapon Environments ($370K)

Update analysis tools for STRATCOM to assess B2 aircraft dust survivability for planned SIOP routes.

Test and Simulation ($7,182K)

Extend initial nuclear MEA models to develop site and regional models for ground shock and ultra-hard target response.
Perform testing and validation of particle formation models for urban nuclear event fallout prediction.

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Project AC - Weapons Systems Lethality (cont'd)

FY 1999 Plans

Nuclear Weapons Effects Phenomenology ($7,835K)

- Provide modern targeting tools to support nuclear weapons capabilities to damage or target effects including very hard or very deep targets.
- Assist STRATCOM in weapon use and apply nuclear phenomenology to enhance understanding of the consequence of a terrorist weapon detonation.
- Complete a weapons output library for potential proliferants' weapons for use in weapons effects models.
- Distribute Tactical Foreign Weapon Output volume.

Application of Nuclear Weapons Expertise ($17,803K)

- Conduct advanced technology demonstration for the Services.
- Conduct high-level testing of compact power distribution source prototype.
- Complete definition of the vulnerability of nuclear reactors and nuclear re-processing facilities to weapons effects.
- Conduct advanced technology demonstration for the Services.
- Complete advanced long pulse HPM source technology.

Weapon/Target Interaction ($17,033K)

- Work with Army to integrate ETC technology into operational system.
- Begin full-scale testing of ETC direct fire cartridges for the XM291 main tank gun.
- Develop vulnerability/collateral effects tools for uranium mining/milling facilities module and transport model rainout/washout.
- Provide technical support, hardware/software to integrate weapons effects, target response codes in distributive interactive envrionment.
- Initiate a test program to develop a target damage model for aboveground fixed targets.
- Implement joint service component vulnerability model into the MEA.

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Project AC - Weapons Systems Lethality (cont'd)

Produce a final CD-ROM version of Revision 1 of the DAHS manual.

US/Allied Survivability and Operability in Nuclear/Special Weapon Environments ($270K)

Update analysis tool for STRATCOM to assess aircraft dust survivability for planned SIOP routes.

Test and Simulation ($8,354K)

Test and validate all Height of Burst airblast environments for all models used in PD-CALC/STRATCOM. This program will develop remote sensing capability.

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Project AE - Weapon Safety and Operational Support -This project is critical to the maintenance of a safe, secure and reliable nuclear deterrent, given that the enduring stockpile will retain weapons far beyond their designed life. Stockpile support efforts in this project include nuclear weapons stockpile technology for weapon system sustainment, probabilistic risk-based system safety assessments, and nuclear physical security policy/requirements validation. Reliability efforts include participation and assistance to Dual Revalidation, Annual Certification, and the Stockpile Stewardship Program. This project performs research and development in support of nuclear contingency planning, force structure deployment and employment options, innovative nuclear command and control concepts, nuclear mission planning, vulnerability assessments, safety assessments, advanced survivability concepts, and theater missile defense against Weapons of Mass Destruction (WMD) delivery systems and warheads. Vulnerability assessments of DoD and allied fixed and mobile Command, Control and Communications (C3) assets subjected to WMD effects are also part of this project. This project includes the Modeling and Simulation Center, which provides integration of weapons effects, downwind hazard prediction models and force effectiveness models to users in acquisition, training, exercises, operations other than war, and warfighting. DSWA provides oversight, technical support and curriculum review for the Defense Nuclear Weapons School (DNWS) and other DoD nuclear training activities.

This project is in direct support of Presidential Decision Directives and taskings and requirements from OSD, the Joint Staff and CINCs. Relevant directives include National Security Strategy of Engagement and Enlargement, National Security Science and Technology Strategy, National Military Strategy, Joint Strategic Capabilities Plan, Presidential Decision Directives, Defense Planning Guidance, and prioritization memorandums from CINCs. These efforts have been closely coordinated with Joint Staff, OSD offices, CINCs and Services, Department of Energy, Federal Emergency Management Agency and the Federal Bureau of Investigation. The thrust of this project supports the JCS Joint Warfighting Capabilities of Counterproliferation and Global Reach.

FY 1996 Accomplishments

Nuclear Operations ($17,268K)

Continued the Weapon System Safety Assessment (WSSA) of the B-52H Aircraft insuring it remains certifiable for use as a Nuclear Deterrent.

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Project AE - Weapon Safety and Operational Support (cont'd)

Completed the Phase 2 Fire Resistance Enhancement study of the enduring nuclear stockpile; continued the safety analyses of solid propellant sensitivity to ensure the nuclear surety and safe handling of the Minuteman III system.

Conducted tech-base efforts in the area of fuel fire and energetic materials and initiated efforts in electrical/lightning effects to validate the proper and safe storage of DoD's nuclear stockpile.

For Dual Revalidation DSWA provided technical support and recommendations to the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Matters (ATSD(NCB)), Joint Staff, Services, STRATCOM and other Combatant Commanders as required for nuclear stewardship including analysis and recommendations of the impacts on DoD.

Assisted ATSD(NCB) and STRATCOM in developing the process and the report for the Annual Certification program.

Analyzed Dual Capable Aircraft deployments for OSD planning and certification.

Completed analysis on enhanced planning capability against mobile strategic nuclear threats as required by Joint Staff.

Began development of a prototype computer-based training system for nuclear planning, emphasizing adaptive nuclear planning using the NATO Nuclear Planning System (NNPS) parameters.

Conducted a force-on-force exercise to evaluate and validate existing DoD Policy standards and equipment on Physical Security of Special Weapons.

Provided Planning and Operations Support to STRATCOM through automated strategic planning capabilities including tanker, B-52, and Conventional Air-Launched Cruise Missile (CALCM) planning.

Initiated the nuclear planning system target data feed which provides intelligence planning data in support of NATO Nuclear Planning.

Initiated the development of a methodology for STRATCOM which includes the impact of fallout effects in achieving effective denial or delay of enemy access to key installations as a result of a nuclear strike.

Provided analytical support to assess STRATCOM's capability to effectively meet national objectives involving the Single Integrated Operations Plan (SIOP) while reducing its complexity.

Conducted proof-of-principle testing and transitioned the Carrier Battle Group Defense System to the USN.

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Project AE - Weapon Safety and Operational Support (cont'd)

Initiated, in response to Tri-service Board and specified Army and Navy requirements on advanced communications survivability, an effort to enhance systems survivability of nuclear and non-nuclear forces.

Demonstrated the prototype of an operational capability for 36-hour weather forecasts on workstations adding to the effectiveness of predicting consequences of WMD releases.

Developed and validated an artificial geographic database for exercises and wargames involving the use of WMD.

Provided system assessment and analytical concept support for effectiveness estimates on current stockpile weapons using Extended Air Defense Simulation (EADSIM) scenarios.

Continued model integration/technical support and completed the Analysis and Assessments Phase I contract allowing for quick analysis as required for OSD, Services, and Joint Staff, on real world WMD consequence analysis and counterproliferation planning.

Began development of mission/consequence analysis for the Agent Defeat Weapon (ADW) Phase 0 Analysis of Alternatives (AOA) for HQ Air Combat Command and San Antonio Air Logistics Center/Nuclear Weapons Integration (SA-ALC/NWI).

Education/Training to Maintain Core Competencies ($1,161K)

As the DoD executive agent for sustaining nuclear weapons training expertise, continued development of the Automated Nuclear Weapons Training System for the DNWS.

Continued nuclear operational training support to CINCs, OSD and Services.

Supported DoD and CINC exercises and wargames with WMD/target response analysis.

Modeling and Simulation ($2,442K)

Provided modeling and simulation support through creation of a Modeling and Simulation Center at DSWA.

Provided the capability for interactive data transfer between non-Agency and Agency developed mission planning codes and DSWA-developed models to facilitate adaptive planning (Common Operational Modeling, Planning and Simulation Strategy (COMPASS)).

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Project AE - Weapon Safety and Operational Support (cont'd)

Test and Simulation ($399K)

Provided Support of RDT&E through a cell at Field Command, DSWA, which provides support for the Permanent High Explosive Test Site, WSMR, NM.

Nuclear Weapons Effects Phenomenology ($4,218K)

Conducted Balanced Survivability Assessments of U.S. and Allied hardened underground and mobile systems to identify single point vulnerabilities and potential mitigation approaches and to facilitate the development of investment strategies for facility survivability enhancements.

Conducted functional assessments of foreign underground C4I facilities, identified single point vulnerabilities, and provided targeting support to the CINCs.

Identified critical nodes in the National Defense Infrastructure System.

FY 1997 Plans

Nuclear Operations ($15,016K)

Provide DSWA core expertise operational studies and assessments to meet the nuclear force requirement issues and needs levied by OSD, Services, Joint Staff and Nuclear Weapons Council (NWC).

Complete the WSSA of the B-52H aircraft and continue tech-base efforts in the areas of fuel fire and energetic materials and electrical/lightning effects.

Initiate a WSSA for a designated weapons system.

Provide assistance, reviews, critiques, analyses and recommendations to ATSD(NCB) Joint Staff, Services, and STRATCOM governing Stockpile Stewardship and Dual Revalidation paying particular interest in the resulting DoD impacts.

Continue the safety assessment and analysis of Minuteman III solid propellant and monomethylhydrazine (hypergolic) fuels for the Services (Air Force in particular), NWC, ATSD(NCB), STRATCOM, and the Project Officer's Group.

Perform an analysis of European area-wide Theater Missile Defense Command and Control requirements to support SHAPE.

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Project AE - Weapon Safety and Operational Support (cont'd)

Support AFNORTH WMD deterrence requirements for force survivability, posture and employment options through analysis of Extended Air Defense requirements.

Deliver an editable, digital, artificial geographic database with supporting forces, weather, and installation data for exercises and wargames involving the use of WMD.

Complete the development of an automated planning system for the airborne portion of the SIOP for STRATCOM and the development of an interface between NATO NNPS and US/NATO intelligence systems.

Initiate an adaptive planning system software program to develop a deployable strategic planning capability for STRATCOM and initiate a modernized software interface between data collection sources and the Nuclear Planning and Execution System (NPES) for STRATCOM and Joint Staff.

Continue developing a prototype computer-based training capability for nuclear planning, emphasizing adaptive nuclear planning using NNPS parameters.

Continue the nuclear planning system target data feed which provides intelligence planning data in support of NATO Nuclear Planning.

Continue the development of a methodology for STRATCOM which includes the impact of fallout effects in achieving effective denial or delay of enemy access to key installations as a result of a nuclear strike.

Provide analytical support to assess STRATCOM capability to effectively meet national objectives involving the SIOP while reducing its complexity.

Begin development of an analytical framework that facilitates WMD deterrence approaches to the needs of multi-regional scenarios.

Conduct a force-on-force exercise to evaluate and validate policy standards as designated by the Security Policy Verifcation Committee (SPVC).

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Project AE - Weapon Safety and Operational Support (cont'd)

Provide quick turn analysis on WMD consequence issues for OSD, Services and Joint Staff and provide weapons effects analysis to weapons Project Officer's Groups and weapons modification programs as requested.

Continue development of templates and training required for Partnership for Peace program activities.

Continue supporting system assessment and analytical weapons concepts as required; develop mission and consequence analysis for HQ ACC's Agent Defeat Weapon phase studies and AOAs.

Education/Training to Maintain Core Competencies ($1,275K)

Complete development of the Automated Nuclear Weapons Training System and transition it to DNWS.

Continue development, improvement, and integration of course materials for the DNWS.

Continue nuclear operational training support to CINCs, Services, and OSD.

Continue development of DoD general interest nuclear training program.

Continue support for DoD and CINC exercises and wargames with WMD/target response analysis and counterproliferation.

Modeling and Simulation ($1,629K)

Achieve full operational capability of the DSWA Modeling and Simulation Center, including connectivity via Defense Simulation Internet (DSI).

Provide technical support for exercises and war games.

Integrate DSWA weapons effects codes into COMPASS program.

Integrate WMD modules into campaign level analytical and assessment models to analyze effects of these weapons on campaign plans.

Initiate Analysis and Assessments Phase II contract to provide real-time support to Services through enhanced infrastructure, deployment teams, integrated models, and technical support.

Update and refine support database per CINCs, Services, and Joint Staff guidance and continue development of consequence analysis of WMD counterproliferation programs.

Continue to develop EADSIM based scenarios for additional studies to support STRATCOM requests.

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Project AE - Weapon Safety and Operational Support (cont'd)

Nuclear Weapons Effects Phenomenology ($1,505K)

Provide an automatic adaptive capability for 36-hour weather forecasts in support of operational exercises and test support, which will add to the effectiveness of WMD consequence predictions.

US/Allied Survivability & Operability in Nuclear Designated Advanced Weapons Environments ($5,471K)

Extend functional assessments of foreign underground facilities to include storage, WMD, and operations-types to identify "Achilles' heel" for hard and mobile systems.

Assist operational users in choosing investment strategies to mitigate and/or eliminate vulnerabilities.

Assess impact of emerging technologies on C3I systems and our nuclear deterrent.

Conduct Integrated Systems Assessments of selected national defense infrastructure facilities.

Continue Advanced Data Communications Survivability Program analyses and assessments.

Demonstrate Prototype Survivability Planning System and initiate follow-on Survivability Integration Demonstration Program.

FY 1998 Plans

Nuclear Operations ($19,133K)

Complete the analysis of monomethylhydrazine (hypergolic) propellant for Minuteman III.

Continue experimental testing to develop a tech-base for fuel fire, energetic materials and electrical/lightning.

Continue WSSA for the designated weapon system.

Provide safety assessment support to the NWC, ATSD(NCB), STRATCOM, Services, and Project Officer's Group.

Initiate experimental testing to develop a tech-base in the area of combined mechanical/thermal environments.

Complete the modernized software interface between NPES and its data sources for STRATCOM and Joint Staff.

Complete prototype development computer-based training capability for nuclear staff planners, emphasizing adaptive nuclear planning.

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Project AE - Weapon Safety and Operational Support (cont'd)

Continue the adaptive planning system software development for a deployable strategic planning capability required by STRATCOM.

Complete and transition the nuclear planning system target data feed which provides intelligence planning data in support of NATO.

Complete the development of a methodology for STRATCOM which includes the impact of fallout effects in achieving effective denial or delay of enemy access to key installations as a result of a nuclear strike.

Continue to provide analytical support to assess STRATCOM's capability to effectively meet national objectives involving the SIOP while reducing its complexity.

Continue to develop an analytical framework that facilitates alternative WMD deterrence approaches to the needs of multi-regional scenarios.

Conduct an annual force-on-force exercise to evaluate and validate policy standards as designated by the SPVC.

Continue to provide quick turn analysis on WMD consequence issues for OSD, Services, and Joint Staff and provide weapons effects analysis to Project Officer's Groups and weapons modification programs as requested.

Continue development of templates and training required for Partnership for Peace program activities.

Continue to support system assessment and analytical weapons concepts analysis for DoD, JCS, CINCs and Services.

Develop mission and consequence analysis for HQ ACC's Agent Defeat Weapon phase studies and AOAs.

Education/Training to Maintain Core Competencies ($1,050K)

Provide nuclear operational training support to CINCs, Services, and OSD.

Continue development of general interest DoD nuclear training program.

Continue development, improvement, and integration of course materials for the DNWS.

Support DoD and CINC exercises and wargames with WMD/target response analysis.

Nuclear Weapons Stockpile Management ($600K)

In support of stockpile stewardship and reliability, continue DSWA participation in, and support to, the Dual Revalidation

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Project AE - Weapon Safety and Operational Support (cont'd)

program with research, and technical analysis assessments and reports.

Provide technical support, progress reports and recommendations to ATSD(NCB), Joint Staff, Services, STRATCOM and other Combatant Commanders as required.

Provide support to the Annual Certification program and to the service weapons life-extension programs.

Modeling and Simulation ($1,624K)

Increase DSWA Modeling and Simulation Center capability with an operational INTEL-S node.

Continue integration of WMD modules into campaign level analytical & assessment models.

Provide technical operational consequence analysis support for exercises and wargames.

Continue Analysis and Assessments Phase II contract to provide real-time support to Services through enhanced infrastructure, deployment teams, integrated models, and technical support.

Update and refine support database per CINCs, Services and Joint Staff guidance and continue development of consequence analysis of WMD counterproliferation programs.

Continue development of EADSIM based scenarios for additional studies to support STRATCOM requests.

Nuclear Weapons Effects Phenomenology ($1,470K)

Deliver an operational, adaptive, user-friendly, high resolution 36 hour weather forecast capability to CINCs and Services.

US/Allied Survivability & Operability in Nuclear/Designated Advanced Weapons Environments ($5,622K)

Deliver underground facility characterization and vulnerabilities guide and computer assessment tools to support CINCs and intelligence community.

Conduct Balanced Survivability Assessments and Integrated Survivability as tasked by CINCs.

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Project AE - Weapon Safety and Operational Support (cont'd)

Conduct proof-of-principle technology prototype testing to assess mitigation effects capability and technology aimed at increasing survivability for the warfighter by enhancing reliability of systems the warfighter depends upon.

Weapon/Target Interaction ($1,000K)

Integrate additional DSWA peculiar weapon effects and target response models into High Level Architecture (HLA) and CINC planning tools.

Integrate weapons effects and target response models in an environment which can be visualized for training, exercises and Bomb Damage Assessment.

FY 1999 Plans

Nuclear Operations ($19,950K)

Complete the safety assessment for the third major weapons system in support of Nuclear Weapon System and Special Stockpile Safety.

Continue experimental testing to develop a tech-base for fuel fire, energetic materials and electrical/lightning.

Continue experimental testing to develop a tech-base in the area of combined mechanical/thermal environments.

Provide safety assessment support to the NWC, ATSD(NCB), STRATCOM, Services and Project Officer's Group.

Conduct Forces Support technical analyses as required by OSD, Services, Joint Staff, and NWC on nuclear infrastructure, stockpile planning, force structure, storage issues, weapons safety and security, theater missile defense, counterproliferation, planning, and international military and political security issues.

Conduct technical analyses to support CINCs, Services and Joint Staff on operational force planning, counterproliferation, nuclear forces, command and control, and regional security issues in light of the changing international security environment.

Continue the adaptive planning system software development for a deployable strategic planning capability required by STRATCOM.

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Project AE - Weapon Safety and Operational Support (cont'd)

Complete analytical support assessing STRATCOM's capability to effectively meet national objectives involving the SIOP while reducing its complexity.

Complete development of an analytical framework that facilitates alternative WMD deterrence approaches to the needs of multi-regional scenarios.

Conduct an annual force-on-force exercise to evaluate and validate policy standards as designated by the SPVC.

Continue to provide quick turn analysis on WMD consequence issues for OSD, Services, and Joint Staff and provide weapons effects analysis to weapons Project Officer's Groups and weapons modification programs.

Continue development of templates and training required for Partnership for Peace activities.

Continue supporting system assessment and analytical concepts analysis for DoD, JCS, CINCs, and Services.

Develop mission and consequence analysis for HQ ACC's Agent Defeat Weapon phase studies and AOAs.

Education/Training to Maintain Core Competencies ($1,050K)

Provide nuclear operational training support to CINCs, Services, and OSD.

Continue development of general interest DoD nuclear training program.

Continue development, improvement, and integration of course materials for the DNWS.

Support DoD and CINCs exercises and wargames with WMD/target response analysis.

Nuclear Weapons Stockpile Management ($750K)

In support of stockpile stewardship and reliability, continue DSWA's participation in, and support to, the Dual Revalidation program with research, technical analysis, and assessment reports.

Continue to provide ATSD(NCB) with progress reports.

Provide technical support and recommendations to ATSD(NCB), Joint Staff, Services, STRATCOM and other Combatant Commanders.

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Project AE - Weapon Safety and Operational Support (cont'd)

Continue DSWA support to the Annual Certification program and support to the service weapons life-extension programs.

Modeling and Simulation ($3,183K)

Upgrade and refine operations of the Modeling and Simulation Center.

Provide an integrated program for analysis and testing of alternate strategies, force employment options and technologies.

Continue to provide technical operational consequence analysis support for exercises and wargames.

Include WMD use and effects in a joint theater-level simulation.

Implement the Analysis and Assessments program to provide real-time support to Services through enhanced infrastructure, deployment teams, integrated models, and technical support.

Update and refine support database per CINCs, Services, and Joint Staff guidance and continue development of consequence analysis of WMD counterproliferation programs.

Continue to develop EADSIM based scenarios for additional studies to support STRATCOM requests.

Nuclear Weapons Effects Phenomenology ($1,471K)

Transition 36 hour weather forecast modeling capability to the CINCs and Services for use in WMD consequence predictions.

US/Allied Survivability & Operability in Nuclear/Designated Advanced Weapons Environments ($6,002K)

Conduct Balanced Survivability Assessments and Integrated Survivability as tasked by CINCs.

Conduct proof-of-principle technology prototype testing to assess mitigation effects capability and technology aimed at increasing survivability for the warfighter by enhancing reliability of systems the warfighter depends upon.

Weapon/Target Interaction ($1, 010K)

Develop visualization tools for DSWA weapon effects models that are compatible with the HLA.

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Project AF - Weapon System Operability - Current and future warfighters and weapon systems, including the associated Command, Control, Communications, Computers and Intelligence (C4I) and support systems, must be able to tolerate and operate effectively through a spectrum of hostile battlefield environments. Planned efforts emphasize the development and demonstration of innovative and cost effective technologies to sustain the functional survivability of U.S. and Allied Forces and systems to advanced conventional weapons and limited nuclear attack. The military systems of interest include those that support warfighting missions in the air, on land, at sea, or in space.

This project constitutes the DoD's residual science and technology expertise in nuclear and related survivability matters. It develops and demonstrates affordable strategies and hardening technologies for U.S. systems; transfers the technical products to acquisition program offices; conducts component, subsystem, system and end-to-end performance tests and assessments as requested by the Services and CINCs; and provides support to the Office of the Secretary of Defense on technical and policy matters that relate to the acquisition of survivable systems and strategic system sustainment. Specific programs in the project include: development and demonstration of the enabling technologies for ensuring the continued availability of special materials and radiation tolerant microelectronics and photonic devices; development and demonstration of affordable hardening and mitigation methods that treat the adverse effects from electromagnetic, natural space and ionizing radiation, nuclear electromagnetic pulse, high power microwave and nuclear atmospheric environments; direct support to warfighters by predicting and quantifying the operational impact of nuclear, biological and chemical (NBC) and conventional battlefield environments on systems and personnel; development and demonstration of cost effective system design and test certification techniques for testable hardware that does not require underground nuclear tests; methods for measuring and increasing soldier effectiveness on NBC battlefields; performance and cost analysis to support the Defense Acquisition Board; and joint efforts with system program offices to apply DSWA's expertise and technologies to specific Service applications.

This project provides the testable system design rules and protocols that are used by users of nuclear effects simulators that are funded in Project AB. It also supports the following JCS Joint Warfighting Capabilities: Information Superiority, Counterproliferation, Electronic Warfare, and Precision Force.

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Project AF - Weapon System Operability (cont'd)

FY 1996 Accomplishments

Test & Simulation ($1,371K)

- Completed Aboveground Test (AGT)/Underground Test (UGT) correlation of electronic component data from AGTs and UGTs since 1983.
- Provided upset/burnout testing analysis of advanced technologies.
- Completed collection and coordination of optical UGT data for extrapolation to future materials.
- Developed Hardware-in-the-Loop (HWIL) Testbed to demonstrate sensor response in nuclear environment.

Nuclear Weapons Effects Phenomenology ($4,675K)

- Incorporated a ground-based radar model for Theater Missile Defense (TMD) Program and supported cost performance tradeoffs for sensor operability issues for Space-based Infrared System (SBIRS) in nuclear environments.
- Continued an assessment of SBIRS sensor operability for Geosynchronous and Highly Elliptic Orbit (GEO & HEO) satellites.

US/Allied Survivability & Operability in Nuclear/Special Weapon Environments ($6,751K)

- Completed radiation anti-emetic drug assessment and recommendation for NATO.
- Finalized sensor demonstration design and test protocols, upgraded protocols based on combined effects environments, and evaluated spacecraft and missile interceptor test protocols.
- Integrated draft guidelines for program manager survivability plan development for missiles; produced a draft MIL-STD on Hardness Assurance, Maintenance, & Surveillance.
- Assisted Allied Command Europe with operational exposure guidance for potential low-level radiation exposures to troops in Bosnia.

Radiation-Tolerant Microelectronics, Materials, and Electro-optics ($13,439K)

- Demonstrated 4-megabit Static Random Access Memory (SRAM) technology in support of radiation hardened microelectronic technology.
- Tested and evaluated a prototype radiation resistant 1-megabit SRAM.

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Project AF - Weapon System Operability (cont'd)

Provided component level (i.e., Analog Signal Processing, Digital Signal Processing, and Focal Plane Array Assembly testing.
Completed combined Qualified Manufacturers List radiation hardness assurance procedures.
Finished Jam-Resistant Secure Communications satellite terminal tests and published revised MIL-STD 2169B.

EM Hardening of Electronics and Optics ($5,879K)

Developed a program to advance state-of-the-art in Electromagnetic Pulse/High Power Microwave (EMP/HPM) hardening technology.

Nuclear/Designated Advanced Weapons Effects ($5,282K)

Developed a test protocol for sensors and designed and tested protocols for missiles/interceptors and spacecraft.

Modeling & Simulation ($8,833K)

Developed Consolidated Radiation Environments Software that assesses the consequences of natural and nuclear, biological and chemical weapons environments.
Completed clutter model for Over-the-Horizon (OTH) Radar for the Southern Command (SOUTHCOM) drug interdiction program. In addition, delivered Phase 2 Strategic C4I Assessment Tool ("STRATCAT") to STRATCOM and completed space modeling design and conducted initial interactive operation of all modules.
Sponsored joint DSWA-CBDCOM NBC Modeling and Simulation Conference.
Supported the 1996 Olympic Emergency Operations Center.

FY 1997 Plans

Nuclear Weapons Effects Phenomenology ($8,200K)

Complete initial environmental support for the SBIRS sensor operability for GEO and HEO satellites.

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Project AF - Weapon System Operability (cont'd)

Develop Beta version of the Nuclear Environment Simulation (NucSim) engagement level phenomenology module for Monte Carlo evaluation of TMD and National Missile Defense (NMD).

Complete initial analyses of the communications and radar functions for the end-to-end evaluation of the NMD elements/architectures.

Implement detailed communications link simulation, and cooperative engagement control, modeling in the DSWA version of the Army's System Performance Intercept Evaluation Tool (SPIET).

Support operational analysis of BMDO radars in nuclear environments.

Complete assessment of SBIRS sensor operability for GEO and HEO satellites.

US/Allied Survivability & Operability in Nuclear/Special Weapon Environments ($17,621K)

Begin testing of spacecraft, missile, and sensor demonstration test objects for validation of design and test protocols.

Demonstrate software solutions to minimize radiation effects on system operability.

Complete AGT testing and evaluation of materials for correlation with UGT data.

Develop optical material test coupons to identify the relationship of design specification to material response for protocol development.

Conduct combined effects testing of optical elements to resolve protocol issues.

Complete commander's guidance for operations in low-level radiation environments.

Evaluate the end-to-end operability of NMD architectures/elements in nuclear-disturbed environment.

Evaluate the vulnerability of systems and C4I nodes exposed to a nuclear-disturbed environment.

Assess/implement innovative, low-cost EMP/HPM hardening technology concepts for Service equipment survivability.

Continue assessment and testing of critical fixed-ground-based C4I facilities.

Develop PC-based Electromagnetic (EM) protection tool.

Regional Version Consequence Tool Set (CENTCOM ADR).

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Project AF - Weapon System Operability (cont'd)

Radiation-Tolerant Microelectronics, Materials, and Electro-optics ($11,755K)

- Demonstrate, test, evaluate, and qualify production-worthy, radiation-tolerant 1-megabit Complimentary Metal Oxide Semiconductor/Silicon-on-Insulator (CMOS/SOI) and bulk SRAMs for U.S. Air Force Space and Missile Command (USAF/SMC) and BMDO.
- Demonstrate, test and evaluate radiation-tolerant SOI Bipolar Complementary Metal Oxide Semiconductor microelectronics for mixed signal applications in support of USN, USAF and BMDO requirements.
- Demonstrate radiation-tolerant, low-power 200k gate array for USAF/SMC and BMDO use.
- Perform initial demonstration of radiation tolerant 16-megabit SRAM integrated circuit technology required by USAF and BMDO.
- Complete development of the Microelectronic and Photonics Test Bed (MPTB) in preparation for the FY98 flight of the MPTB flight vehicle in support of USN, USAF and BMDO.

Nuclear Operations ($600K)

- Deliver upgraded version of "STRATCAT" C4I assessment tool to STRATCOM.
- Support communications operability assessment for SBIRS and complete longwave noise program for fleet submarine broadcasting system.
- Develop long-wave sensors (passive and active) for imaging underground structures/Weapons of Mass Destruction (WMD) storage facilities for non-proliferation/counterproliferation (NP/CP).

Technology Transfer ($741K)

- Develop initial space environmental prediction forecast model and an equatorial ionosphere clutter model for the system analysis of a new OTH radar to be installed in Puerto Rico.
- Integrate Space Weather Prediction Model (ISM).
- Initiate EMP phenomenology upgrade program.

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Project AF - Weapon System Operability (cont'd)

Applications of Nuclear Weapons Expertise ($1,250K)

Demonstrate human variability for radiation-induced and fire suppression-induced performance decrement in Modular Semi-Automated Forces.

Demonstrate connectivity for infrastructure data exchange with the Intel Net.

FY 1998 Plans

Nuclear Weapons Effects Phenomenology ($9,650K)

Continue environmental support for the SBIRS sensor operability for satellites in GEO and HEO.

Continue analyses of the communications and radar functions for the end-to-end evaluation of the NMD elements/architectures associated with changing threats.

Support continuing operational analysis of BMDO radars in nuclear environments.

Initial distribution of improved DSWA SPIET with new, detailed interceptor homing models.

Continue assessment of SBIRS sensor operability for GEO and HEO satellites.

Develop and maintain EMP core competency programs for DSWA sponsored programs for both defensive and offensive applications.

US/Allied Survivability & Operability in Nuclear/Special Weapon Environments ($20,373K)

Correlate material testing data to predict system-level performance.

Develop AGT/UGT threat correlation derived from the completed materials data sets.

Develop structural response data for missiles, penetration aids and reentry vehicles from UGT and data.

Upgrade testable hardware protocols based on validation testing of sensor subsystems in nuclear environments.

Finalize spacecraft missile design and test protocols.

Continue testing for validation of sensor design and test protocols.

Continue development and evaluation of low-level radiation standards and equipment for NATO review.

Complete evaluation of the end-to-end operability of NMD/TMD architectures/elements in nuclear-disturbed environment.

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Project AF - Weapon System Operability (cont'd)

Conduct SBIRS operability assessment, and evaluate the vulnerability of systems exposed to a nuclear-disturbed environment.

Demonstrate affordable EMP/HPM design and test technologies, develop system hardening technology against advanced HPM techniques, and continue assessment and testing of critical fixed-ground-based C4I facilities.

Create EMP/HPM hardening cost model tool.

Radiation-Tolerant Microelectronics, Materials, and Electro-optics ($13,070K)

Test and evaluate radiation-tolerant analog and digital microelectronics, demonstrate radiation-hardened 4M SRAM prototype.

Demonstrate, test and evaluate hardened SOI microelectronics for sensor applications in support of USAF and BMDO.

Evaluate advanced photonics and compound semiconductor technology for DoD space-based applications.

Demonstrate, test and evaluate radiation-tolerant 16M SRAM integrated circuit technology for USAF and BMDO.

Demonstrate nanoelectronics technology in support of USN, USAF and BMDO requirements.

Nuclear Operations ($700K)

Continue upgrade of "STRATCAT" C4I assessment tool for STRATCOM.

Support communications operability assessment for SBIRS and complete longwave noise prediction program for fleet submarine broadcasting system.

Technology Transfer ($802K)

Develop initial space environmental prediction forecast model and models to detect and track cruise missiles by OTH radars.

Test and validate ISM for 50th Space Weather Squadron.

Applications of Nuclear Weapons Expertise ($1,250K)

Develop nuclear weapon detonation model in Distributed Interactive Simulation compatible format.

Demonstrate Geographic Information System (GIS) based assessments of potential NBC effects on OCONUS-based military forces.

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Project AF - Weapon System Operability (cont'd)

FY 1999 Plans

Nuclear Weapons Effects Phenomenology ($9,448K)

- Complete assessment of SBIRS sensor operability for GEO and HEO satellites.
- Continue environmental support for the SBIRS sensor operability for satellites in GEO and HEO.
- Continue analyses of the communications and radar functions for the end-to-end evaluation of the NMD elements/system.
- Support continuing operational analysis of BMDO radars in nuclear environments.
- Distribution of DSWA SPIET with stereo processing models for space borne optical sensor data.
- Continue support of EMP phenomenology upgrade.

US/Allied Survivability & Operability in Nuclear/Special Weapon Environments ($21,308K)

- Finalize configuration control electronics database for qualification testing.
- Develop design protocols for advanced optical systems.
- Complete AGT/UGT threat correlation for penetration aids, missile and reentry vehicle materials/structures.
- Finalize sensor design and test protocols and upgrade protocols based on combined effects environments.
- Finalize sensor design and test protocols, and evaluate spacecraft and missile interceptor test protocols.
- Complete development and assessment low-level radiation standards and equipment for NATO.
- Evaluate the end-to-end operability of advanced architectures/networks in nuclear-disturbed environments.
- Continue to assess SBIRS architecture operability, and evaluate the vulnerability of C4I systems exposed to nuclear-disturbed environment.
- Continue application of innovative, low-cost EMP/HPM hardening technology and propose candidate EM standards and guidelines in accordance with the new technology.
- Continue assessment and testing of critical, fixed-ground-based C4I facilities.

Radiation-Tolerant Microelectronics, Materials, and Electro-optics ($15,390K)

- Demonstrate, test and evaluate a radiation-tolerant, low-power 1000K gate array.

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Project AF - Weapon System Operability (cont'd)

Demonstrate, test and evaluate application-specific integrated circuits, including a digital signal processor.

Demonstrate radiation-tolerant photonics technology for DoD space-based applications.

Investigate and characterize single event effects in photonic devices and deep-submicron microelectronics for USAF and BMDO.

Develop, test and evaluate improved radiation-tolerant Charge Coupled Device technology.

Nuclear Operations ($300K)

Deliver final version of "STRATCAT" C4I assessment tool to STRATCOM.

Support geomagnetic EMP sensor network for Comprehensive Test Ban Treaty, and longwave sensor technology of imaging underground storage of WMD for NP/CP, and develop initial space environmental prediction forecast model.

Technology Transfer ($801K)

Transition code to operations and deliver Contract Data Requirements Lists for ISM; define and develop tools to use Defense Meteorological Satellite Program ionospheric data; initiate program to develop an advanced space weather prediction tool.

Applications of Nuclear Weapons Expertise ($1,000K)

Demonstrate how human performance is degraded in NBC environments using DIS compatible models for use in wargames.

Demonstrate GIS representations of NBC open source and intelligence data.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	R-1 ITEM NOMENCLATURE Defense Special Weapons Agency; 0602715H

Project AG—Scientific Computations & Information Systems. This project provides High Performance Computing (HPC), computational databases, information products, and advanced numerical models that enable DSWA's customers, researchers, and RDT&E contractors to answer questions about nuclear and advanced special weapons effects. Applications, required by the warfighters, involve packaging nuclear data and physical understanding into advanced computational and information products that enable new capabilities for warfighter interaction and visualization. Models, codes, and information products are developed to aid the design of experiments, predict types and levels of measurements required, establish system design requirements, assess performance, and provide system-specific predictions of weapons effects to DoD planners. Nuclear issues often require use of advanced computational resources, e.g., for investigation of the physics of weapon-target interactions, and for extrapolating test results into areas for which tests are no longer possible. This has required DSWA to develop a world-class high performance computing architecture with high bandwidth communications. This capability, currently with a hub at Los Alamos National Laboratory, is scheduled to transition to the new DoD HPC architecture over the FYDP. DSWA's Data Archival and Retrieval Enhancement (DARE) information system (a hierarchical database tailored to the specific needs of the researcher, the system designer, and developer) is supported by this project. This project funds the "graybeard" efforts for collection of unique and potentially perishable nuclear data with appropriate prioritization based on technical value. The "Alliance", a collaboration involving DSWA, DoD and other non-DoD organizations with nuclear research interests, resources, and missions, has been constituted as a mechanism for identifying cost effective, cooperative approaches for ensuring data preservation and other research and development matters of mutual interest. The principal thrusts respond to warfighter requirements for survivable systems and effective weapons in the Joint Warfighting Technology Areas of Discriminate Attack, Global Reach, and Counterproliferation.

FY 1996 Accomplishments

Test & Simulation ($324K)

Provided centralized CRAY resources for testing and simulation activities.

Assisted users with technical advice on employing CRAY assets.

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Project AG—Scientific Computations & Information Systems (cont'd)

Continued DATACOM wide-area, high-speed connections.
Provided interactive visualization/animation of computer-produced computations.

Nuclear Weapons Effects Phenomenology ($1,574K)

Provided centralized CRAY resources for nuclear weapons effects activities.
Assisted users with technical advice on employing CRAY assets.
Continued DATACOM wide-area, high-speed connections.
Provided interactive visualization/animation of computer-produced computations.

Nuclear Operations ($5,058K)

Provided centralized CRAY resources for nuclear operations activities.
Assisted users with technical advice on employing CRAY assets.
Continued DATACOM wide-area, high-speed connections.
Provided interactive visualization/animation of computer-produced computations.
Managed network, including annual assessment of circuit utilization, price/performance, requirements, changes, and acquisitions.
Provided science and technology Information Analysis Center support through broad-based research analysis.
Disseminated three nuclear weapon effects computational aids.
Published Science and Technology Digest .
Began revision of the Effects Manual-One (EM-1) Technical Handbook.
Published the NATO version of the EM-1.

Applications of Nuclear Weapons Expertise ($4,320K)

Provided centralized CRAY resources for nuclear weapons expertise activities.
Assisted users with technical advice on employing CRAY assets.
Continued DATACOM wide-area, high-speed connections.
Provided interactive visualization/animation of computer-produced computations.

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Project AG—Scientific Computations & Information Systems (cont'd)

Data Archival and Retrieval Enhancement (DARE) ($2,499K)

- Upgraded DSWA's DARE to accept test data and loaded high priority test data.
- Continued development of DARE test data and waveform standards.

Nuclear Weapons Technical Assistance Publications ($518K)

- Provided support for publication and distribution of the scientific and technical reports, documentation, and the research efforts of DSWA.

Modeling and Simulation ($2,829K)

- Provided centralized CRAY resources.
- Assisted users with technical advice on employing CRAY assets.
- Continued DATACOM wide-area, high-speed connections.
- Provided interactive visualization/animation of computer-produced computations.
- Demonstrated anelastic version of Gudunov code for application to weather/dust transport for Advanced Computational Methods.
- Demonstrated non-premixed turbulent combustion version of the Gudunov code and applied it to the bomb-in-structure problem.

FY 1997 Plans

Test & Simulation ($35K)

- Develop individual nuclear weapons effects computational aids.
- Demonstrate DSWA's advanced numerical models at technical symposia.

Nuclear Weapons Effects Phenomenology ($3,136K)

- Conclude development of DARE test data and waveform standards.
- Provide scientific and technical information services and products as the DoD wide repository for test photos, films, data, test records and other information products.
- Provide text to update Glasstone's book, The Effects of Nuclear Weapons, the standard reference for nuclear weapons effects.

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Project AG—Scientific Computations & Information Systems (cont'd)

Disseminate Science and Technology Digest.

Review, approve, and archive perishable nuclear test data.

Infrastructure ($5,144K)

Continue to provide computer operations support through CRAY resources.

Provide continuous technical assistance for users of CRAY and other DoD HPC platforms and high performance networks to display supercomputer results.

Continue DATACOM computational support by providing annual support for Wide Area Network connection with additional T-1 backbone and high speed links.

Continue providing ongoing technical assistance and network management and conduct annual assessment of circuit utilization, price/performance, and requirements.

Initiate acquisitions to create a scientific computing data center at HQ DSWA and facilitate data researchers access to DoD HPC modernization plan resources.

Install DSWA hubsite for enhanced connectivity to DoD HPC resources, and fully interconnect with the Defense Research and Engineering Network (DREN).

Provide broad-based science and technology Information Analysis Center research support.

Develop a nuclear targeting CD-ROM.

Applications of Nuclear Weapons Expertise ($920K)

Add original data to Nuclear Effects Data Management Assessment System.

Initiate development of computational aids for total characterization of nuclear weapons effects.

Begin to update two more chapters of EM-1.

Update the unclassified textbook entitled, The Effects of Nuclear Weapons.

Distribute the engineering handbook entitled, EM-1 Technical Handbook.

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Project AG—Scientific Computations & Information Systems (cont'd)

Data Archival and Retrieval Enhancement (DARE) ($3,483K)

- Expand archival of airblast, thermal, and other nuclear test data, reports, and photography for archival/retrieval in DSWA's DARE.
- Initiate development and testing of computational tools employing diverse visual displays that are scenario-driven and exchange data and results with other warfighter displays.
- Initiate development of video/text interrelationship with hyperlink capability.

Nuclear Weapons Technical Assistance Publications ($575K)

- Provide common administrative support (personnel, equipment, maintenance) for publication and distribution of DSWA's scientific and technical reports.

Counterproliferation ($2,056K)

- Provide Advanced Computational Methods support by completing code work on explicit radiation modeling. Continue combustion/afterburning modeling for incendiary devices.
- Provide centralized CRAY resources in support of counterforce portion of Counterproliferation Advanced Concept Technology Demonstration (ACTD).
- Continue DATACOM computational support by providing wide-area connections in support of counterforce portion of Counterproliferation ACTD.

Weapon/Target Interaction ($200K)

- Benchmark the Gudunov Adaptive Mesh Refinement (AMR) code with reactive burn model against large scale experiments under the structure Advanced Technology Demonstration.

FY1998 Plans

Test & Simulation ($35K)

- Conclude development of integrated nuclear weapons effects computational aids.

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Project AG—Scientific Computations & Information Systems (cont'd)

Provide Advanced Computational Methods support to the International Shockwave Congress and demonstrate DSWA's advanced modeling techniques.

Nuclear Weapons Effects Phenomenology ($3,339K)

Provide scientific and technical information services and products as the DoD wide repository for test photos, films, data, test records and other information products.

Continue revision of Glasstone's book, The Effects of Nuclear Weapons, the standard reference for nuclear weapons effects.

Disseminate Science and Technology Digest.

Review, approve, and archieve nuclear test data.

Infrastructure ($7,402K)

Continue to provide computer operations support through centralized CRAY resources. Provide continuous technical assistance for users of CRAY and other DoD HPC platforms and high performance networks to supply display of supercomputer results.

Continue DATACOM computational support by providing annual support for Wide Area Network.

Provide broad-based science and technology Information Analysis Center research support.

Continue computational support by providing annual support for the communication network and upgrade/acquire the network management equipment for the HQ DSWA hubsite.

Integrate DSWA's network with the DoD's HPC DREN network.

Investigate new communication technologies.

Beta test and distribute nuclear targeting CD-ROM.

Applications of Nuclear Weapons Expertise ($845K)

Distribute integrated nuclear weapons effects computational aids.

Disseminate electronic version of EM-1 Technical Handbook.

Continue to develop and upgrade computational aids of nuclear weapons effects on various electronic media.

Disseminate individual nuclear weapons effects computational aids.

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Project AG—Scientific Computations & Information Systems (cont'd)

Disseminate two and update two more chapters of EM–1.

Data Archival and Retrieval Enhancement (DARE) ($4,617K)

Expand archival of information and knowledge of nuclear weapons, other Weapons of Mass Destruction (WMD) and Agency mission areas for retrieval in DSWA's DARE as outlined in DARE 2000 Master Plan.

Develop and test computational tools employing diverse visual displays that are scenario-driven and exchange data and results with other warfighter displays.

Continue development of video/text interrelationship with hyperlink.

Nuclear Weapons Technical Assistance Publications ($585K)

Provide common support (personnel, equipment, maintenance) for publication and distribution of DSWA's scientific and technical reports.

Counterproliferation ($1,930K)

Provide Advanced Computational Methods support by validating code work on explicit radiation modeling.

Continue combustion/afterburning modeling for incendiary devices.

Validate advanced numerical models for complex flow/chemistry.

Provide centralized CRAY resources in support of counterforce portion of Counterproliferation ACTD.

Continue DATACOM computational support by providing wide area connections in support of counterforce portion of Counterproliferation ACTD.

Weapon/Target Interaction ($200K)

Add a reactive burn model to the Gudunov AMR code and validate against experimental data.

Radiation Simulators ($60K)

Perform a numerical study for the Advanced Radio Frequency Payload concept in support of DoD programs.

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Project AG—Scientific Computations & Information Systems (cont'd)

FY1999 Plans

Test & Simulation ($55K)

Disseminate integrated nuclear weapon effects computational aid.

Provide Advanced Computational Support by hosting the International Shockwave Conference.

Nuclear Weapons Effects Phenomenology ($2,997K)

Provide scientific and technical information services and products as the DoD wide repository for test photos, films, data, test records and other information products.

Continue computer operations support by providing centralized CRAY resources to researchers, DSWA customers and RDT&E contractors.

Continue DATACOM computational support by providing wide area connections.

Disseminate Science and Technology Digest.

Review, approve, and archive perishable nuclear test data.

Disseminate updated The Effects of Nuclear Weapons.

Infrastructure ($7,260K)

Continue computational support by providing annual support for the communication network and upgrade/acquire the supercomputing equipment for the HQ DSWA data center.

Provide classified access channels for the HQ DSWA data center.

Acquire hierarchical file storage for classified systems.

Continue assessment of circuit utilization and the investigation of new communication and networking technologies.

Continue to provide broad based science and technology Information Analysis Center research support.

Applications of Nuclear Weapons Expertise ($550K)

Continue to provide computer operations support through centralized CRAY resources. Provide continuous technical assistance for users of CRAY and other DoD HPC platforms and high performance networks to supply display of supercomputer results.

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Project AG—Scientific Computations & Information Systems (cont'd)

Continue DATACOM computational support by providing wide-area, high-speed connections.

Update two more chapters of DSWA's EM–1.

Data Archival and Retrieval Enhancement (DARE) ($5,731K)

Expand archival of information and knowledge of nuclear weapons, other WMD and Agency mission areas for retrieval in DSWA's DARE as outlined in DARE 2000 Master Plan.

Continue development and testing of computational adjuncts employing diverse visual displays that are scenario–driven and exchange data and results with other warfighter displays.

Provide on–line capability for video/text interrelationship with hyperlink capability.

Nuclear Weapons Technical Assistance Publications ($595K)

Provide common support (personnel, equipment, maintenance) for publication and distribution of DSWA's scientific and technical reports.

Counterproliferation ($2,070K)

Complete validation of Advanced Numerical Methods. Compare results to precision test data.

Perform large-scale analysis of incendiary warheads to support demonstration testing.

Continue to provide centralized CRAY resources in support of counterforce portion of Counterproliferation ACTD.

Continue DATACOM computational support by providing wide area connections in support of counterforce portion of Counterproliferation ACTD.

Weapon/Target Interaction ($200K)

Transition "new explosive" fabrication technology to U.S. contractors, DoD and DOE labs.

Transition "convective burning" to the DSWA gun development programs.

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Project AI - Hard Target/Tunnel Defeat & Nevada Test Site (NTS) Sustainment

The United States and its allies face a growing threat related to critical military targets hidden within and shielded by hardened, deeply buried tunnel complexes which house battle management facilities, command, control, and communications facilities, theater ballistic missiles and their transporter-erector-launchers (TELs), and biological/chemical/nuclear weapons production or storage facilities. An objective of this program is to examine the existing U.S. and Allied capabilities to hold hardened, deeply buried tunnel targets at risk, thereby defining a current performance baseline. Any deficiencies will be identified and the ability of planned systems to address these deficiencies will be assessed. Finally, new technologies needed to mitigate remaining shortfalls will be evaluated as candidates for new hard target defeat acquisitions. Activities respond to priorities by the Office of the Under Secretary of Defense for Acquisition and Technology (OUSD(A&T)) Hard and Deeply Buried Target Defeat Capability Initiative and U.S. Forces, Korea. Efforts in this program provide part of the technology base needed for counterproliferation activities conducted in other DoD programs.

The Presidential Decision Directive (PDD) on Stockpile Stewardship implemented an indefinite moratorium on underground nuclear testing while requiring retention of the capability to resume testing at Presidential direction. DSWA has complied with this policy by realigning the previously existing underground test program to emphasize non-nuclear weapons test technology and facility development, and to conduct a program for an orderly decommissioning and mothballing of the national underground nuclear test assets. The following major tasks will satisfy this requirement: (1) continue test complex shutdown, continue tunnel stabilization and preservation; (2) continue environmental characterization; (3) document testbed design and construction methodology; (4) maintain UGT readiness through joint test organization activities at NTS including counterproliferation and hard target defeat testing; and (5) support SOCOM efforts to develop tactics and techniques for JCS Joint Warfighter Capabilities of Discriminate Attack and Counterproliferation. Project AI is linked to Project AB, through which its testing is conducted, and to Project AC which leverages its weapons work.

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Project AI - Hard Target/Tunnel Defeat & Nevada Test Site (NTS) Sustainment (cont'd)

FY 1996 Accomplishments

Hard Target Tunnel Defeat ($2,000K)

- Compiled a database of Balanced Vulnerability Assessments and began applying the data to the problem of identifying single point vulnerability nodes in underground facilities.
- Supported USD(A&T)'s Hard and Deeply Buried Target Defeat Capability acquisition program with computational support and associated studies of weapon effectiveness assessments for the evaluation of new concepts.
- Performed full-scale tunnel portal tests.
- Began test sequence for hard target kill and functional vulnerability of hard tunnel facilities.

Nevada Test Site Activities ($7,390K)

- Completed test bed documentation; archival of underground testing techniques, procedures, and methodologies; and transfer of appropriate underground test technologies.
- Maintained test site infrastructure for DSWA activities at the Nevada Test Site (NTS) in support of environmental characterization activities and for tunnel decommissioning and site characterization for the last tunnel complex to be closed. One tunnel complex is maintained in support of the program for military exercises on defeat of hardened underground facilities and for the stockpile stewardship program.
- Supported SOCOM research and development training, and tactics development by providing targets, equipment, and personnel.

FY 1997 Plans

Weapon /Target Interaction ($1,958K)

- Complete data survey and geologic characterization of Korean Multiple Rocket Launcher (MRL) sites.
- Continue support for USD(A&T)'s Hard and Deeply Buried Target Defeat Capability program.
- Complete lab-scale portal damage tests on intact rock.

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Project AI - Hard Target/Tunnel Defeat & Nevada Test Site (NTS) Sustainment (cont'd)

Bomb Damage Assessment ($500K)

Develop an automated engineering tool to identify and exploit vulnerable nodes in underground facilities. Add module for portal and tunnel damage (based on tunnel portal test data).

Continue compiling a database of Balanced Survivability Assessments and began applying the data to the problem of identifying vulnerable nodes in underground facilities.

Test and Simulation ($2,690K)

Maintain DSWA activities at NTS in support of environmental remediation activities.

Provide on-site DSWA personnel to plan and supervise environmental remediation of DSWA facilities using Defense Environmental Restoration Account funds.

Maintain one tunnel complex in support of the stockpile stewardship program.

Complete lab-scale penetration tests on intact rock in support of phenomenology/validation tests.

Perform phenomenology tests on tunnel deformation in jointed rock.

Complete tests on unlined and lined tunnels in Norway geology.

Evaluate weapon/target interactions for new weapons concepts, enhanced payloads, and target fragility.

Continue test sequence for hard target kill and functional vulnerability of hard tunnel facilities.

Continue supporting SOCOM training and tactics development by providing targets, equipment and personnel.

Begin construction of two missile tunnel facility test tunnels.

FY 1998 Plans

Weapon/Target Interaction ($4,493K)

Develop geoengineering models describing key aspects of geology pertaining to warhead penetration and damage propagation.

Enhance the MEA tunnel module by adding subroutines for improved target geology, penetration models, and subsystem damage.

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Project AI - Hard Target/Tunnel Defeat & Nevada Test Site (NTS) Sustainment (cont'd)

Continue support for USD(A&T)'s Hard and Deeply Buried Target Defeat Capability program.
Evaluate weapon/target interactions for new weapons concepts, enhanced payloads, and target fragility.
Complete field tests on blast/fragmentation/fire damage to target subsystems, including blast doors, vehicles, and equipment.
Collect and evaluate target and event signatures for surveillance.

Bomb Damage Assessment ($500K)

Complete the automated engineering tool to identify and exploit vulnerable nodes in underground facilities.
Begin evaluation of target reconstitution, post-attack.

Test and Simulation ($4,719K)

Maintain DSWA activities at NTS in support of environmental remediation activities.
Provide on-site DSWA personnel to evaluate environmental remediation requirements of DSWA facilities.
Maintain one tunnel complex in support of the stockpile stewardship program.
Conduct tunnel construction/test support exercises.
Perform tests and demonstration for functional kill of operational hard tunnel facilities.
Continue test sequence for hard target kill and functional vulnerability of hard tunnel facilities.
Complete construction of a missile tunnel facility test tunnel.

FY 1999 Plans

Weapon/Target Interaction ($4,687K)

Continue support for USD(A&T)'s Hard and Deeply Buried Target Defeat Capability program.
Evaluate weapon/target interactions for new weapons concepts, enhanced payloads, and target fragility.
Collect and evaluate target and event signatures for surveillance.
Begin planning activities for C3I tunnel target.

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Project AI - Hard Target/Tunnel Defeat & Nevada Test Site (NTS) Sustainment (cont'd)

Bomb Damage Assessment ($500K)

Continue target reconstitution studies and model development for incorporation in MEA tunnel module.

Test and Simulation ($5,240K)

Continue NTS infrastructure maintenance by maintaining DSWA activities at NTS in support of environmental remediation activities.

Continue providing on-site DSWA personnel to evaluate environmental remediation requirements of DSWA facilities.

Maintain one tunnel complex in support of the stockpile stewardship program.

Begin tunnel construction/test support activities and perform tests for functional kill of hard tunnel facilities housing production or storage of Weapons of Mass Destruction.

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Project AM - Combating Terrorism - Terrorism has been an international problem for many years, but recent events have greatly increased the awareness of the domestic vulnerabilities to terrorism. The World Trade Center, Oklahoma City, and Saudi bombings have vividly illustrated the immediacy of the threat and the necessity that the U.S. be better prepared to prevent and respond to them. The extensive data base and expertise on nuclear and conventional weapons effects acquired over the last fifty years by the Defense Special Weapons Agency (DSWA) constitute a unique foundation for predicting the explosive environments due to blast effects as a basis for forensic investigations. The creation of this project reflects the Congressional intent to adapt and make available DSWA technology and expertise to reduce the vulnerability of U.S. forces and infrastructure to terrorist events and enhance the capabilities of U.S. law enforcement authorities. Research in this area supports the JCS Joint Warfighter Capability of Counterproliferation.

FY 1996 Accomplishments

Threat analysis and vulnerability baseline ($400K)

- Assessed the range of threats (explosives configuration and constituents) likely to be encountered in the U.S.
- Summarized the assessment in a data base which includes the characterization and classification of the vulnerabilities of major civilian and government resources.
- Assessed vulnerability of one major civilian and one major military facility with significant potential for being targeted by terrorists.

Predictive modeling assessment, adaptation, and validation ($3,600K)

- Initiated efforts to quantify response of selected structural components to explosive effects and define potential retrofit and design mitigating techniques for force protection and facility vulnerability reduction.
- Initiated efforts to quantify explosives of advanced terrorist devices, such as incendiaries and weapons of mass destruction-laced explosives.
- Began adapting structural response models to address terrorist-type explosions.

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Project AM - Combating Terrorism (cont'd)

FY 1997 Plans

Vulnerability assessment and mitigation ($2,498K)

Assess vulnerability of representative structures to support development of a generalized vulnerability assessment methodology.

Conduct terrorist-based event exercises to define exercise support requirements and develop assessment and predictive tools.

Explosive effects and mitigation ($4,000K)

Characterize explosives behavior in wet and dry geologies and incorporate data into response models.

Initiate design of full-scale validation test facility.

Characterize generation of debris due to blast and shock.

Evaluate effectiveness of retrofit techniques for mitigating blast and shock.

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Project AN - Thermionics - Meeting national objectives in both the military and civilian areas will require large capacity (40-100kW) nuclear space power systems having long lifetimes. Potential applications have been identified by the Air Force and NASA. The Air Force "New World Vistas" study, dated 15 December 1995, cites specific requirements for space nuclear power to accomplish force projection from space. NASA has identified requirements for power and propulsion for contemplated deep space missions and manned exploration. The objectives of DSWA's Advanced Thermionics Program are to advance the state of the art of thermionic power conversion in the United States, to develop high performance and highly reliable thermionic converters that provide high output power per unit of system mass, to demonstrate the capabilities of these thermionic converters, to show their feasibility for use in thermionic systems, and to develop corresponding system level conceptual designs. This effort supports the Defense Technology Area Plan for Space Platforms.

FY 1996 Accomplishments

Integrated Solar Upper Stage (ISUS) ($3,800K)

Leveraged USAF Phillips Laboratory ISUS Program to procure the most advanced U.S. planar thermionic converters, and evaluate their performance in an Engine Ground Demonstration.

In-core Thermionic Development ($3,700K)

Released Ready for Proposal (RFP) to design, fabricate, and test high performance and highly reliable in-core thermionic converters.

Solar or Out-of-Core Thermionic Development ($1,900K)

Released RFP to design, fabricate, and test high performance and highly reliable solar or out-of-core thermionic converters.

Microminiature Thermionic Converters (MTCs) ($600K)

Awarded Interagency Cost Reimbursement Order (IACRO) to Sandia National Laboratories to fabricate and test MTCs with high conversion efficiency using semiconducter integrated circuit fabrication methods.

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Project AN - Thermionics (cont'd)

FY 1997 Plans ($3,000K)

In-core Thermionic Development ($1,800K)

- Award contract
- Fabricate diodes
- Demonstrate diode performance

Solar or Out-of-Core Thermionic Development ($600K)

- Award contract
- Fabricate diodes
- Demonstrate diode performance

Microminiature Thermionic Converters ($600K)

- Deliver and test converter with 5 micrometer gaps
- Deliver and test converter with 3 micrometer gaps
- Test array of microminiature converters

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Project AQ - Deep Digger - This project proposes to develop a "Deep Digger" design for attacking hard targets such as leadership or C3 Bunkers, underground factories, or weapon storage facilities. The U.S. Services have identified a need to defeat such hard and buried targets. Current weapons have only limited capability against these targets. A more effective penetrator capability such as that claimed by the inventor of "Deep Digger" is required.

This effort is responsive to Special Operations Forces interests as well as the consolidated Mission Need Statement of the U.S. Air Force Combat Command and the U.S. Strategic Command. The deep digger system would be delivered by a guided munition airframe such as used by the Air Force and the Navy. As an integrated weapon, this concept has application as a breeching tool.

FY 1997 Plans

Technology Development ($2,000K)

Develop a detailed description of the digger concept.
Develop a risk reduction experimental plan.
Support expert panel review with in-depth analysis and experiments.
Produce a concept development plan for a follow-on action.

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Project AR - Johnston Atoll Remediation - DSWA is currently managing the environmental restoration of a 24-acre site on Johnston Island which is contaminated with plutonium from atmospheric nuclear weapon missile aborts in 1962. The technology developed and used by DSWA over the years is demonstrably successful; in two more years the volume of contaminated soil (dredged, filled, and compacted coral) will be reduced from 180,000 metric tons to 29,000 metric tons. That technology is reaching the limits of its effectiveness, and an additional process, yet to be identified, is necessary to further reduce the volume. The clean portion of the soil is available for use on Johnston Atoll. DSWA plans to dispose of the waste at the Nevada Test Site. With removal of the waste from Johnston Atoll, the 24-acre site can be returned to unrestricted use. At a current cost of $1.0 million per thousand metric tons of waste, the expense of shipping and disposing of the remaining low-level radioactive waste mandates that it be the smallest volume attainable.

To that end, DSWA has undertaken a program to identify and employ an innovative waste-reduction technology (or combination of technologies) to reduce the volume of waste to a manageable and less-expensive 5,000 metric tons. Through a series of vendor bench-scale and pilot-scale technology demonstrations with the support of the Department of Energy facilities at the Nevada Test Site, DSWA hopes to identify or develop in 1997 an effective technology that can be scaled up to meet the unique conditions at Johnston Atoll.

FY 1997 Plans

Technology Development ($2,000K)

Identify, develop and employ a waste-reduction technology

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Project AX - TOPAZ International Program - The TOPAZ International Program was the only U.S. space nuclear reactor technology program. Restructured in FY96, it focused on transferring advanced Russian space nuclear power piecepart and component level technologies to the United States. This program emphasized obtaining state-of-the-art Russian thermionic hardware and fabrication processes and ensuring that those processes were well understood by U.S. scientists and engineers. The House and Senate Defense Authorization committees did not support the FY 97 budget request and have terminated the TOPAZ International Program.

FY 1996 Accomplishments

Technology Transfer ($8,500K)

- Negotiated and signed the first contracts between the U.S. DoD and Russian Institutes for space nuclear reactor power technologies.
- Developed design for 60 kilowatt-class single-cell thermionic fuel element (TFE).
- Completed study of 40 kilowatt class experimental TFE.
- Prepared system and initiated tests of startup system interactions with an external, diffusion cesium reservoir.
- Completed National Academy of Sciences review of program.

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Project AY - Bioenvironmental Hazards Research - This project provides for research on bioenvironmental hazards of specific DoD concern. Areas of research include remediation, human health effects and risk evaluation, pollution prevention, waste stream treatment, and impact assessment of atmospheric emissions. Funds were provided as a Congressional addition in FY 1994, FY 1995 and FY 1997, and were intended to continue efforts begun by a grant in FY 1989 to Tulane and Xavier Universities. Additional funding was made available from existing DSWA resources to comply with Congressional direction to continue this effort in FY 1996.

FY 1996 Accomplishment ($5,000K)
The research emphasized the impact of environmental pollutants on human and ecological systems. Priority was given to pollutants of particular concern to the defense community such as radioactive material, and agents associated with chemical and biological defense. Research will include disposal, detection, storage, separation, decomposition (bioremediation) and environmental hazards. Work has not yet begun due to late release of FY 1996 funds from OSD. Award of grant is anticipated before September 1997.

FY 1997 Plans ($5,000)
Efforts anticipated from the FY 1997 budget appropriation will continue to follow the intent of the original program by supporting a collaborative research program which develops a better understanding of the effects of bionevironmental hazards of pollutants on the human and ecological systems. Of particular concern is research which may reveal possible synergistic effects of pollutants on organisms and ecosystems.

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B. Program Change Summary

	FY96	FY97	FY98	FY99
Previous President's Budget	228.0	195.1	212.6	222.7
Current Budget Submit/President's Budget	227.3	192.3	212.0	221.7

Change Summary Explanation:

The budget request supports a refocused program strategy. In light of the recent Defense Authorization Conferees' decision to terminate the TOPAZ International Program, funds have been redistributed in support of DSWA's commitment to the sustainment of nuclear competencies, and the high priority Electro-Thermal Chemical gun advanced technology program.

C. Other Program Funding Summary None.

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AB (Test & Simulation Technology)																
Acquisition Milestones																
Initiate radiation simulator diagonostics			X		X								X			
Begin Decade quad					X											
Initiate large area debris shield development									X							
Engineering Milestones																
Design reviews for communications/radar NWE simulators	X	X														
Demonstrate improved soft x-ray sources			X				X				X				X	
Demonstrate improved hot x-ray sources			X				X				X				X	
Demonstrate Pulsed Power Components for NWE			X													
Complete large area debris shields							X									
Demonstrate radiation simulator diagnostics							X				X				X	
Demonstrated insulator lifetime (2X) improvement			X													
T&E Milestones																
Initial Operational Capability of Communications/Radar NWE simulators							X	X								
IOC Non-Ideal Airblast Simulation capability at LBTS			X													
Close Aurora simulator		X														

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D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AB (Test & Simulation Technology)																
Other Program Events																
Complete closure of Blackjack simulators							X									
Complete closure of Phoenix and Casino Simulators							X									
Begin MBS operation at AEDC			X													
Begin Decade Quad checkout at AEDC											X					
Begin Decade customer testing at AEDC															X	
Build 1/2 scale structures for collateral effects & wall-failure testing	X	X														
Execute protective design tests (Dipole Gate)	X															
Execute antipenetration tests	X						X		X		X				X	X X
Execute enhanced warhead tests		X			X					X						
Construct large test structure							X								X	
Construct hard target 3							X									
Initiated Large Blast/Thermal Simulator (LBTS) Final Blast Shock Operational Capability		X														
Integrated thermal test operation into the test capability at LBTS	X															
Executed Army M-1 tank test requirements in LBTS					X											
Executed Navy thermal test requirements at TRS site & Tri Service Facility			X													

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D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AB (Test & Simulation Technology)																
Other Program Events																
Joint DSWA-Army non-ideal blast testing program for LBTS upgrade (P3I)	X	X	X													
Completed fully dynamic display sensor nuclear weapons effects simulator demonstration	X															
Construct AGT Targets		X					X									
Complete Decade Assessment Program		X														
Continue communication/radar atmospheric effects simulator participation in operability assessment/warfighting exercises					X											
Evaluate Upgraded Early Warning Radar (UEWR) operability for NMD						X										
Continue testing of vehicle types for USANCA							X									
Complete RNECS development for TMD and begin initial operational tests										X						
Complete ACS development and begin initial operational test									X							
Evaluate advanced sensor focal planes in NICS											X					
Provide advanced SATCOM Simulation Test Support to assess TMD architecture communications link operability											X					
Evaluate TMD GAR operability												X				
Continue advanced SATCOM Simulation Test Support to MILSTAR and Universal Modem											X	X				
Complete RNECS development for NMD and begin initial operational tests															X	

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D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AB (Test & Simulation Technology)																
Other Program Events																
Develop advanced optical scene generation/projection													X			
Develop mitigation techniques for TMD GBR in a nuclear-disturbed environment																X
Provide advanced SATCOM/UEWR simulation test support to assess NMD architecture operability																X
Continue communications/radar atmospheric effects simulator participation in operability assessment/warfighting exercises													X	X		
Complete evaluation of NMD target acquisition and tracking algorithms against improved NODDS IR scene and evaluate for fusion with RNECS																X
Complete modifications to LBTS for blast and thermal diagnostics															X	

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AC (Weapon Systems Lethality)																
Other Program Events																
Executed tests in Support of the Joint Munitions Effectiveness Manual			X													
Validated adaptive refinements of structural dynamics code			X													
Validated Munitions Effects Assessment			X													
Validate coupled codes							X									
Supported Battle Damage Assessment Sensors/demo			X													
Release weather & transport model			X				X				X				X	
Conducted precision model shock/bubble assessment test		X														
Completed discrete elements structural boundary model			X													
Started Computer Aided Design Interface			X													
Conduct live fire demonstration						X										
Complete advanced fluid/structural codes							X									
Fabricated prototype high energy density capacitors			X													
Design and fabricate full scale high energy density capacitors							X									
Validate Virtual Interactive Target in STOW DIS exercise							X									

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AC (Weapons Systems Lethality)																
Other Program Events																
Support Service/CINC exercises & training with technical support/weapon effects information.					X	X	X	X	X	X	X	X	X	X	X	X
Released graphite reactor simulator	X															
Complete functional facilities defeat analysis							X									
Execute one-third scale single and multiple ground shock experiments									X	X	X	X				
Initiate full-scale low-yield ground shock experiments for hard target defeat													X	X	X	X
Conduct live fire demonstration							X									
Conducted Wind Tunnel Test of Flight Body for 5" Naval Gun		X														
Electromagnetic Sabot-Launched Electric Kinetic Energy (SLEKE) projectile tests for Army							X									
Complete one breadboard flux compression generators							X									
Complete long pulse HPM megawatt class source							X									
Begin joint laboratory tests with U.S. Navy using 10 kW HPM source					X											
Began alternate source development						X										

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AC (Weapons Systems Lethality)																
Other Program Events																
Begin exploration of HPM associated technology for Command and Control Warfare (C^2W)	X															
Execute tests in support of the Joint Munitions Effectiveness Manual						X				X				X		
Continue validation of refinements of structural dynamics code						X				X				X		
Continue validation of Munitions Effects Assessment Program						X				X						
Validation of second generation targeting tool														X		
Initiate field testing of enhanced penetration testing into hard weathered rock						X										
Initiate field testing on closely spaced multiple penetration into hard targets						X										
Complete penetration field testing for penetration into hard weathered granite															X	
Completed high energy density materials evaluation.	X															
Scale-up high energy density materials production capability						X										

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AC (Weapons Systems Lethality)																
Other Program Events																
Developed High-Power Radio Frequency (RF) test system, and completed lab demonstration	X															
Began advanced RF source development and continued foreign asset testing	X															
Explored HPM associated technology designed for defense of friendly assets		X														
Begin to explore HPM hardening technology for advanced applications					X											
Conduct static outdoor demonstration of EM effects on weapons systems							X									
Begin Alternate Source Development						X										
Complete long pulse HPM megawatt class source							X									
Conduct modified live-fire outdoor demonstration of EM effects on weapons systems										X						
Develop HPM hardening technology for Command and Control Warfare (C^2W)										X						
Begin to explore HPM associated technology for Command and Control Warfare (C^2W)											X					
Begin to develop advanced long pulse HPM source technology							X									

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AC (Weapons Systems Lethality)																
Other Program Events																
Participate in advanced technology demonstration with the Services													X			
Complete advanced long pulse HPM source technology																X

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	FY 1996	FY 1997	FY 1998	FY 1999
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Project AE (Weapon Safety & Operational Support)				
Other Program Events				
Automated Routing & Maintenance System	X X X X	X X X X		
Air vehicle Planning System (APS)		X X	X X X X	X X X X
Synthetic Exercise Environment	X X X X	X X X		
Hazardous Prediction Integration System	X			
Minuteman III Refined	X X X X	X X X X	X X X X	
B52	X X X X	X X X X		
Fuel Fire	X X X X	X X X X	X X X X	X X X X
Propellant Sensitivity	X X X X	X X X X	X X X X	
Fire Resistant Enhancement (Second Phase)	X X X X			
WSSA Designated System		X X	X X X X	X X X X
Ground Based Jammer	X X X			
Navy Aircraft Carrier Defense System	X X X X	X X X		
Survivability Integration Initiated	X X X X	X X X		
Continue survivability integration assessments as tasked by CINCS		X	X X X X	X X X X
Initiate survivability integration demonstration program as follow-on			X	
Laser Countermeasures	X X			
Modeling & Simulation Initiatives	X X X X	X X X X	X X X X	X X X X
NATO Nuclear Planning System PC Trainer	X	X X X X	X X X X	

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D. Schedule Profile (cont'd)

	FY 1996	FY 1997	FY 1998	FY 1999
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Project AE (Weapon Safety & Operational Support)				
Other Program Events				
Automated Nuclear Weapons Training Program	X X X X	X X X X		
Counterproliferation Awareness Course (Development)	X			
Sustaining Nuclear Operational Training Expertise	X X	X X X X		
Air Vehicle Planning System (APS)	X X	X X X X	X X X X	
Nuclear Planning System Target Data Feed	X	X X X X	X X X X	
Conduct Balanced Survivability Assessments	X X	X X X	X X X	X X X
Conduct Integrated Survivability Assessments	X X	X X	X X	X X
Conduct Functional Kill Assessments	X X X X	X X X X	X X X X	X X X X
Strategic Force Planning Initiatives	X X X X	X X X X	X X X X	X X X X

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	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AF (Weapon Systems Operability)																
Acquisition Milestones																
Delivered design tool analysis capability-based on AGT/UGT radiation testing		X														
Developed and delivered First-of-a-Kind Non-Upsettable System Design Guidelines	X															
Delivered HWIL Testbed for protocol validation		X														
Other Program Events																
Completed anti-emetic drug recommendation for NATO			X													
Joint DSWA-CBDCOM NBC Modeling & Simulation Conference		X														
Operational exposure guidance for potential low level radiation exposure for troops in Bosnia			X													
Support to 1996 Olympic committee EOC for potential CBR incidents	X															
Regional version Consequence Assessment Tool Set							X									
Human variability in Modular Semi-Automated Forces Demonstration							X									
Regional GIS-Based NBC Assessments (PACOM AOR)											X					
Complete Operational Evaluation Group & Equipment Assessment for Low-Level Radiation																X

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	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AF (Weapon System Operability)																
Other Program Events																
Regional GIS-Based Natural & NBC Hazard Consequence Assessment Tool Set																X
Developed environments models for sensors for TMD & space surveillance system - Assessed nuclear operability issues for Space-Based Infrared Research Satellite System Sensor		X														
Developed Executive Level Software (ELS) communications connectivity Program - Deliver final version of ELS to STRATCOM							X									
Deliver qualified radiation-hardened 1-megabit SRAM																X
Deliver lower power gate array (1000 gate)																X
Successfully test prototype megabit SRAM														X		
Demonstrate radiation hard SOI analog technology															X	
Demonstrate radiation-hard 16-megabit SRAM technology																X
Correlate AGT and UGT data for Electronic Systems in a configuration-controlled electronics database		X														
Develop and deliver Preliminary Guidelines for Improved Testable Hardware Testing	X															
Deliver first combined correlation study of optical materials						X										

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	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AF (Weapon System Operability)																
Other Program Events																
Design preliminary test coupon for optical coating			X													
Develop & deliver First-of-a-Kind testing Technology for High Throughput Sensor System			X													
Complete initial analyses of the communications and radar functions for the end-to-end evaluation of NMD elements/architectures						X										
Begin testing of spacecraft, missile, and sensor demonstration test objects for validation of design and test protocols					X											
Demonstrate software solutions to minimize radiation effects on systems operability						X										
Complete AGT testing and evaluation of materials for correlation with UGT data							X									
Develop optical material test coupons to identify the relationship of design specification to material response for protocol development							X									
Conduct combined effects testing of optical elements to resolve protocol issues.							X									
Evaluate the end-to-end operability of NMD architectures/elements in nuclear-disturbed environment						X										

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D. Schedule Profile (cont'd)

	FY 1996	FY 1997	FY 1998	FY 1999
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Project AF (Weapon System Operability)				
Other Program Events				
Evaluate the vulnerability of systems and C4I nodes exposed to a nuclear-disturbed environment		X		
Continue assessment and testing of critical fixed-ground-based C4I facilities		X		
Correlate material testing data to predict system-level performance			X	
Develop AGT/UGT threat correlation derived from the completed materials data sets			X	
Develop structural response data for missiles, penetration aids and reentry vehicles from UGT and data			X	
Upgrade testable hardware protocols based on validation testing of sensor subsystems in nuclear environments			X	
Finalize spacecraft missile design and test protocols			X	
Continue analyses of the communications and radar functions for the end-to-end evaluation of the NMD elements/system				X
Support continuing operational analysis of BMDO radars in nuclear environments				X
Finalize configuration control electronics database for qualification testing				X

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	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AF (Weapon System Operability)																
Other Program Events																
Develop design protocols for advanced optical systems																X
Complete AGT/UGT threat correlation for penetration aids, missile and reentry vehicle materials/structures																X
Finalize sensor design and test protocols and upgrade protocols based on combined effects environments															X	
Finalize sensor design and test protocols and evaluate spacecraft and missile interceptor test protocols																X
Evaluate the end-to-end operability of advanced architectures/networks in nuclear-disturbed environments														X		
Developed program to advance state-of-the-art in EMP/HPM hardening technology			X													
Assess/implement innovative, low-cost EMP/HPM hardening technology concepts for Service Equipment survivability						X										
Develop PC-based EM protection tool							X									
Demonstrate affordable EMP/HPM design and test technologies, develop system hardening technology against advanced HPM techniques, and continue assessment and testing of critical fixed-ground-based C4I facilities										X						
Create EMP/HPM hardening cost modeling tool											X					

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D. Schedule Profile (cont'd)

	FY 1996	FY 1997	FY 1998	FY 1999
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Project AF (Weapon System Operability)				
Other Program Events				
Continue application of innovative, low-cost EMP/HPM hardening technology and propose candidate EM standards and guidelines in accordance with the new technology				X
Incorporate a ground-based radar model for TMD Program	X			
Support cost performance tradeoffs for sensor operability issues for SBIRS in a nuclear environment	X	XXXX	XXXX	XXXX
Develop Beta version of NucSim engagement level phenomenology module	X	XXXX		
Analyze communication and radar systems for end-to-end evaluation of NMD elements and architecture	X	XXXX	XXXX	XXXX
Support operational analysis of BMDO radars in nuclear environments	X	XXXX	XXXX	XXXX
Develop initial ISM	XXXX	XXXX	XXXX	XXXX
Implement detailed communication link simulation and cooperative engagement control into DSWA version of the Army's SPIET	X	XXXX	XXXX	XXXX

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	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AG (Scientific Computations & Information Systems)																
Other Program Events																
Disseminate Science and Technology Digest	X				X	X				X	X		X	X	X	
Data archival incremental deliveries			X				X				X				X	
DARE data loading	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Disseminate Computational Aids	X		X			X					X				X	
Disseminate "Effects of Nuclear Weapons"										X						
Provide supercomputing resources to researchers	X	X	X	X	X	X	X	X								
Migration to new supercomputing facility					X	X	X	X								
Upgrade tail circuits/hubsite		X		X			X		X						X	
Upgrade peripheral hardware			X	X	X			X		X				X		X
Distributed NATO version of Effects Manual-1	X															
Distribute Effects Manual-1 Technical Handbook							X									

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project AI (Hard Target Tunnel Defeat & NTS Sustainment)																
Other Program Events																
Construct Tunnel Target Test Facility						X	X	X	X	X	X	X	X			
Characterize Tunnel Target Test Facility							X	X	X	X	X	X				
Conduct Explosive Safety Tests							X				X					
Equipment Installation													X	X		
Conduct Dipole Hail Tunnel Vulnerability Tests		X	X		X					X		X				
Conduct Attack Planning						X										
Conduct Portal Damage Tests U16a						X	X	X						X	X	
Conduct Portal Closure Tests U12u							X		X		X					
Conduct Operational Vulnerability Tests	X						X								X	X

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997			
	1	2	3	4	1	2	3	4
Project AM - (Combating Terrorism)								
Other Program Events								
Assessed threats	X							
Summarized assessment		X						
Cataloged and assessed existing models	X							
Adapted/applied selected tests		X						
Conducted selected tests		X						
Initiated structural component testing		X						
Completed initial component testing							X	
Complete sub-scale wet and dry geology characterizations					X			
Complete selected vulnerability assessments						X		
Develop prototype assessment methodology							X	
Conduct terrorist-based event exercise(s)						X		
Define full-scale validation test requirements								X
Characterize debris hazards						X		
Test selected retrofit techniques						X		

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D. Schedule Profile (cont'd)

	FY 1996				FY 1997			
	1	2	3	4	1	2	3	4
Project AN - (Thermionics)								
In and Out-of-Core RFPs released				X				
In and Out-of-Core contracts awarded					X			
In-core converter designed						X		
Out-of-Core converter designed						X		
First Microminiature converter tested						X		
ISUS EGD Test						X		
ISUS converter coating optimized						X		

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D. Schedule Profile (cont'd)

	FY 1997 1 2 3 4
Project AQ - (Deep Digger)	
Concept Definition	X
Experimental Test Plan	X

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D. Schedule Profile (cont'd)

	FY 1997 1 2 3 4
Project AR - (Johnston Atoll Remediation)	
Technology demonstrations at NTS	X X
Evaluations/vendor selection	X
Develop/award pilot scale contracts	X
Develop/award Corps of Engineers contract for tech/field support at JA	X

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D. Schedule Profile (cont'd)

	FY 1997 1 2 3 4
Project AY - (Bioenvironmental Hazards)	
Broad Area Announcement	X
Collect Proposals	X X
Award Grant	X
Oversight of Research	X

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY **RDT&E, Defense-Wide/Advanced Technology Development - BA3**	R-1 ITEM NOMENCLATURE **Verification Technology Demonstration; 0603711H**

COST *(In Millions)*	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Cost to Complete	Cost to Complete
Total 0603711H Cost	32.3	25.5	81.4	50.2	43.8	43.0	43.6	44.5	Continuing	
Project CA Strategic Arms Control Technology	10.6	8.2	8.1	9.4	10.2	11.4	11.6	11.9	Continuing	
Project CB Conventional Arms Control Technology	10.6	10.2	9.5	8.1	8.1	8.3	8.4	8.7	Continuing	
Project CC Chemical Weapons Convention	11.1	7.2	9.5	10.8	10.7	12.9	13.2	13.4	Continuing	
Project CD Nuclear Arms Control Technology			54.3	21.9	14.8	10.4	10.4	10.5	Continuing	

A. Mission Description and Budget Item Justification - This Defense Special Weapons Agency (DSWA) program element covers implementation, compliance, monitoring and inspection, research development test and evaluation (RDT&E) for existing and emerging arms control treaties and agreements. The funded projects conform to requirements presented and approved by the Office of the Under Secretary of Defense (Acquisition & Technology) through the DoD Arms Control Requirements Assessment Board (RAB) process. RDT&E fulfills the technical requirements to implement, comply with, and monitor the following treaties/agreements: the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START); the Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II) (START III); the Anti-Ballistic Missile (ABM) Treaty, the Intermediate-Range Nuclear Forces (INF) Treaty; the Conventional Armed Forces in Europe (CFE) Treaty; the Open Skies (OS) Treaty; the Convention on Certain Conventional Weapons (CCW); the Chemical Weapons Convention (CWC); Comprehensive Test Ban Treaty (CTBT); the CFE Adaptation negotiations, the Anti-Personnel landmine negotiation; Presidential arms control initiatives; and other existing and emerging arms control related agreements, treaties, and initiatives, such as the United Nation's (UN) Transparency in Armaments; the

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Mission Description and Budget Item Justification (cont'd) - Organization on Security and Cooperation in Europe's Vienna Document 94 (VD-94) and the Global Exchange of Military Information (GEMI); Missile Technology Control Regime (MTCR) and the UN's Transparency in Armaments Agreement. It also provides confidence and transparency building capabilities to support DoD efforts concerning the Biological Weapons Convention (BWC), and conforms to the Administration's research and development priorities as related to both conventional arms control and weapons of mass destruction arms control, and disarmament. Arms control technologies are critical for enabling the U.S. to detect, monitor, verify and implement international arms control treaties and other agreements whose purpose is to prevent the proliferation and or reduction of nuclear, chemical, biological, and other advanced conventional weapons. Technical assessments are made to provide the basis for sound project development, to evaluate existing programs, and to provide the data required to make compliance judgments. Technology developments and system improvements projects are conducted to ensure that capabilities to monitor, comply with, and implement treaties and agreements are available when required.

The program includes development of equipment and procedures for data exchanges, on-site and aerial inspections and monitoring, and other confidence-building measures. In addition, assistance is provided to the Office of the Secretary of Defense by providing technical support in preparing for U.S. compliance with treaty obligations. For example, work includes an assessment to determine the susceptibility of a CTBT verification regime to evasive measures. Results will be used by the CTBT negotiators to develop a technically robust International Monitoring System (IMS). Hardware and procedures developed are often transitioned to the On-Site Inspection Agency (OSIA), or appropriate international inspectorate, as in the case of the CWC, for use in conducting treaty mandated inspection and monitoring and for implementing transparency and confidence-building regimes. Where applicable, RDT&E to meet requirements in one treaty area is applied to fulfill requirements in other areas to eliminate duplication of efforts. For example, development of remote monitoring capabilities for future START Treaty applications will also be evaluated for use to verify limits and activities in a future conventional arms control regime. The technologies and procedures developed in DSWA's arms control technology program provided an invaluable source of information on equipment and procedures that was extensively used by a DSWA team to support an interagency assessment of Long Term Monitoring of Iraq. The results of the effort and equipment developed in the DSWA program are being used to implement the provisions of United Nations Resolution 715.

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Mission Description and Budget Item Justification (cont'd) - DSWA's synergistic approach to fulfilling arms control requirements has been maximized in data management development. Arms control treaties require extensive exchanges of data concerning treaty accountable items, initial declarations, movements, etc., by signatory nations. DSWA has developed a treaty information management system, the Compliance Monitoring and Tracking System (CMTS), to accommodate these data exchanges and monitor U.S. compliance with treaty data reporting provisions. The CMTS provides treaty required data exchanges for INF, START, CFE and Confidence- and Security-Building Measures. A DoD system, Chemical Accountability Management Information Network (CAMIN), is under development to create the capability to transmit CWC required data. The Open Skies Notification System (OSNS) is being developed to support an anticipated FY1997 treaty entry-into-force (EIF). DSWA will transition operational control of the CMTS to OSIA in a phased approach starting with Data Management/Notification System (DMNS) and START Central Data System (SCDS) in FY1997. The Chemical Weapons Convention Information Management System (CWCIMS) was offered to the Preparatory Commission at the Hague by the United States Government (USG). The Commission accepted the U.S. offer and the system was delivered in late FY1996.

In FY 1998 and FY 1999, the architecture for presentation/execution of this program will change. Elimination and realignment of the Implementation and Compliance (I&C) category resulted in all negotiation, compliance, and implementation efforts moving to the Technical Assessments category. All hardware and software developments in I&C have moved to the Technology Development or Improvements category to reflect the actual nature of the effort.

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Project CA - Strategic Arms Control Technology - This project consists of research development test and evaluation (RDT&E) activities required to provide the capabilities needed to conduct monitoring, inspections, and data exchanges under the Strategic Arms Reduction Treaty (START), START II, START III, Missile Technology Control Regime (MTCR), Safeguards, Transparency and Irreversibility (STI) Agreement, Anti-Ballistic Missile (ABM) Treaty, and the Intermediate-Range Nuclear Forces (INF) Treaty. It also assists the United States Government (USG) and industry in compliance with the treaties and development of technology to meet requirements of future strategic arms control agreements. The projects conform to requirements presented and approved by the Office of the Under Secretary of Defense (Acquisition & Technology), (OUSD(A&T)), through the DoD Arms Control Requirements Assessment Board (RAB) process. The START Central Data System (SCDS), as part of the Compliance Monitoring and Tracking System (CMTS), enables the U.S. to generate treaty-required notifications, perform treaty compliance assessments, and transmit notifications to treaty states. The START II Treaty, signed in January 1993, requires inspections of converted SS-18 silos and authorizes additional re-entry vehicle on-site inspections of Intercontinental Ballistic Missiles (ICBMs) installed in the converted silos. It also introduces new rules for counting strategic forces that complicate START reporting. Tools developed by this program will enable the USG to effectively exercise treaty inspection rights and monitor compliance and reporting. Technology development efforts are planned to support anticipated future treaty requirements in the most non-intrusive and cost-effective manner. Future strategic arms control regimes may consider non-deployed missiles and warheads in all phases, to include conversion and/or elimination, and would require the development of new procedures and equipment to accomplish the monitoring task. The primary focus of the efforts is on more effective methods of measuring characteristic Treaty Limited Item (TLI) signatures with technologies such as gravity gradiometry and providing monitoring/inspection capabilities to ultimately reduce cost and increase the flexibility of U.S. inspectors.

Overall RDT&E requirements and implementation timelines are dependent on the desired robustness and implementation schedule for the various components of the verification regime. RDT&E is being initiated now to ensure that monitoring and inspection systems are available at treaty entry into force (EIF) and that negotiators have the technical information to make informed decisions on key issues. This project descriptive plan supports the JCS Warfighting Capability of counterproliferation.

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Project CA - Strategic Arms Control Technology (cont'd) -

FY 1996 Accomplishments

Implementation and Compliance ($5.2M)

- Continued SCDS START development and testing with software release 4.3 to satisfy treaty requirements.
- Prepared to incorporate START II data reporting requirements into CMTS SCDS.
- Provided treaty compliance assessments and planning support to OUSD(A&T)/Arms Control Implementation & Compliance (ACI&C).
- Provided technical and engineering support to START Treaty Joint Compliance and Inspection Commissions (JCIC).
- Completed analysis of legal implications for START Special Access Visit (SAV) for government and industry.
- Initiated effort on tracking Radionuclide Atmospheric Plumes.
- Conducted impact analyses of proposed provisions for on-site activities and associated measures for CTBT for confidence-building.

Technical Assessments ($1.3M)

- Completed Technical On-Site Inspection (TOSI) closeout/transfer of control.
- Conducted ABM/Theater Missile Defense (TMD) interceptor technical assessment to identify modeling tools and model performance criteria.
- Conducted TLI detection, identification and tracking assessment.
- Continued assessments of proposed International Monitoring Systems for CTBT (via adversarial analysis methodology).
- Initiated strategic weapons and materials monitoring assessments to support post-START II requirements to monitor mobile delivery systems, non-deployed nuclear weapons systems and warhead inventories.

Improvements ($.8M)

- Continued development of a remote, unattended, corral monitoring system to supplement on-site inspections.

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Project CA - Strategic Arms Control Technology (cont'd) -

Technology Development ($3.3M)

Completed development of the Authenticated Tracking Monitoring and Tracking System.

Conducted Advanced Technology Development Program (Light-Weight Neutron Detector, Micro-power Impulse Radar, Underground Facility, Modeling, Raman Lidar, Multifunction Synthetic Aperture Radar and Object Pattern Recognition) with national laboratories and university research institutes.

Completed fabrication and factory test of an arms control verification gravity gradiometer in preparation for field trials in an outdoor environment.

Initiated gravity gradiometer modeling and simulation and independent assessment to support field trials.

FY 1997 Plans

Implementation and Compliance ($4.0M)

Complete CMTS SCDS documentation and transition system to the On Site Inspection Agency (OSIA).

Incorporate future START/START II follow-on treaties data exchange revisions into CMTS.

Provide treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.

Provide technical and engineering support to START Treaty commissions (JCIC/BIC).

Technical Assessments ($.3M)

Complete strategic weapons and materials monitoring assessment to support post-START II requirements to monitor mobile delivery systems, non-deployed nuclear weapons and delivery systems, and warhead inventories.

Technology Development ($3.9M)

Conduct and complete prototype gravity gradiometer system field trials and technical data package.

Conduct and complete gravity gradiometer modeling and simulation data verification analysis.

Initiate development of an Object Pattern Recognition prototype including motion detection.

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Project CA - Strategic Arms Control Technology (cont'd) -

Complete Corral Monitoring System (CMS) prototype and system documentation.
Initiate modification/enhancement/development of ABM/TMD computer analysis models.
Initiate system concept, design concept, and prototype technology development for detection, identification, and tracking of ABM treaty related TLI's.
Initiate "warhead fingerprinting" capability analysis of Multiplicity Fingerprint Detector, Rapid Identification System, and Nuclear Weapon Identification System technologies at national laboratories.
Initiate new approaches for Wide Area Tracking System (WATS) to detect nuclear weapons and dispersal devices transported on land.

FY 1998 Plans

Technical Assessments ($2.4M)

Provide treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.
Provide technical and engineering support to START Treaty commissions (JCIC/BIC).
Continue research on technologies to support post-START II requirements to monitor mobile delivery systems, non-deployed nuclear weapons and delivery systems, and warhead inventories.

Technology Development ($5.7M)

Incorporate post-START II software modifications to support CMTS interface with international data exchange formatting.
Complete Object Pattern Recognition prototype development.
Continue modification/enhancement/development of ABM/TMD computer analysis models.
Initiate Emerging Technologies investigations for future treaty requirements through industry, academia and national laboratories.
Initiate Authenticated Tracking and Monitoring System (ATMS) proof of concept demonstration an a Russian MINATOM railcar.

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Project CA - Strategic Arms Control Technology (cont'd) -

Continue system design and prototype technology development for detection, identification, and tracking of ABM treaty related TLIs.

Complete WATS to detect nuclear weapons and dispersal devices transported on land.

Continue Advanced Technology Development program with national laboratories and university research institutions.

Demonstrate CMS capabilities in an operational scenario.

Select promising "Fingerprinting technologies" for vulnerability analysis and further development.

FY 1999 Plans

Technical Assessments ($2.5M)

Provide treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.

Provide technical and engineering support to START Treaty commissions (JCIC/BIC).

Continue research on technologies to support post-START II requirements to monitor mobile delivery systems, non-deployed nuclear weapons and delivery systems, and warhead inventories.

Technology Development ($6.9M)

Incorporate provisions for post-START II. nuclear warhead and non-deployed TLI data incorporation (and hardware improvements) into CMTS.

Initiate remote monitoring prototype development systems.

Continue Object Pattern Recognition prototype development.

Continue modification/enhancement/development of ABM/TMD computer analysis models.

Continue system design and prototype technology development for detection, identification, and tracking of ABM treaty related TLIs.

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Project CA - Strategic Arms Control Technology (cont'd) -

Continue Advanced Technology Development program with national laboratories and University Research institutions.

Initiate Arms Control Verification Treaty Information System development.

Demonstrate proof of concept for selected "fingerprinting technologies" to support START II follow-on.

Provide follow-on support to WATS O'Conus installation.

Initiate Emerging Technology investigations for future treaty requirements through industry, academia and national laboratories.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

CB - Conventional Arms Control Technology - This project covers Research Development Test & Evaluation (RDT&E) required to: meet on-site and aerial monitoring, transparency, confidence-building, and peacekeeping monitoring technology requirements for existing, emerging, and potential treaties, agreements, and initiatives related to Conventional Arms Control (CAC) and compliance monitoring of peacekeeping regimes; ensure compliance; implement agreements; and provide technical support to negotiations. The funded projects conform to requirements presented and approved by the Office of the Under Secretary of Defense (Acquisition & Technology) through the DoD Arms Control Requirements Assessment Board (RAB) process and described in the Office of the Secretary of Defense (OSD)/Arms Control Implementation and Compliance (ACI&C) Memorandum, dated 12 April 1996, Subject: Guidance and Summary Requirements and ACI&C memorandum, also dated 12 April 1996, Subject: Long Term Planning Guidance. Relevant agreements which require continuing RDT&E support include: (1) the Conventional Armed Forces in Europe (CFE) Treaty, (2) Open Skies (OS) Treaty (projected Entry-Into-Force FY1997); (3) the Organization for Security and Cooperation in Europe (OSCE) Confidence- and Security-Building Measures (CSBMs) contained in Vienna Document 94 (VD-94) to include the Global Exchange of Military Information (GEMI) signed in December 1994 and the OSCE agreements contained in the Lisbon Document of 5 December 1996; (4) the United Nation's Transparency in Armaments (TIA) Agreement established in 1993; and the April 1996 Wassenaar Arrangement on Export Controls for Conventional Arms and Dual Use Goods and Technologies. The RDT&E needs for emerging treaty and agreement areas include: (1) the OSCE Review Conferences, with its OSCE Forum for Security Cooperation (2) the CFE Review Conferences and CFE Adaptation negotiations; (3) regional/sub-regional arms control and peacekeeping to include RDT&E arms control implementation support for the Dayton Agreement and conventional arms proliferation issues; (4) enhancing CSBMs, and (5) the Convention on Certain Conventional Weapons (CCW) and the Anti-Personnel Landmine negotiating the Conference on Disarmament. This project also supports U.S. implementation of and compliance with the decisions of consultative commissions, arms control negotiating and coordinating organizations including: the CFE's Joint Consultative Group; the OSCE's Forum for Security Cooperation; NATO's Verification Coordinating Committee and the High Level Task Force; the Conference on Disarmament; the Multilateral Working Group on Arms Control and Regional Security; the Wassenaar Arrangement; and the Open Skies Consultative Commission.

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CB - Conventional Arms Control Technology (cont'd) - Decisions of all of the negotiating fora and coordinating organizations listed above have resulted and will continue to result in new or revised implementation and compliance requirements to which the U.S. must abide. Further, they all require technical advice and assessments to support U.S. positions and evaluate proposals to ensure DoD equities are protected. New treaty areas not previously addressed include the APL and expanded regional security and peacekeeping monitoring applications. This project descriptive plan supports the JCS Warfighting Capability of counterproliferation.

FY 1996 Accomplishments

Implementation and Compliance ($10.0M)

Continued OSMAPS transition to users, provided operational support and independent validation and verification.

Flight tested Synthetic Aperture Radar Open Skies (SAROS) in Open Skies aircraft.

Delivered SAROS system 2 to U.S. Air Force.

Delivered portable Synthetic Aperture Radar (SAR) image processing systems.

Provided treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.

Determined portable/aerial standoff gamma/x-ray detection capabilities.

At the request of the U.S. Mission to NATO, developed and presented an analysis on the application of technologies to arms control and confidence building implementation and compliance to the NATO Verification Coordinating Committee Seminar with Cooperation Partners.

Provided technical support to Open Skies Consultative Commission (OSCC), the FY1996 APL negotiations, the Joint Consultative Group, the OSCE's Forum for Security Cooperation, and prepared to support the OSCE Review Conference.

Supported delivered prototypes, e.g., SAROS, SAR Processing System (SARPRO), Transportable Operational Planning System (TOPS), and Data Annotation, Recording, and Mapping System (DARMS).

Developed and delivered the Data Management and Reporting System (DMRS) to meet U.S. TIA and GEMI data reporting obligations.

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CB - Conventional Arms Control Technology (cont'd) -

Integrated DMRS in Compliance Monitoring and Tracking System (CMTS).
Provided technical support for standardization of digital data exchange formats for Open Skies data requirements.
Developed U.S. portion of CFE Notification Front End System (NOFES) to comply with international data structures for Nuclear Risk Reduction Center (NRRC) data transmission.
Modified the CMTS DMNS to comply with the newly released (VD-94) CSBM data structures and negotiations on a follow-on international CSBM-NOFES.
Provided support to an international effort to define and develop an Open Skies Data Bank of information.
Completed work as the major leader in an international team to develop and test an Open Skies NOFES system.
Continued analysis of new classes of sensors to support aerial observation regimes.

Technical Assessments ($.5M)

Assessed verification technologies required for emerging or evolving treaty areas such as the CCW-APL negotiation.
Conducted tests of Infra-red targets and flight tests of the Infra-red Line Scanner (AAD-5) for Open Skies implementation and compliance.

Improvements ($.1M)

Completed delivery of an automated Treaty Limited Equipment (TLE) identification training aids system to OSIA.
Delivered DMNS Version 4.3 to meet new U.S. CFE and CSBM (VD-94) obligations and continued independent validation and verification of DMNS software.

FY 1997 Plans

Implementation and Compliance ($8.5M)

Continue delivery of all baseline OSMAPS capabilities, ensure the system complies with all changes to the Open Skies regime and initiate planned modifications.
Continue baseline OSMAPS independent validation and verification.

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CB - Conventional Arms Control Technology (cont'd) -

Provide treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.
Continue support of delivered prototypes, e.g., SAR, SARPRO, TOPS, DARMS, and DMRS.
Provide technical support for SAROS data standardization and implementation of fixed site SAR processor.
Apply a standard digital format to the Open Skies Infra-Red Line Scanner and Video data.
Initiate development of a standard digital format for Open Skies digital sensors data.
Continue assessment of candidate replacement sensor for Open Skies an other aerial monitoring regimes.
Complete development of CFE and CSBM (VD-94) Notification Front End System (NOFES) and integrate it into DMNS.
Initiate update of CMTS to comply with decisions of the OSCE Forum for Security Cooperation and the CFE Review Conference.
Transition operational control of DMNS to OSIA.
Deliver CMTS Version 4.4 and complete CMTS documentation.
Conduct concurrent testing of CMTS compliance updates.
Complete work on an international effort to define and develop an Open Skies Data Bank of information.
Complete and deploy updated CMTS OSNS software to ensure full compliance with Open Skies NOFES formats and concepts.
Continue analyses of new classes of sensors to support aerial observation regimes.

Technical Assessments ($.8M)

Demonstrate proof of concept for selected "fingerprinting technologies" to support START II follow-on.

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CB - Conventional Arms Control Technology (cont'd) -

Provide technical support (to include quick turn around and longer term analyses) to the U.S. delegations to the OSCC, the Joint Consultative Group, the CFE Adaptation negotiation, the Forum for Security Cooperation, the APL negotiation, and regional arms control negotiations and prepare to support the FY1998 OSCE Review Conference.

Test and evaluate a micropower impulse radar for applicability to the implementation of the future or follow-on APL agreement.

Conduct assessments of technologies to support on-going or emerging conventional arms control negotiations (e.g., CCW-APL and CFE Adaptation negotiations.

Conduct technical assessments of regional arms control needs for Central and South America and South Asia.

Technology Development ($.9M)

Develop technologies and prototypes, including the required replacement of the current U.S. OS Infra-Red Line Scanner to ensure U.S. compliance with emerging or evolving arms control requirements.

FY 1998 Plans

Technical Assessments ($5.2M)

Provide technical support (to include quick turn around and longer term analyses) to the U.S. delegations to the OSCC, the Joint Consultative Group and CFE Adaptation, the Forum for Security Cooperation, the APL negotiation, and regional arms control negotiations.

Provide treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.

Conduct assessments of technologies to support on-going or emerging conventional arms control negotiations and peacekeeping requirements for monitoring and complete assessment of APL agreements needs.

Complete technical assessments of regional arms control needs for Central and South America and South Asia.

Continue analysis of new classes of sensors for modification of the Open Skies regime and other aerial observation regimes.

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CB - Conventional Arms Control Technology (cont'd) -

Initiate assessment of the utility of database management and analytical tools for interface with U.S. and international arms control databases.

Document and maintain prototypes to support current and future conventional arms control agreements.

Assess the utility and cost effectiveness of a Universal Treaty Inspection Planning and Execution Tool.

Technology Development ($4.3M)

Continue development of a standard digital format for Open Skies digital sensors data.

Complete planned OSMAPS baseline updates, modifications and independent validation and verification of software.

Complete standardization of Infra-Red Line Scanner and Video data formats.

Initiate prototype development of an inspection planning tool for operational evaluation.

Complete technical support for SAROS.

Continue to develop technologies and prototypes to meet U.S. implementation and compliance requirements.

Initiate development of analytical and database management tools for CMTS.

Conduct concurrent independent validation and verification of the development of CMTS software.

Continue development of replacements for the Open Skies Infra-Red Line Scanner and Video sensors.

FY 1999 Plans

Technical Assessments ($4.3M)

Provide technical support (to include quick turn around and longer term analyses) to the U.S. arms control delegations to the NATO, OSCC, the Joint Consultative Group, the Forum for Security Cooperation, the APL negotiation, and regional arms control negotiations.

Provide treaty compliance assessments and planning support to OUSD(A&T)/ACI&C.

Continue analysis of new classes of sensors for modification of the Open Skies regime and other aerial observation regimes.

Conduct assessments of technologies to support on-going or emerging conventional arms control negotiations.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

CB - Conventional Arms Control Technology (cont'd) -

Conduct technical assessments of regional arms control needs.

Document and maintain prototypes to support current and future conventional arms control agreements.

Technology Development ($3.8M)

Continue to develop compliance block updates for OSMAPS capabilities and perform independent validation and verification.

Initiate the development of an extended digital processor to process digital sensor data to ensure treaty required resolution of foreign sensors used in overflights of the U.S.

Initiate CMTS compliance updates and integration of APL agreement data requirements.

Begin long range development of follow-on technologies to support implementation and compliance with the future APL agreements.

Continue development of database management and analytical tools for CMTS.

Complete development of a prototype universal inspection planning tool.

Continue CMTS independent verification and validation to ensure efficient development of CMTS software.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

Project CC - Chemical/Biological Arms Control Technology - This project funds research, development, test and evaluation (RDT&E) necessary to meet DoD requirements for the implementation of chemical and biological arms control agreements and technical analyses to support and protect DoD equities in the negotiation and review of arms control agreements. The primary focus in this project has been and continues to be preparing for multinational verification of, and U.S. compliance with, the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction (CWC). States Parties to the CWC undertake a continuing treaty obligation to ensure that the Organization for the Prohibition of Chemical Weapons (OPCW) has the technology to verify compliance with the CWC through the implementation of on-site inspection protocols. This project ensures that technology introduced into the international inspection regime increases the level of confidence in the ability of the inspection process to verify compliance while at the same time minimizing intrusiveness to protect DoD equities. In short, this project provides the U.S. contribution to assist the OPCW in implementing a comprehensive, technically sound inspection program. Technologies developed to support the CWC synergistically support both the U.S.-Russian chemical weapons Bilateral Destruction Agreement and international peacekeeping efforts such as the UN Special Commission on Iraq. In the area of biological weapons arms control, this project provides for technical assessments to assist DoD and U.S. policy makers and negotiators in their efforts to strengthen the Biological Weapons Convention (BWC). These assessments are essential to DoD and U.S. negotiators in the multilateral arena, both in preparation for and subsequent to the BWC Review Conferences (RevCons) held every five years. The RevCons (latest RevCon held December 1996) have the goal of developing measures to strengthen compliance with the BWC; this project supports U.S. policy makers by analyzing and prioritizing proposed confidence-building measures. RDT&E following the RevCons will be essential in continuing this process and ensuring confidence-building is balanced against the need to protect legitimate DoD/U.S. equities. The project also provides technical assessments of transparency measures that are being reviewed for inclusion in a series of planned exchange visits among the U.S./UK/Russia, in accordance with the 1992 Trilateral Statement; the goal is to resolve ambiguities in compliance with the BWC as well as to promote openness on legitimate military BW defense programs.

This project descriptive plan supports the JCS Joint Warfighting Capability of counterproliferation.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

Project CC - Chemical/Biological Arms Control Technology (cont'd) -
FY 1996 Accomplishments

Implementation and Compliance ($7.4M)

Continued development and documentation for a Chemical Accountability Management Information Network (CAMIN).

Deployed an interim operational capability to CAMIN designated sites and migrated all CW stockpile information to this database.

Delivered Chemical Weapons Convention Information Management System (CWCIMS) to the Organization for the Prohibition of Chemical Weapons (OPCW).

Continued test and evaluation of recommended inspection equipment and procedures.

Continued development and improvement of on-site analytical methods, to include an interim on-site method for the Gas Chromatograph/Mass Spectrometer (GC/MS) to analyze scheduled compounds in the CWC and initiating a U.S./Finnish Joint project to improve methods for sample extraction and preparation.

Completed testing of Series 1 Modular Laboratory.

Completed development of initial Non-Destructive Evaluation (NDE) systems.

Provided technical support to OSD (Policy) and U.S. Delegation to the Preparatory Commission (PrepCom) in developing criteria, recommendations, procedures, and guidelines to establish the U.S. position on and responses to issues raised concerning verification/implementation provisions of the CWC.

Developed analytical data software for CWC-specific equipment.

Provided technical and treaty support to OSD (Policy) on issues related to strengthening the BWC, including preparation and conduct of National Trial Visits, support to activities preparing for the 1996 Review Conference (RevCon), and support to the negotiation process.

Provided technical support to OSD (Policy) on issues related to the Joint Statement of U.S./UK/Russia on Biological Weapons.

Assessed historical U.S. offensive biological weapons information for inclusion in the biological weapons database.

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Project CC - Chemical/Biological Arms Control Technology (cont'd) -

Technical Assessments (2.2M)

Continued validation of on-site analytical methods, evaluated new technologies, and evaluated portable analytical equipment.

Conducted technical peer review process of analytical methods and other papers and issues pertaining to sampling and analysis.

Improvements ($.5M)

Initiated improved algorithms in Acoustic Resonance Spectrometer (ARS) NDE system.

Technology Development ($1.0M)

Continued development of Swept Frequency Acoustic Interferometry (SFAI) NDE technology.

Adapted more advanced state-of-the-art spectroscopy technologies that can be used in instruments during on-site sampling and analysis.

Initiated commercialization of the ARS NDE system.

FY 1997 Plans

Implementation and Compliance ($3.8M)

Deploy CAMIN system and increased capabilities towards the final full operational capability (FOC).

Complete validation of Full Operational Capability (FOC) for CAMIN.

Transition operational control of CAMIN to USACBDCOM.

Conduct test and evaluation of new commercial-off-the-shelf (COTS) equipment for potential inclusion in the modular lab.

Provide training and develop documentation on CAMIN.

Support OPCW inspection equipment/procedures test & evaluation.

Continue development of on-site sampling and analytical methods.

Continue technical support to OSD (Policy) to establish the U.S. position on and responses to issues raised concerning verification/implementation provisions of the CWC.

Conduct protocol/vulnerability assessment of DoD equities for BWC RevCon proposals for improved compliance.

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Project CC - Chemical/Biological Arms Control Technology (cont'd) -

Provide technical support to activities preparing for the 1996 BWC RevCon.

Update and maintain BW history database.

Continue technical support to OSD (Policy) on issues related to the Joint Statement of US/UK/Russia on Biological Weapons.

Technical Assessments ($.9M)

Continue validation of on-site sampling and analytical methods developed in DSWA programs.

Improvements ($1.8M)

Develop improved decision algorithm for the ARS system to provide greater confidence in identification of unknown chemical munitions.

Develop Quality Assurance/Quality Control protocols for analytical data software.

Technology Development ($.6M)

Initiate a comprehensive program for filling OPCW-identified on-site inspection technology gaps.

Continue to adapt more advanced spectroscopy technologies that can be used in instruments during on-site sampling and analysis.

Adapt innovative sensing technologies for potential CWC verification applications.

Initiate commercialization of SFAI.

Initiate engineering development of the hand-held gas chromatograph chemical detector.

Initiate project to integrate sampling and analysis components into an on-site laboratory system.

FY 1998 Plans

Technical Assessments ($5.1M)

Continue development and evaluation of on-site sampling and analytical methods.

Continue technical support to CWC Policy Interagency Working Group to establish the U.S. position on and responses to issues raised concerning verification/implementation provisions of the CWC.

Conduct assessments of commercial-off-the-shelf (COTS) equipment for potential use in the On-Site Lab.

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Project CC - Chemical/Biological Arms Control Technology (cont'd) -

Continue protocol vulnerability assessments of DoD equities for BWC RevCon proposals for improved compliance.
Provide technical support to BW Trilateral Statement Negotiations and Visits.
Provide technical assessments in preparation for BWC National Trial and Trilateral exchange visits.
Conduct technical lessons learned assessments following BWC National Trial and Trilateral Exchange Visits.
Expand and maintain BW History and Database.

Technology Development ($4.4M)

Conduct technical peer review process of analytical methods and other papers and issues pertaining to sampling and analysis.
Evaluate emerging sampling, sample preparation, and analytical technologies to meet OPCW-identified technology gaps.
Continue to adapt more advanced spectroscopy technologies to improve on-site sampling and analysis.
Continue engineering development of the hand-held chemical detector.
Support OPCW inspection equipment/procedures test & evaluation.
Continue developing analytical data software for CWC-specific equipment.
Initiate Phase II Analytical Software development.
Support commercialization and provide improved sensitivities to flow injection trace gas analyzer for lewisite monitoring.
Support commercialization and provide improved algorithms in the SFAI.

FY 1999 Plans

Technical Assessments ($5.6M)

Continue support to Interagency for BWC RevCon.
Provide support to BW Trilateral Visits.
Continue technical support to CWC Policy Interagency Working Group to establish the U.S. position on and responses to issues raised concerning verification/implementation provisions of the CWC.
Provide technical assessment of BW protocols and DoD vulnerabilities.
Continue validation of on-site sampling and analytical methods developed in DSWA programs.

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Project CC - Chemical/Biological Arms Control Technology (cont'd) -

Expand and maintain BW History and Database.

Technology Development ($4.5M)

Evaluate emerging sampling, sample preparation, and analytical technologies as they become available.
Complete development of technologies and equipment to fill OPCW-identified on-site inspection technology gaps.
Continue to adapt more advanced spectroscopy technologies to improve on-site sampling and analysis.
Develop innovative sensing technologies for potential CWC verification applications.
Support OPCW inspection equipment/procedures test & evaluation.
Complete engineering development of the hand-held chemical detector.
Continue engineering development of the On-Site Laboratory.

Improvements ($.7M)

Improve chemical agent characterization and sensitivities of non-destructive evaluation technologies.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

Project CD - Nuclear Arms Control Technology - This project consists of Research Development Test and Evaluation (RDT&E) activities required to provide a comprehensive and integrated DoD research and development program to support preparation, implementation, compliance, and verification of the CTBT. This project is consistent with the direction given December 1995 by the Deputy Secretary of Defense (Implementation of the Comprehensive Test Ban Treaty), May 1996 by the Under Secretary of Defense for Acquisition and Technology (Revised Arms Control Treaties and Agreements Planning Assumptions) and the August 1996 Program Decision Memorandum 1 that describes funding for CTBT safeguards support and funding required for CTBT entry into force.

The CTBT arms control activities are the following:

U.S. CTBT International Monitoring System (IMS) Sensors-- The Treaty will require the U.S. to contribute 40 stations to the IMS . This funding supports R&D, implementation, operations, and maintenance for the 24 stations not covered under funding from other sources.

CTBT International Data Center (IDC)-- In the CTBT negotiations, the U.S. committed to develop, prototype and transition to the CTBT international organization an International Data Center which would have the capability to acquire, archive, process and analyze data from approximately 320 sensor stations positioned around the globe, and to disseminate raw data and products to all States Parties. The IDC will serve as the central data processing hub for the Treaty verification regime, and will be located in Vienna, Austria, at the headquarters of the CTBT international organization. The IDC will be critical for supporting U.S. objectives for CTBT compliance and global monioring.

U.S. CTBT Interface-- The U.S. must develop, integrate, test, evaluate, operate and maintain an interface to the international CTBT organization to support routing of data between U.S. facilities and the IDC; to support the U.S. National Authority in the execution of Treaty-related exchanges and decisions; and to function as a backup data archive, and research analysis center. This funding supports initial prototyping of the interface.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE **February 1997**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, Defense-Wide/Advanced Technology Development - BA3**	R-1 ITEM NOMENCLATURE **Verification Technology Demonstration; 0603711H**

Project CD - Nuclear Arms Control Technology (cont'd) -
Monitoring Safeguards RDT&E-- The U.S. agreement to a zero-yield CTBT is contingent upon the capability to independently monitor nuclear activities worldwide. Understanding, processing and analyzing monitoring data and providing actionable information based on these data and products will require significant basic research and exploratory development in the areas of seismic, hydroacoustic, infrasound, and radionuclide monitoring. This RDT&E work has no parallel in other arms control treaties; this Treaty requires an understanding of geophysical and physical phenomena that have not yet been studied or understood for any other purpose. The objectives of the R&D program are to enhance monitoring capabilities to meet current CTBT standards at decreasing cost over time.

Implementation/Compliance Support-- Measures are identified within the Treaty language to minimize the number of frivolous OSI requests and to maximize the early resolution of events of concern. A regular procedure for reporting large conventional explosions so that the signals detected do not raise suspicions will greatly reduce the number of OSI requests, and consequently the cost of participating in the Treaty. When events occur which cannot be resolved through confidence-building measures or consultation and clarification, U.S. decisionmakers must have the ability to react appropriately and in a timely fashion for both offensive situations (where the U.S. suspects a Treaty violation), and defensive situations (where the U.S. is challenged by another State Party over an ambiguous event). This funding supports initial prototyping of the decision systems and databases needed to address these issues.

FY 1998 Plans
U.S. CTBT IMS Sensors ($8.5M)
- Replace Wake Island hydroacoustic station.
- Procure and install infrasound stations.
- Install aerosol samplers at four radionuclide stations.
- Install required seismic stations and provide needed upgrades to existing seismic stations.

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Project CD - Nuclear Arms Control Technology (cont'd) -

CTBT IDC ($32.5M)

Integrate proven seismic, hydroacoustic, infrasound, and radionuclide data exploitation techniques into the automated and interactive systems.

Deliver limited IDC components to support initial operation and operational testing in Vienna.

Operate in parallel the interim and provisional IDCs.

Draft software manuals.

U.S. CTBT Interface ($3.8M)

Begin tests with PrepCom to demonstrate initial operating capability and to support data communication and backup data archive and analysis capability.

Monitoring Safeguards RDT&E ($6.0M)

Derive new methods for enhancing detection, location, screening and identification for seismic, oceanic and atmospheric events.

Develop computerized, rapidly running techniques/algorithms to detect, locate, and identify optical signals from operational systems.

Develop improved understanding of source phenomenology and propagation for events near detection threshold.

Implementation/Compliance Support ($3.5M)

Develop the types of information to be presented to policy/decision makers.

Initiate database development for treaty-required information exchanges.

Conduct implementation and compliance assessments on selected CTBT issues.

FY 1999 Plans

U.S. CTBT IMS Sensors ($1.3M)

All stations for which the U.S. is responsible to be operational and supplying data to the IDC.

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Project CD - Nuclear Arms Control Technology (cont'd) -

CTBT IDC ($10.1M)

Delivery of IDC to CTBT international organization.

U.S. CTBT Interface ($2.7M)

Test U.S. Interface in conjunction with the CTBT IDC acceptance test.

Monitoring Safeguards RDT&E ($5.8M)

Calibrate new methods for enhancing detection, location, screening and identification of seismic, oceanic, and atmospheric events.

Evolve new methods for multi-technique data fusion and calibrate visualization.

Continued studies on source phenomenology and propagation for events near the detection threshold and near environmental boundaries.

Implementation and Compliance ($2.0M)

Assemble information for policy/decision makers in a coherent format.

Finalize database for treaty-required information exchanges.

Continue implementation and compliance assessments on selected CTBT issues.

Continue assessing alternative positions for the U.S. to present at the CTBT Preparatory Commission.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

B. Program Change Summary

	FY1996	FY1997	FY1998	FY1999
Previous President's Budget	32.5	26.2	29.3	30.5
Current President's Budget	32.3	25.6	83.3	50.2

Change Summary Explanation:

The Nuclear Treaty Area has been added to the Program Element beginning in FY98 as directed by Program Decision Memorandum 1 from the Deputy, Secretary of Defense. However, the decision required a $2M per year reduction in FY98 and FY99 seriously impacting execution in the Strategic, Conventional and Chemical/Biological areas of the Arms Control Technology Program. In the Strategic Arms Control area, capabilities to monitor a START II follow-on agreement and support emerging data exchanges requirements will not be developed. In the Conventional Arms Control, area preparation for meeting anti-personnel landmine ban database requirements must be delayed for one year, thus placing the Department of Defense in the position of not supporting the President's initiative to accelerate conclusion of the ban. In the Chemical Arms Control area, the reduction necessitates delaying development of advanced munitions sampling capabilities that would significantly reduce inspectors exposed to lethal chemical agents.

C. Other Program Funding Summary. None.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE Verification Technology Demonstration; 0603711H

D. Schedule Profile

	FY1996				FY1997				FY1998				FY1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project CA (Strategic Arms Control Technology)																
Engineering Milestones																
Complete prototype field testing of Arms Control Verification Gravity Gradiometer (ACVGG)								X								
Complete Technical On-Site Inspection closeout/transfer of control	X															
Complete Anti-Ballistic Missile/Theater Missile Defense Interceptor Technical Assessment					X											
Complete Strategic Weapons and Nuclear Materials verification assessment								X								
Complete Treaty Limited Item Detection, Identification and Tracking Technical Assessment					X											
Other Program Events																
START Central Data System (SCDS) Initial Operational Capability for START II						X										
SCDS documentation completed and system transitioned to OSIA						X										
Demonstrate prototype Object Pattern Recognition technology								X								
Demonstrate improved portable neutron detector								X								

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D. Schedule Profile (cont'd)

	FY1996				FY1997				FY1998				FY1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project CA (Strategic Arms Control Technology)																
Other Program Event (cont'd)																
Demonstrate Wide Area Tracking System for detecting nuclear weapons in ground transit							X									
Demonstrate Automated Tracking Management System performance on Russian Railcar							X									
Demonstrate Corral Monitoring System prototype development							X									
Completed abaktses for on-site activities and confidence building measures for CTBT							X									
Project CB (Conventional Arms Control																
T&E Milestones																
Complete flight testing of Synthetic Aperture Open Skies and Data Annotation Recording and Mapping System							X									
Other Program Events																
Deliver Open Skies Management and Planning System Blocks 2A, 3 and 4					X		X				X					

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D. Schedule Profile (cont'd)

	FY1996				FY1997				FY1998				FY1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project CB (Conventional Arms Control)																
Other Program Event (cont'd)																
Deliver upgraded Open Skies Telephone System to OSIA						X										
Deliver augmented climatological and ground feature models to OSIA							X									
Deliver notifications tool to OSIA for Conventional Armed Forces in Europe/Confidence- and Security-Building Measure notifications			X													
Deliver automated collection and reporting system to meet the Transparency in Armaments and Global Exchange of Military Information reporting requirements to the Joint Staff	X															
Initiate development of the extended digital processor											X					
Initiate development of inspection planning tools								X								
Engineering Milestones																
Complete standard digital format							X									

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APPROPRIATION/BUDGET ACTIVITY: RDT&E, Defense-Wide/Advanced Technology Development - BA3	R-1 ITEM NOMENCLATURE: Verification Technology Demonstration; 0603711H

D. Schedule Profile (cont'd)

	FY1996				FY1997				FY1998				FY1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project CC (Chemical Weapons Convention)																
Engineering Milestones																
Complete Lewisite detector component fabrication					X											
Complete field prototype Lewisite detector							X									
Complete production prototype Acoustic Resonance Spectrometer (ARS)					X											
Complete lab prototype Swept Frequency Acoustic Interferometry (SFAI)					X											
Complete field prototype Swept Frequency Resonance Spectrometry (SFAI)					X											
Complete production prototype SFAI											X					
Complete field prototype Supercritical Fluid Extractor (SFE)					X											
Complete production prototype SFE											X					
On-Site laboratory system integration										X						
On-Site laboratory prototype development											X					

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D. Schedule Profile (cont'd)

	FY1996				FY1997				FY1998				FY1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project CC (Chemical Weapons Convention)																
Engineering Milestones (cont'd)																
Develop handheld detector prototype											X					
T&E Milestones																
Conduct T&E of field prototype Lewisite detector							X									
Conduct T&E of production prototype ARS						X										
Conduct T&E of field prototype SFAI						X										
Complete T&E of SFE							X									
Complete baseline T&E of Series I Modular Lab										X						
Conduct T&E of On-Site laboratory																X
Conduct T&E prototype handheld detector														X		
Other Program Events																
Complete technical support in preparation of Biological Weapons Convention Review Conference					X											
Complete development of Chemical Weapons Convention Information Management System (CWCIMS)		X														

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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D. Schedule Profile (cont'd)

	FY1996 1 2 3 4	FY1997 1 2 3 4	FY1998 1 2 3 4	FY1999 1 2 3 4
Project CC (Chemical Weapons Convention)				
Other Program Events				
Deliver CWCIMS to Organization for the Prohibition of Chemical Weapons	X			
Complete development of Chemical Accountability Management Information Network		X		

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D. Schedule Profile (cont'd)

	FY1998 1 2 3 4	FY1999 1 2 3 4
Project CD (Nuclear Arms Control Technology)		
Engineering Milestones		
Integrate proven seismic, hydroacoustic, infrasound, and radionuclide data exploitation techniques into the automated and interactive systems	X	
Derive methods for enhancing detection, location, screening, and identification for seismic, oceanic, and atmospheric events	X	
Develop improved understanding of source phenomenology and propagation for events near detection threshold	X	
Develop techniques/algorithms to detect, locate, and to identify optical signals from operational systems	X	
Deliver limited IDC components to support initial, partial operation in Vienna	X	
Calibrate new methods for enhancing detection, location, screening, and identification of seismic, oceanic, and atmospheric events		X
Evolve new methods for multi-technique data fusion and visualization		X
Continued studies on source phenomenology and propagation for events near the detection threshold and near environmental boundaries		X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE **February 1997**
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D. Schedule Profile (cont'd)

	FY1998				FY1999			
	1	2	3	4	1	2	3	4
Project CD (Nuclear Arms Control Technology)								
T&E Milestones								
Operate in parallel the interim and provisional IDCs			X					
Begin tests with PrepCom to display initial operation capability				X				
Replace Wake Island hydroacoustic station				X				
Procure and install infrasound stations				X				
Install aerosol samplers at four radionuclide stations				X				
Install required seismic stations and provide needed upgrades to existing seismic stations	X							
Deliver of IDC to CTBT international organization and acceptance testing						X		
All U.S. stations operational and supplying data to the IDC						X		
Test interface in conjunction with CTBT IDC acceptance test								X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE **February 1997**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, Defense-Wide/Advanced Technology Development - BA3**	R-1 ITEM NOMENCLATURE **Verification Technology Demonstration; 0603711H**

D. Schedule Profile (cont'd)

	FY1998				FY1999			
	1	2	3	4	1	2	3	4
Project CD (Nuclear Arms Control Technology)								
Other Program Events								
Develop the types of information to be presented to policy/decision makers				X				
Initiate database development for treaty-required information exchanges				X				
Conduct implementation and compliance assessments on selected CTBT issues				X				
Draft software manuals			X					
Assemble information for decision makers in a coherent format								X
Finalize database for treaty-required information exchanges								X
Continue assessing alternative U.S. positions for the PrepCom								X
Continue implementation and compliance assessments on selected CTBT issues								X

THE JOINT STAFF

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Joint Chiefs of Staff
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1996	FY 1997	FY 1998	FY 1999	Sec
85	0208043J	ISLAND SUN	4	1,356	1,216			U
		Demonstration and Validation		1,356	1,216			
101	0605126J	Joint Theater Air and Missile Defense Organizatio	6			23,100	17,850	U
		RDT&E Management Support				23,100	17,850	
115	0208052J	Joint Analytical Model Improvement Program	7		1,000	2,186	1,883	U
126	0303149J	C4I for the Warrior	7	171	2,554	5,554	3,215	U
148	0902298J	Management Headquarters (OJCS)	7	3,999	10,012	10,035	9,806	U
149	0902740J	Joint Simulation System	7		21,054	24,321	25,179	U
150	1001017J	Partnership for Peace Activities	7			1,993	1,991	U
		Operational Systems Development		4,170	34,620	44,089	42,074	
Total		Joint Chiefs of Staff		5,526	35,836	67,189	59,924	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

Date: Feb-97

Appropriation/Budget Activity	R-1 Item Nomenclature
RDT&E, DEFENSE WIDE, JOINT STAFF/BA6	0605126J Joint Theater Air and Missile Defense Organization (JTAMDO)

COST ($ IN MILLIONS)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	TOTAL COST
TOTAL PE COST	0	0	23.100	17.850	17.775	17.480	17.892	18.313	Continuing	Continuing

A. Mission Description and Budget Item Justification.

The Joint Theater Air and Missile Defense Organization (JTAMDO) is a new organization that consolidates on-going DoD efforts in theater air & missile defense. The effort evolved from an ASD/C3I charter in July, 1994 identifying the Air Force as the Executive Agent for Theater Air Defense Battle Management Command, Control, Communications, Computers, and Intelligence (EA TAD BMC4I). In order to establish a single organization within DoD responsible for joint integrated theater air and missile defense requirements, operational concepts, and architectures, the Secretary of Defense and the Chairman of the Joint Chiefs of Staff have established the Joint Theater Air and Missile Defense Organization (JTAMDO). This new organization absorbs the requirements and resources from PE 060547F (EA TAD BMC4I). All functions and outyear resources previously assigned by ASD/C3I to the EA TAD BMC4I have been transferred to JTAMDO.

JTAMDO is the single organization within DoD responsible for the planning, coordination, and oversight of joint integrated theater air and missile defense requirements generation (including capstone requirements), joint operational concepts, architecture development, and supporting technical annexes. The JTAMDO functions include: represent the Services and warfighting CINC's requirements for theater air and missile defense; develop the requirements section of the joint theater air and missile defense Master Plan; serve as the joint theater air and missile defense resource proponent within the resource allocation structures of Services, BMDO, and DARPA; monitor the research, development, acquisition, and demonstration activity associated with the Services's TAMD programs; recommend to the JROC those RD&A efforts which should be designated as TAMD programs; specify tasking to Working Integrated Product Teams (WIPTs) and establish through the TAMD Integration IPT new, task-oriented WIPTs as necessary; develop and maintain the requirements section of the Master Plan for fielding integrated TAMD capabilities; and coordinate with the Services, BMDO, and DARPA to ensure JTAMD requirements are effectively evaluated in test efforts. This program is in budget activity 6 - as it performs management support of RDT&E Activities.

FY 1996 $0

FY 1997 $0

FY 1998

$10.200 Develop and maintain the requirements section of the Master Plan for fielding integrated theater air and missile defense capabilities. This will include the development and submittal of the overall theater air and missile defense objectives, integrated air and missile defense architectures, joint operational concepts, capstone requirements documents, roadmaps identifying the projected milestones of investment programs planned to meet DoD TAMD objectives, and a report on the status of each TAMD program. Assess Service POMs and identify investment opportunities.

$7.800 Coordinate and support the Services, CINCs, and Agencies in interoperability assessments and initiatives. Participate in advanced concept technology demonstrations of TAMD capabilities and provide operational assessments. Participate in appropriate TAMD working level and over-arching IPTs and ensure IPT products are integrated into a comprehensive package.

$3.000 Conduct modeling and simulation activities to support TAMD programs and assessments. Sponsor and direct a high fidelity TAMD wargame followed by a geographically distributed wargame with hardware in the loop testing. Assess and validate joint operational concepts and assess TAMD operational

$0.900 Perform studies and analyses to support TAMD operational requirements definition, joint operational concepts, technology insertion opportunities, and architecture development and validation.

$1.200 Fund JTAMDO operations, including civilian pay, office lease, office equipment, training, and travel.

$23.100 Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	Date: Feb-97
Appropriation/Budget Activity	R-1 Item Nomenclature
RDT&E, DEFENSE WIDE, JOINT STAFF/BA6	0605126J Joint Theater Air and Missile Defense Organization (JTAMDO)

FY 1999

$7.175 Continue to develop and maintain the requirements section of the Master Plan for fielding integrated theater air and missile defense capabilities. This will include the development and submittal of the overall theater air and missile defense objectives, integrated air and missile defense architectures, joint operational concepts, capstone requirements documents, roadmaps identifying the projected milestones of investment programs planned to meet DoD TAMD objectives, and a report on the status of each TAMD program. Assess Service POMs and identify investment opportunities.

$5.975 Continue to coordinate and support the Services, CINCs, and Agencies in interoperability assessments and initiatives. Participate in advanced concept technology demonstrations of TAMD capabilities and provide operational assessments. Participate in appropriate TAMD working level and over-arching IPTs and ensure IPT products are integrated into a comprehensive package..

$2.700 Continue modeling and simulation activities to support TAMD programs and assessments. Sponsor and direct wargames that support the assessment and validation of joint requirements, operational concepts, and architectures.

$0.800 Continue to perform studies and analyses to support TAMD operational requirements definition, joint operational concepts, technology insertion opportunities, and architecture development and validation.

$1.200 Continue to fund JTAMDO operations, including civilian pay, office lease, office equipment, training, and travel.

$17.850 Total

B. Program Change Summary.

	FY96	FY97	FY98	FY99
FY97 President's Budget	0	0	0	0
Appropriated - FY97	0	0	0	0
Adjustments to Appropriated Value				
a. Transfer of Program	0	0	23.100	17.850
Current FY98 Budget Submission	0	0	23.100	17.850

Change Summary Explanation

In FY98 and FY99 funding was transferred from the EA TAD BMC4I program (PE 0605704F) and in FY98 funds also transferred from the Advanced Technology Development program (PE 0603750D).

C. Other Program Funding Summary. N/A.

D. Schedule Profile. N/A.

Exhibit R-2

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE Feb-97
Appropriation/Budget Activity RDT&E, DENFENSE WIDE, THE JOINT STAFFF/BA 7	R-1 Item Nomenclature 0208052J, Joint Analytical Model Improvement Program (JAMIP)

COST (IN MILLIONS)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	TOTAL COST
TOTAL PE COST	0.000	1.000	2.186	1.883	1.066	0.374	0.206	0	TBD	TBD

A. Mission Description and Budget Item Justification.

In May 1995, DepSecDef approved JAMIP to improve analytic support to senior DoD officials. The Joint Staff/J8 shares the lead with OSD/PA&E. JAMIP will enhance the current suite of models and simulations providing analytic support, and will develop new tools. The centerpiece of JAMIP is the development of the Joint Warfare System (JWARS), which will be a state-of-the-art, closed-form, constructive simulation of multi-sided, joint warfare for analysis. Users of JWARS will include the Combatant Commanders, Joint Staff, Services, OSD, and other DoD organizations. This program is in Budget Activity 7 -Operational Systems Development because it supports currently employed systems and training activities.

B. Program Change Summary

	FY96	FY97	FY98	FY99
FY 97 President's Budget	0.000	0.000	0.000	0.000
Appropriated -FY97		0.000		
Adjustments to Appropriated Value				
a. Transfer from O&M		1.000	1.293	1.092
b. Theater-level analytic models			0.900	0.800
c. Inflation			-0.007	-0.009
Current FY98 Budget Submission	0.000	1.000	2.186	1.883

Change Summary Explanation:

a. R&D funds needed for research and design on challenging representation problems and independent testing.
b. The increase of .900 and .800 is in FY98 and FY99 respectively for theater-level analysis models.
c. Program reduced for inflation .007 and .009 in FY98 and FY99 respectively

C. Other Program Funding Summary: N/A

D. Schedule Profile.

The RDT&E will be spent during various quarters of each FY.

Exhibit R-2

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) DATE: Feb 97

Appropriation/Budget Activity
RDT&E, DEFENSE WIDE, JOINT STAFF/BA 7

R-1 Item Nomenclature:
0303149J C4IFor the Warrior

COST (IN MILLIONS)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Complete	COST
TOTAL PE COST	0.171	2.554	5.554	3.215	3.277	3.34	3.396	3.487	TBD	TBD
Prog: Joint C4ISR Battle Center			2.964	3.025	3.088	3.153	3.221	3.297	TBD	TBD
Prog: STEP/JWIDS/Adv Cnpts	0.171	2.554	2.590	0.191	0.190	0.187	0.175	0.190	TBD	TBD

A. Mission Description and Budget Item Justification.

C4I for the Warrior (C4IFTW) is the Chairman of the Joint Chiefs of Staff (CJCS) initiative promoting joint and coalition C4I interoperablity per DOD Directives. The Joint Staff J-6 is tasked to continuously identify, prioritize, and quickly solve Joint C4I interoperablity problems. C4IFTW's three overlapping phases lead to global interoperability for US military forces deployed anywhere, on any mission, at any time, with maximum flexibility in force composition. This Program Element provides focus and visibility into resolving C4I interoperability issues. It includes, but is not limited to, RDT&E, Procurement, and O&M related costs directly associated with C4IFTW efforts. The C4IFTW PE includes annual Joint Warrior Interoperability Demonstrations (JWIDS), the Standardized Tactical Entry Point (STEP) initiatives, Advanced Concepts, and the Joint C4ISR Battle Center (JBC).

B. Program Change Summary

	FY96	FY97	FY98	FY99
FY 97 President's Budget		2.618	2.599	0.191
Appropriated -FY97		2.618		
Adjustments to Appropriated Value				
a. Programmatic Adjustment:				
Funding added for JBC			2.974	3.039
b. Non- Programmatic Adjustment:				
(General Congressional reductions and Inflation)		-0.064	-0.019	-0.015
Current FY98 Budget Submission	0.171	2.554	5.554	3.215

Change Summary Explanation:

a. FY97 was reduced by $64K because of general Congressional reductions. Reductions in FY98 and FY99 are due to inflation.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
O&M	1.053	1.153	15.605	17.122	17.556	17.930	18.234	18.836	TBD	TBD
Procurement	8.852	10.360	15.095	18.032	5.857	5.938	6.192	6.342	TBD	TBD

D. Schedule Profile.

Approx. 0.2M will be spent in conjuction with the annual Joint Staff sponsored Joint Warfighting Interoperability Demonstration (JWID) usually conducted in the 4th quarter of the FY. The remaining RDT&E will be spent during various quarters of each FY as advanced system concepts, concepts of operation, and operational requirements for the emerging information macrosystem evolve.

Exhibit R-2

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE Feb-97
Appropriation/Budget Activity RDT&E, DENFENSE WIDE, THE JOINT STAFFF/BA7	R-1 Item Nomenclature 0303149J C4IFTW - Joint C4ISR Battle Center

COST (IN MILLIONS)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	TOTAL COST
Program: Joint Battle Center	0.000	0.000	2.964	3.025	3.088	3.153	3.221	3.297	TBD	TBD

A. Mission Description and Budget Item Justification. The Joint Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Battle Center within the Defense Information Services Agency (DISA) will assimilate demonstrations and experiments of large scale engineering required for architecture development of Joint warfighting systems integration which leverage C4ISR. The Center grew out of the FY1995 Chairman of the Joint Chiefs of Staff (CJCS) initiative to address the need to provide comprehensive joint warfighting capability that maintains a competitive military advantage dependent on the ability to effectively field evolutionary systems and equipment which assure joint operational capability dominance by quickly organizing and testing innovative C4ISR concepts. The Center will also ensure that as new C4ISR concepts surface, these concepts will be developed to share all C4ISR information with precision force generators which will engender a powerful environment for Joint operational innovations. Industry driven technology advancements dictate rapid insertion into the DoD C4ISR infrastructure to maintain this competitive advantage. The Center will support experiments in mission with actual battle scenarios and assessment specific parameters by utilizing the latest technology insertion and applications to provide a consistently improving state of readiness for the joint warfighter. This program element is under Budget Activity 07 because it supports operational systems development.

B. Program Change Summary

	FY96	FY97	FY98	FY99
FY 97 President's Budget	0.000	0.000	0.000	0.000
Appropriated -FY97		0.000		
Adjustments to Appropriated Value				
a. Transfer JBC from DISA			2.974	3.039
b. Inflation			-0.010	-0.014
Current FY98 Budget Submission	0.000	0.000	2.964	3.025

Change Summary Explanation:

a. The Joint C4ISR Battle Center (JBC) was created within the Defense Information Systems Agency. The Joint Requirements Oversight Council recently determined the JBC fills a valid warfighting requirement and should report directly to The Joint Staff (TJS).
b. JBC received a general reduction for inflation.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COMPLETE	COST
O&M	0.000	0.000	11.834	12.071	12.456	12.730	13.009	13.296	TBD	TBD
Procurement	0.000	0.000	4.903	5.004	5.112	5.224	5.346	5.479	TBD	TBD

D. Schedule Profile.
The RDT&E will be spent dulring various quarters of each FY.

Exhibit R-2

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE: Feb 97	
Appropriation/Budget Activity RDT&E, DEFENSE WIDE, JOINT STAFF/BA 7			R-1 Item Nomenclature: 0303149J C4I For The Warrior - STEP/JWIDS/Advanced Concepts							
COST (IN MILLIONS)	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**Cost to Complete**	**TOTAL COST**
Prog: STEP/JWIDS/Adv Cnpts	0.171	2.554	2.59	0.191	0.190	0.187	0.175	0.190	**TBD**	**TBD**

A. Mission Description and Budget Item Justification.

This program assists in the definition of a joint Precision Force C4I Operational Architecture by identifying common and integrated communications paths and platforms that will support Joint Strike, Defense, and Maneuver Operations by 2010 in accordance with the CJCS Vision 2010. It is in direct response to DOD guidance directing the Joint Staff to lead an effort to develop an integrated architecture to support Joint Strike, Defense, and Maneuver Operations. Additionally, CJCS is actively advocating a new vision for Information Warfare and Information Assurance that will enable US led forces to dominate future battlefields. Central to this emerging vision is an evolving concept currently referred to as the "information macrosystem." A compelling need exists to explore and develop advanced system concepts, concepts of operation, and operational requirements for the emerging information macrosystem. A portion of this effort will assist in the refinement of joint C4ISR concepts, doctrines, and requirements by allowing us to perform the necessary research and development for customizing commercial technologies for the warfighter. Joint Staff leadership of this effort requires this focused research and development initiative.

B. Program Change Summary

	FY96	FY97	FY98	FY99
FY 97 President's Budget		2.618	2.599	0.191
Appropriated -FY97		2.618		
Adjustments to Appropriated Value				
a. Nonprogrammatic Adjustment				
(General Congressional reductions and Inflation)		-0.064	-0.009	-0.001
Current FY98 Budget Submission	0.171	5.172	2.590	0.190

Change Summary Explanation:

a. FY97 was reduced by $64K because of general Congressional reductions. Reductions in FY98 and FY99 are due to inflation changes.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
O&M	1.053	1.153	3.771	5.051	5.100	5.200	5.225	5.540	TBD	TBD
Procurement	8.852	10.360	10.192	13.028	0.745	0.714	0.846	0.863	TBD	TBD

D. Schedule Profile.

Approx. 0.2M will be spent in conjuction with the annual Joint Staff sponsored Joint Warfighting Interoperability Demonstration (JWID) usually conducted in the 4th quarter of the FY. The remaining RDT&E will be spent during various quarters of each FY as advanced system concepts, concepts of operation, and operational requirements for the emerging information macrosystem evolve.

Exhibit R-2

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE Feb-97
Appropriation/Budget Activity RDT&E, DEFENSE WIDE, THE JOINT STAFF/BA 7	R-1 Item Nomenclature 0902298J - MANAGEMENT HEADQUARTERS

COST (IN MILLIONS)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	TOTAL COST
TOTAL PE COST	3.999	10.012	10.035	9.806	9.920	9.890	9.885	9.899	TBD	TBD

A. Mission Description and Budget Item Justification.

Joint Warfighting Capabilities Assessment (JWCA) are studies conducted in: Strike; Land and Littoral Warfare; Strategic Mobility and Sustainability; Sea, Air and Space Support; Deterrence/Counter Proliferation; Regional Engagement/PRESENCE; Command and Control (C2); Information Warfare; Intelligence, Surveillance and Reconnaissance; Joint Readiness (Personnel); Joint Readiness (Forces); and Joint Readiness (Exercise/Training). Each JWCA is sponsored by a Joint Staff Directorate and is conducted by teams of warfighting and functional area experts from the unified commands, Services, Office of the Secretary of Defense, Federally Funded Research and Development Centers, and others as necessary. Assessments examine key relationships between warfighting capabilities and interactions and identify opportunities for improving warfighting effectiveness. This program is in Budget Activity 7 - Operational Systems Development because it supports currently employed systems and training activities.

B. Program Change Summary

	FY96	FY97	FY98	FY99
FY 97 President's Budget		34.912	37.546	38.234
Appropriated -FY97		34.912		
Adjustments to Appropriated Value				
a. Transfer to JWCA O&M		-3.000	-3.000	-3.000
b. Transfer to new JSIMS PE		-21.577	-24.478	-25.382
c. Congressional Reduction		-0.323		
d. Inflation			-0.033	-0.046
Current FY98 Budget Submission	3.999	10.012	10.035	9.806

Change Summary Explanation:

a. Transfer to O&M: The Joint Staff received $14M RDT&E for JWCA as a part of the development of the FY1997 President's Budget. The RDT&E funding was based on a review of the initial studies requests. Since that time, the actual requirements have proven to be a mixture of O&M and RDT&E.

b. FY97 PB funding included the Joint Simulation Sytems (JSIMS). A new PE, 0902740J, has been set up to track this system and the funds have been transferred.

c. & d. Congressional and inflation reductions.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
O&M	0.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	N/A	N/A

D. Schedule Profile.

The RDT&E will be spent during various quarters of each FY.

Exhibit R-2

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									Date:	Feb-97
Appropriation/Budget Activity RDT&E, DEFENSE WIDE, JOINT STAFF/BA7			R-1 Item Nomenclature PE 0902740J -Joint Simulation System (JSIMS)							
COST ($ IN MILLIONS)	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**Cost to Complete**	**TOTAL COST**
TOTAL PE COST	0	21.054	24.321	25.179	19.173	17.073	17.406	17.781	Continuing	Continuing

A. Mission Description and Budget Item Justification.

In the FY97 PB, funding for the Joint Simulation System was budgeted in the Joint Staff's Management Headquarters Program Element 0902298J. It has since been moved into its own PE. JSIMS is at the leading edge of the Goldwaters-Nichols Act as the vehicle to institute interoperability and Joint Training, and eliminate Service stovepipe training. JSIMS is a single, seamlessly integrated simulation environment designed to train CINCs and Services to meet the Chairman's Joint Training System requirements. It includes a core infrastructure and mission space objects, both maintained in a common repository. The objects can be composed to create a simulation capability to support Joint or Service training, rehearsal, or education objectives. JSIMS is a core of common and joint representations and services, a runtime hardware and software infrastructure, interfaces, and representations of Air/Space, Land, and Maritime Warfare functionality. JSIMS includes a strategy for cooperative development that is based on the use of Executive Agents (i.e. Army, Navy, AF, etc.) to provide authoritative domain-specific representations. This program is in budget activity 7 - Operational Systems Development, because it supports currently employed systems and training activities.

FY 1996

$0

FY 1997

$14.000	Development Contract
3.600	Support Contracts
2.154	Program Office
0.500	Domain Engineering Contract
0.500	Independent verification/validation
0.300	Hardware
$21.054	Total

FY 1998

$15.700	Development Contract
2.959	Support Contracts
2.812	Program Office
1.950	Modeling
0.700	Independent verification/validation
0.200	Hardware
$24.321	Total

FY 1999

$16.382	Development Contract
3.000	Support Contracts
3.297	Program Office
1.900	Modeling
0.500	Independent verification/validation
0.100	Hardware
$25.179	Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	Date: Feb-97
Appropriation/Budget Activity: RDT&E, DEFENSE WIDE, JOINT STAFF/BA7	R-1 Item Nomenclature: PE 0902740J -Joint Simulation System (JSIMS)

B. Program Change Summary.

	FY96*	FY97**	FY98	FY99
FY97 President's Budget	0	21.577	24.478	25.382
Appropriated - FY97	0	21.577	0	0
Adjustments to Appropriated Value	0	0	0	0
a. Non-programmatic adjustment	0	-0.523	-0.157	-0.203
Current FY98 Budget Submission		21.054	24.321	25.179

Change Summary Explanation

*In FY96, JSIMS was funded through the Defense Modeling and Simulation Organization.
**JSIMS funding was initially authorized under PE 0902298J (Management HQ JCS). Subsequently it was moved to its own PE 0902740J. In FY97 there were Congressional general reduction of .523, and in FY98 and FY99 inflation adjustments.

C. Other Program Funding Summary. N/A

D. Schedule Profile.

	FY 1996				FY 1997				FY 1998				FY 1999			
(Fiscal Qtr)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(U) RFP Release				X												
(U) Contract Award					X											
(U) Software Build 0								X								
(U) Software Build 1											X					
(U) Software Build 2													X			
(U) Initial Ops Capability (IOC) and software version 1.0																X

Exhibit R-2

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE Feb-97
Appropriation/Budget Activity RDT&E, DEFENSE WIDE, THE JOINT STAFF/BA 7	R-1 Item Nomenclature 1001017J Partnership-for-Peace (PFP)

COST (IN MILLIONS)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	TOTAL COST
TOTAL PE COST	0.000	0.000	1.993	1.991	1.989	1.987	1.986	1.989	TBD	TBD

A. Mission Description and Budget Item Justification.

The Partnership for Peace Information Management System (PIMS) will launch a comprehensive R&D effort with 27 PFP nations starting in FYT 98. Currently PIMs policy and technical briefing teams are in the first stages of International Memorandums of Agreement (MOA) with several Partner nations. These MOAs define the requirements, mutual obligations, and detailed activities of the signatories in accordance with the particular circumstances of each nation. Formal implementation of PIMs - briefing teams, MOAs, site surveys, installations, training and operation (communication, data base development, and maintenance) also will formally begin in FY 98. This provides the U.S. and 21 Partner nations a vehicle for collective cost avoidance through collaborative database development and operation and maintenance life cycle cost sharing. The international MOA which covers all these programs and requirements will remain in force for five years. The five year development program is supported by an O&M budget line to maintain the infrastructure necessary to focus the efforts of numerous DoD and PFP programs on specific database development efforts. This program is in Budget Activity 7, Operational Systems Development, because it supports currently employed systems and training activities.

B. Program Change Summary

	FY96	FY97	FY98	FY99
FY 97 President's Budget	0.000	0.000	0.000	0.000
Appropriated -FY97		0.000		
Adjustments to Appropriated Value				
a. R&D efforts funded.			2.000	2.000
b. Inflation			-0.007	-0.009
Current FY98 Budget Submission	0.000	0.000	1.993	1.991

Change Summary Explanation:

a.) Funds added for R&D efforts.
b.) There is an inflation adjustment starting in FY98.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	COST TO COMPLETE	TOTAL COST
O&M	40.000	48.560	44.162	54.969	55.500	55.500	55.500	55.500	TBD	TBD

D. Schedule Profile.

The RDT&E will be spent during various quarters of each FY.

Exhibit R-2

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U. S. SPECIAL OPERATIONS COMMAND

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Special Operations Command
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0400 D Research Development Test & Eval Defwide

Date: FEB 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999	Sec
				Thousands of Dollars				
151	1160279BB	Small Business Innovative Research/Small Bus Tech Transfer Pilot Prog	7	2,239	3,017			U
152	1160401BB	Special Operations Technology Development	7	3,774	5,865	4,161	4,247	U
153	1160402BB	Special Operations Advanced Technology Developmen	7	14,515	7,602	8,009	8,171	U
154	1160404BB	Special Operations Tactical Systems Development	7	105,201	93,855	73,073	86,216	U
155	1160405BB	Special Operations Intelligence Systems Development	7	2,880	1,946	4,914	1,839	U
156	1160407BB	SOF Medical Technology Development	7	1,747	1,803	2,029	2,077	U
157	1160408BB	SOF Operational Enhancements	7	16,646	28,177	26,357	13,790	U
		Operational Systems Development		147,002	142,265	118,543	116,340	
Total		Special Operations Command		147,002	142,265	118,543	116,340	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE FEBRUARY 1997					
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160279BB Small Business Innovative Research								
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160279BB (Small Business Innovative Research	2.239	3.017							Cont.	Cont.
S050, Small Business Innovative Research	2.239	3.017							Cont.	Cont.

A. Mission Description and Budget Item Justification

The Small Business Innovative Research (SBIR) project is a highly competitive three phase award system which provides qualified small business concerns with the opportunity to propose high quality innovative ideas that meet specific research and development needs of USSOCOM. SBIR is a result of the Small Business Development Act of 1992. It was enacted by Congress in Public Law 97-219, reenacted by Public Law 99-443, and reauthorized by the SBIR Program Reauthorization Act of 1992. Starting in FY 1994, the SBIR program was refocused toward dual use and defense reinvestment efforts. Phase I projects evaluate the scientific technical merit and feasibility of an idea. Awards are up to $100,000 with a maximum six month period of performance. Phase II projects expand the results of, and further pursue, the developments of Phase I. Awards are up to $750,000 with a maximum two year period of performance. Phase III is for commercialization of the results of Phase II and requires the use of private or non-SBIR federal funding. DoD publishes government agency proposal projects twice per year for a consolidated DoD Request for Proposal. USSOCOM then awards its proposed SBIR projects.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE FEBRUARY 1997					
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160401BB Special Operations Technology Development									
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160401BB (Special Operations Technology Development)	3.774	5.865	4.161	4.247	5.329	5.419	4.523	5.180	Cont.	Cont.
S100, Special Operations Technology Development	3.774	5.865	4.161	4.247	5.329	5.419	4.523	5.180	Cont.	Cont.

A. Mission Description and Budget Item Justification

Projects provide studies and laboratory prototypes for USSOCOM to link non-system basic research and exploratory development to Special Operations Forces (SOF) specific system engineering and manufacturing development and procurement. This project supports SOF, psychological and civil affairs forces involvement in foreign internal defense and world-wide operations. It also supports special operations forces conduct of special reconnaissance and direct action operations in low, mid, and high intensity conflict. A major objective of the SOF technology base program is to provide a balanced effort of studies and technology base funding across the exploratory research and advanced development categories in order to exploit technological developments of other organizations through aggressive resource leveraging. This resource leveraging (applying small incremental amounts of USSOCOM funding on top of significantly larger research investments by other DoD, government, and commercial organizations) will allow USCINCSOC to influence the direction of technology development or the schedule against which it is being pursued.

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COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S100, Special Operations Technology Development	3.774	5.865	4.161	4.247	5.329	5.419	4.523	5.180	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project provides studies and laboratory prototypes for exploratory and advanced development, as well as a means for leveraging other organizations' projects that may not otherwise be affordable within MFP-11. Applying small incremental amounts of investments to DoD, other government agencies, and commercial organizations allows United States Commander-in-Chief Special Operations Command to influence the direction of technology development or the schedule against which it is being pursued and to acquire emerging technology for Special Operations Forces (SOF). This program supports special reconnaissance, information warfare, unconventional warfare, direct action, foreign internal defense, psychological and civil affairs operations, and other SOF missions worldwide. This program provides an investment strategy for USSOCOM to link non-systems technology opportunities to USSOCOM technology development objectives and mission area analyses. Sub-projects include:

- Active Noise Cancellation. Reduce acoustic signature of SOF propeller craft.
- Audio Deception Emitter. Brassboard audio emitter to mimic low frequency audio emissions.
- Color Night Vision Fusion. Brassboard prototype for infrared and low-light-level video using artificial color that incorporates SOF size, weight, and human factors requirements.
- Enhanced Thermal Protection. Diver thermal protection for combat swimmers during underwater operations in cold water.
- Head-Mounted Thermal Vision. Lightweight, low-volume, low-power thermal viewer providing a passive night/obscured

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vision capability using an uncooled focal plane array. This project leverages other government efforts.

- Maximum Efficiency Language Training. Joint project with Army Research Institute and Defense Advanced Research Projects Agency to demonstrate an advanced computer based virtual reality interactive language tutor.

- Pursuit Deterrent Munitions (PDM) Trainer. A PDM simulator for safe training.

FY 1996 ACCOMPLISHMENTS:

- ($892K) Continued development of the Maximum Efficiency Language Training, Head-Mounted Thermal Vision, and Pursuit Deterrent Munition Trainer. Completed development and transition of Target Marking Technologies. (1QTR96-4QTR96)

- ($152K) Audio Deception Emitter. Started brassboard prototypes that provide spot and large area loudspeaker broadcast capability to influence target audiences with high quality audio deception. (2QTR96-4QTR96)

- ($480K) Demonstrated technologies to remotely detect, characterize, and type classify mines, obstacles, and barriers found in the littoral warfare region. (3QTR96-4QTR96)

- ($425K) Concept Exploration. Conducted studies to assess optimum gas turbine engine alternatives for SOF maritime craft and optimum operating characteristics of a vehicle-mounted, crew-served weapon system. (3QTR96-4QTR96)

- ($1,825K) Classified Project. Reported under separate cover. (2QTR96-4QTR96)

FY 1997 PLAN:

- ($1,350K) SOF Command, Control, Communications, Computer, and Intelligence (C4I) Technologies. Complete

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160401BB Special Operations Technology Development / Project S100

development and begin evaluation of the Head-Mounted Thermal Vision. Leverage technology to develop a SOF brassboard prototype of infrared and low-light-level video using artificial color that incorporates SOF size, weight, and human factors requirements. (1QTR97-2QTR97)

- ($538K) SOF Mobility Technologies. Develop an Active Noise Cancellation system to reduce onboard noise levels on SOF propeller aircraft. (1QTR97-2QTR97)

- ($716K) SOF Sustainment Technologies. Complete development and evaluation of the Maximum Efficiency Language Training prototype. Complete development and evaluation of the Audio Deception Emitter. Demonstrate an Enhanced Thermal Protection System to maintain performance of SOF combat swimmers during underwater operations in cold water. (1QTR97-2QTR97)

- ($461K) Continue to demonstrate technologies to remotely detect, characterize, and type classify mines, obstacles, and barriers found in littoral warfare region. (3QTR97)

- ($600K) Concept Exploration Studies. Conduct studies to analyze the optimum technology concept for an integrated sensor navigation system and a remote command detonation device in support of the Naval Special Warfare Mine Countermeasures Program. Complete gas turbine engine alternatives and vehicle-mounted, crew-served weapon studies. (2QTR97)

- ($2,000K) Joint Ranger Anti-Armor Anti-Personnel Weapons System (JRAAWS). The Bofors 84-mm M3 Carl Gustof ammunition is being adopted for use by the Naval Special Warfare Command (NAVSPECWARCOM). The ammunition is being tested to ensure insensitive munition requirements are satisfied to allow use by NAVSPECWARCOM operators and storage/transport aboard Navy ships and submarines. Acquire test ammunition and conduct qualification testing against joint service safety and performance requirements. This is a Congressional plus-up; a request has been made to reprogram these funds to PE1160404BB, Project S800. (2QTR97-4QTR97)

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- ($200K) Technology Development Exploitation. Exploit emerging technologies to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas such as reducing size and weight, and improving the life of power supplies. Needs in these areas will be advertized to industry and government research and development agencies via broad area announcements, calls for white papers, and research and development conferences. (3QTR97)

FY 1998 PLAN:

- ($1,539K) SOF C4I Technologies. Complete evaluation of Head-Mounted Thermal Vision. Continue development of SOF Color Night Vision Fusion device. Exploit technology efforts that provide improvements in weight reduction, size, support, power consumption/management, low probability of intercept/detection, and transmission rates of SOF communication and intelligence systems. Exploit technology efforts for potential improvements in SOF's ability to detect surveillance threats. (2QTR98)

- ($712K) SOF Mobility Technologies. Continue development of the Active Noise Cancellation concept. (1QTR98)

- ($1,166K) SOF Sustainment Technologies. Complete development and evaluation of Enhanced Thermal Protection effort. Exploit technology efforts to provide enhanced performance and protection of SOF personnel. (2QTR98)

- ($544K) Concept Exploration Studies. Explore/validate concepts for projects being continued or initiated in support of the USSOCOM technology development objectives. (3QTR98)

- ($200K) Technology Development Exploitation. Exploit emerging technologies to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas such as reducing size and weight, and improving the life of power supplies. Needs in these areas will be advertized to industry and government research and development agencies via broad area announcements, calls for white papers, and research and development

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conferences. (3QTR98)

FY 1999 PLAN:

- ($975K) SOF C4I Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to research/exploit emerging C4I technologies of the Services and other government agencies. (2QTR99)
- ($850K) SOF Mobility Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to research/exploit emerging mobility technologies of the Services and other government agencies. (2QTR99)
- ($917K) SOF Weapons Technologies. Continue to research/exploit emerging weapons technologies of the Services and other government agencies. (2QTR99)
- ($812K) SOF Sustainment Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to research/exploit emerging sustainment-related technologies of the Services and other government agencies. (2QTR99)
- ($493K) Concept Exploration Studies. Explore/validate concepts for projects being continued or initiated in support of the USSOCOM technology development objectives. (2QTR99)
- ($200K) Technology Development Exploitation. Exploit emerging technologies to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas such as reducing size and weight, and improving the life of power supplies. Needs in these areas will be advertized to industry and government research and development agencies via broad area announcements, calls for white papers, and research and development conferences. (3QTR99)

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ACQUISITION STRATEGY: NA

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	3.969	4.083	4.173	4.267	Cont.
Appropriated Value	4.090	6.083			
Adjustments to Appropriated Value / President's Budget	(.316)	(.218)	(.012)	(.020)	
Current Budget Submit	3.774	5.865	4.161	4.247	Cont.

Change Summary Explanation:

Funding: The FY 1996 decrease is for Congressional inflation adjustments and overhead / management savings. FY 1997 net decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast.

Schedule: None.

Technical: None.

C. Other Program Funding Summary NA.

D. Schedule Profile NA.

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160402BB Special Operations Advanced Technology Development								
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160402BB (Special Operations Advanced Tech Dev)	14.515	7.602	8.009	8.171	8.328	8.514	8.701	9.455	Cont.	Cont.
P204, Explosive Ordnance Disposal - Low Intensity Conflict	4.057									21.495
P205, Special Operations / Low Intensity Conflict Studies	.974									3.880
S200, Special Operations Special Technology Development	9.484	7.602	8.009	8.171	8.328	8.514	8.701	9.455	Cont.	Cont.

A. Mission Description and Budget Item Justification

Projects provide studies, technology demonstrations and rapid prototyping efforts to provide technology and prototypes to accelerate the acquisition of Special Operations Forces-peculiar equipment. Technology goals are generated annually by USSOCOM with input from components and regional Commanders-in-Chief.

Projects P204 and P205 transition to the USD-managed PE 0603122D, "Counterterror Technical Support", in FY 1997.

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COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S200, Special Operations Special Technology	9.484	7.602	8.009	8.171	8.328	8.514	8.701	9.455	Cont.	Cont.

A. Mission Description and Budget Item Justification

Special Operations Special Technology (SOST) is an advanced technology development program capable of rapid development and evaluation of prototypes to apply emerging advanced technologies against Special Operations Forces (SOF) deficiencies. It also provides for SOF-peculiar advanced technology demonstrations. A SOST sub-project ends once the prototypes undergo user assessments in an operational environment and a transition package is prepared. A transition package assists in the initiation of or insertion into an acquisition program. The program also addresses projects that are a result of unique joint, special mission, or area-specific needs for which a few-of-a-kind prototypes must be developed on a rapid response basis, or are of sufficient time sensitivity to accelerate the prototyping effort of a normal acquisition program in any phase. Sub-projects include:

- Advanced Sniper Weapon Fire Control. Full wind vector ballistic solution at extended range (1200 meters).
- Aircraft Off/On Load System. Demonstrate system to air drop platforms or SOF-unique pallets without the use of material handling equipment.
- Clandestine Lighting Systems. Ground- and air-based lighting system(s) that operate at the Generation III maximum sensitivity line and focused to a tight beam.
- Communications Helmet. Lightweight, protective headgear with integrated communications for use by SOF during small boat, repelling, and parachute operations.

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- Decompression Monitor. Time and depth monitor for use in SEAL Delivery Vehicle operations to extend the range of missions.
- Hasty Hide Shelter. Lightweight, weatherproof, "quick hide" shelter for SOF personnel providing protection from detection.
- Integrated Bridge System. A system that enhances maritime craft bridge-console and operator interface through human factors engineering and integration with console design and displays.
- Inter/Intra Team Low-Power Communications. Electro-optic and low probability intercept/low probability detect communication devices for SOF applications.
- Intrusion Sensor. A miniature, multi-sensor system to detect local threats.
- Limited Effects Submunition. Project leverages Service efforts to provide less-than-lethal delivery capabilities onboard SOF aircraft.
- Portable Oxygen Charging System. Demonstrate a capability to reduce SOF logistics support of underwater breathing apparatuses.
- Quick Erect Antenna. Improved antenna to reduce set-up time requirements in support of psychological operations.
- Remote Miniature Weather Station. Man-portable, air-drop capable weather sensors with a transmission system for terrestrial based unattended weather collection operations.
- Sensor Hardening. Laser protection modules for SOF electro-optic devices.

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- Special Operations Information Warfare Support System. Automated system for civil affairs and psychological operations information support.
- SOF Enhanced Weapons. Weapons and munitions prototypes for increased range, improved accuracy, and improved performance against hardened targets.
- Structural Usage Monitor System. Demonstrate accurate flight regime algorithms to extend aircraft component lives.
- Tactical Communications Management System. A drop-in wireless radio management system and intercom for use in SOF craft.
- Transport Cradles. Equipment to transport watercraft in military aircraft.
- Very Slender Vessel Technologies. Demonstrate advanced technologies to minimize signature and wave-shock impact to personnel onboard SOF maritime craft.
- Weapons Control System. Prototype providing improved accuracy for small arms mounted on SOF water craft.

FY 1996 ACCOMPLISHMENTS:

- ($375K) Completed evaluation and transitioned the Tactical Communications Management System, Laser Defense, Special Operations Information Warfare Support System, and Transport Cradles. (1QTR96-4QTR96)
- ($4,398K) Continued efforts on the Advanced Sensors, Inter/Intra Team Low Power Communications, Decompression Monitor, Remote Miniature Weather Station, Improved SOF Power Sources, SOF Enhanced Weapons, Advanced Sniper

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Weapon Fire Control System (in project S100 prior to FY 1996), Communications Helmet, and Weapons Control System. (1QTR96-4QTR96)

- ($3,611K) Conducted advanced technology demonstrations in the following areas:
  - Special Operations Forces (SOF) Survival Sustainment and Personal Equipment. Specifically, a lightweight, low profile, Hasty Hide Shelter to provide SOF personnel with environmental and camouflage protection. (3QTR96-4QTR96)
  - Advanced Technologies for SOF Mobility Platforms. Specifically, technologies for Clandestine Lighting Systems to assist SOF aircraft with landings at night, technologies for an Integrated Bridge System to integrate current console functions onboard SOF watercraft while protecting the components and improving human factors, and initiated exploitation of Very Slender Vessel technologies to minimize Special Operations Forces (SOF) maritime craft' signature and the wave-shock impact to personnel onboard. (1QTR96-4QTR96)
  - Controlled-Effects Weapons Technologies. Specifically, leverage with Service efforts for a "Limited Effects" Submunition to provide less-than-lethal delivery capabilities onboard SOF aircraft. (3QTR96)
  - Advanced Technologies for Deception, Information Warfare. Specifically, technologies for a Quick Erect Antenna to reduce size and improve set-up time requirements of antenna in support of psychological operations transmissions. (4QTR96)
  - SOF Command, Control, Communications, Computer, and Intelligence (C4I) Technologies. Demonstrate millimeter wave technology to provide small, low power, clandestine, high data rate communications link for audio and video transmissions. (4QTR96)

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- ($450K) Leveraged U.S. Army efforts to develop flight regime recognition algorithms with sufficient accuracy to allow replacement of fatigue critical aircraft components based upon actual aircraft usage versus predicted design usage. (2QTR96-3QTR96)

- ($650K) Classified project. Reported under separate cover. (2QTR96-3QTR96)

FY 1997 PLAN:

- ($1,691K) SOF C4I Technologies. Complete evaluation and transition of the Advanced Sensors and Inter/Intra Team Low Power Communications. Continue advanced technology demonstration of the Remote Miniature Weather Station. Complete development and begin evaluation of the Quick Erect Antenna. Leverage U.S. Air Force Sensor Hardening efforts to develop generic laser protection modules for SOF electro-optic devices. (1QTR97-2QTR97)

- ($2,351K) SOF Mobility Technologies. Complete user evaluation and transition the Clandestine Lighting System. Complete demonstration and begin user evaluation of the Integrated Bridge System and complete user evaluation of the Very Slender Vessel technologies. Continue development of Structural Usage Monitor System. Demonstrate an Aircraft Off/On Load System to provide SOF with the capability to off/on load air-drop platforms or SOF-unique pallets without the use of material handling equipment. (1QTR97-2QTR97)

- ($1,324K) SOF Weapons Technologies. Complete development and begin user evaluation of Weapons Control System, SOF Enhanced Weapons, and Advanced Sniper Weapon Fire Control. (2QTR97-3QTR97)

- ($1,381K) SOF Sustainment Technologies. Complete user evaluation and begin transition of the Communications Helmet. Complete development and user evaluation of the Hasty Hide Shelter and Communications Helmet. Demonstrate an Intrusion Sensor System to provide the SOF operator with the capability to detect local threats. Demonstrate a Portable Oxygen

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Charging System to reduce the SOF logistics support required (while forward deployed) for underwater breathing apparatuses. (2QTR97)

- ($500K) Technology Exploitation Initiative. Exploit emerging technology to meet critical Special Operations Forces (SOF) requirements and encourage industry and Government Lab participation in identifying enhancements to SOF in critical areas. Need in these areas have been advertised to industry and government research and development agencies via Broad Agency Announcements and research and development conferences. (3QTR97)

- ($355K) Classified project. Reported under separate cover. (2QTR97)

FY 1998 PLAN:

- ($2,888K) SOF C4I Technologies. Complete demonstration and user evaluation of Remote Miniature Weather Station, Quick Erect Antenna, and Sensor Hardening. Exploit emerging technology to conduct Advanced Technology Demonstrations (ATDs) that provide improvements in weight reduction, size, support, power consumption/management, low probability of intercept/detection, and transmission rates of SOF communication and intelligence systems. Exploit emerging technology to conduct ATDs that provide SOF with improvements in their ability to detect, track, and maintain surveillance of threats/targets. (1QTR98-3QTR98)

- ($1,854K) SOF Mobility Technologies. Complete demonstration and user evaluation of Structural Usage Monitor System, Integrated Bridge System, and Aircraft Off/On Load System. Exploit emerging technology to conduct ATDs to provide SOF mobility platforms with enhanced visibility in adverse weather. (1QTR98-3QTR98)

- ($1,171K) SOF Weapons Technologies. Complete user evaluation of the Weapon Control System and Advanced Sniper Weapon Fire Control. Exploit emerging technology to conduct ATDs that provide enhanced flexibility and increased accuracy of weapons and munitions. (1QTR98-3QTR98)

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- ($1,596K) SOF Sustainment Technologies. Complete demonstration and user evaluation of the Intrusion Sensor System. Continue development of the Portable Oxygen Charging System. Exploit emerging technology to conduct ATDs to provide SOF combat swimmers with improved mission readiness. Exploit emerging technologies to conduct ATDs that provide SOF with increased situation/information awareness and intelligence awareness during their missions. (1QTR98-3QTR98)

- ($500K) Technology Exploitation Initiative. Exploit emerging technology to meet critical Special Operations Forces (SOF) requirements and encourage industry and Government Lab participation in identifying enhancements to SOF in critical areas. Need in these areas have been advertised to industry and government research and development agencies via Broad Agency Announcements and research and development conferences. (3QTR98)

FY 1999 PLAN:

- ($1,936K) SOF C4I Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to exploit emerging technology to conduct ATDs that provide improvements in weight reduction, power consumption/management, low probability of intercept/detection, and transmission rates of SOF communication and intelligence systems. Continue to exploit emerging technology to conduct ATDs that provide SOF with improvements in their ability to detect, track, and maintain surveillance of threats. (1QTR99-3QTR99)

- ($1,925K) SOF Mobility Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to exploit emerging technology to conduct ATDs to improve performance, lower the probability of detection, or improve the support of SOF mobility platforms. (1QTR99-3QTR99)

- ($1,685K) SOF Weapons Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to exploit emerging technology to conduct ATDs that provide increased lethality, enhanced flexibility, reduced weight and volume, increased accuracy, controllability, and safety of explosive charges and weapons. Continue to exploit emerging

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technology to conduct ATDs that provide SOF weapons with improvements in the responsiveness, stand-off, accuracy, reliability, and target effects. (1QTR99-3QTR99)

- ($2,125K) SOF Sustainment Technologies. Continue development of FY98 sub-projects to completion and evaluation. Continue to exploit emerging technology to conduct ATDs that will provide enhanced performance, sustainment, and protection of SOF personnel. (1QTR99-3QTR99)

- ($500K) Technology Exploitation Initiative. Exploit emerging technology to meet critical Special Operations Forces (SOF) requirements and encourage industry and Government Lab participation in identifying enhancements to SOF in critical areas. Need in these areas have been advertised to industry and government research and development agencies via Broad Agency Announcements and research and development conferences. (3QTR99)

ACQUISITION STRATEGY: NA

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	9.985	7.927	8.105	8.287	Cont.
Appropriated Value	10.443	7.927			
Adjustments to Appropriated Value / President's Budget	(.959)	(.325)	(.096)	(.116)	
Current Budget Submit	9.484	7.602	8.009	8.171	Cont.

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Change Summary Explanation:

Funding: The FY 1996 adjustments reflect a Congressional add and reductions due to Congressional inflation adjustments and overhead/management savings and a decrease for revised OMB economic assumptions. FY 1997 decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast.

Schedule: None.

Technical: None.

C. Other Program Funding Summary NA.

D. Schedule Profile NA.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development								
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160404BB Special Operations Tactical Systems Development	105.201	93.855	73.073	86.216	93.021	109.128	111.938	83.086	Cont.	Cont.
D476, PSYOPS Advanced Development	1.100	.660	1.199	14.477	1.988	1.112	2.645	.319	Cont.	Cont.
D615, SOF Aviation	3.552	2.145	5.942	7.220	6.661	11.827	8.856	8.268	Cont.	Cont.
SF100, Aviation Systems Advanced Development	5.680	1.570	2.396	16.588	19.334	15.114	11.373	15.564	Cont.	Cont.
SF200, CV-22 SOF Osprey	0	0	0	0	10.017	10.428	10.151	11.436	Cont.	Cont.
S0417, Underwater Systems Advanced Development	29.861	21.796	24.229	2.318	5.227	12.446	10.323	5.752	Cont.	Cont.
S1684, SOF Surface Craft Advanced Development	8.419	6.783	0	0	0	2.980	5.958	4.972	Cont.	Cont.
3284, SOF Aircraft Defensive Systems	10.744	6.413	8.155	5.464	20.115	17.434	11.383	10.015	Cont.	Cont.
3326, AC-130U	4.282	14.495	6.009	1.164	1.386	1.375	.755	.759	6.699	Cont.
3642, Aircrew Training Systems	18.831	4.262	0	0	0	0	0	0	0	204.646

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE FEBRUARY 1997						
APPROPRIATION/BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development									
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S350, Special Operations Forces Planning and Rehearsal System	7.997	7.339	5.640	4.072	3.801	3.535	3.275	3.024	Cont.	Cont.
S375, Weapons and Support Systems Advanced Development	.147	3.801	4.109	2.548	4.100	2.525	.463	.276	Cont.	Cont.
S625, SOF Training Systems	4.441	9.759	9.564	24.777	11.359	12.907	29.197	1.933	Cont.	Cont.
S700, Communications Advanced Development	.730	2.604	2.130	2.890	2.601	2.212	2.077	2.205	Cont.	Cont.
S800, Special Operations Munitions Advanced Development	9.357	12.208	3.700	4.698	6.432	15.233	15.482	18.563	Cont.	Cont.
S900, Special Operations Miscellaneous Equipment Development	.60	.20	0	0	0	0	0	0	0	8.399

A. Mission Description and Budget Item Justification

Projects provide for development, testing, and integration of specialized equipment to meet the unique requirements of Special Operations Forces (SOF). Specialized equipment will permit small, highly trained forces to conduct required operations across the entire spectrum of conflict. These operations are generally conducted in harsh environments, for unspecified periods and in locations requiring small unit autonomy. SOF must infiltrate by land, sea, and air to conduct unconventional warfare, direct action, or deep reconnaissance operations in denied areas against insurgent units, terrorists, or highly sophisticated threat forces. The requirement to operate in denied areas controlled by a sophisticated threat mandates that SOF systems remain technologically superior to threat forces to ensure mission success.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D476

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
D476, PSYOP Advanced Development	1.100	.660	1.199	14.477	1.988	1.112	2.645	.319	Cont.	Cont.

A. Mission Description and Budget Item Justification

This program provides for the development and acquisition of Psychological Operations (PSYOP) equipment. The purpose of PSYOP is to reinforce foreign or hostile attitudes and behavior favorable to U.S. national objectives. New and emerging national, regional, and ethnic power groupings and religious fanaticism have increased threats of terrorism, insurgency, instability, and subversion. Successful PSYOP can lower the morale and reduce efficiency of enemy forces and create dissidence and dissatisfaction within their ranks. This project funds replacement of existing 1950's and 1960's technology equipment currently employed, and provides enhanced capability to conduct tactical and theater-level PSYOP dissemination in support of regional unified commanders and their deployed task forces. The PSYOP programs funded in this project are grouped by the level of organization they support: Operational Element (Team) and Above Operational Element (Deployed). Sub-projects include:

OPERATIONAL ELEMENT (TEAM)

- Family of Loudspeakers (FOL). The FOL will be deployed by PSYOP Loudspeaker Teams and Mobile Audio/Visual Teams to target areas in support of Special Operations Forces and conventional forces. FOL will permit the conduct of loudspeaker missions over larger areas than present equipment capability allows and will provide a greater stand-off distance for US forces/assets. The FOL will consist of modular amplifiers and speakers that will provide high quality recorded audio, live dissemination, and limited acoustic deception capability. Amplifiers and speakers will be transported, operated, and mounted in ground vehicles, watercraft, and rotary wing aircraft, and dismounted for ground operations (tripod/manpack). The basic system, or manpack, is comprised of a modular amplifier and modular speaker(s) weighing 35 lbs or less.

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D476

- Leaflet Delivery Systems (LDS). This program develops a family of leaflet delivery systems to provide Psychological Operations (PSYOP) forces the capability to disseminate large quantities of leaflets over a wide geographic range to include denied areas. This system supports PSYOP operational requirements for numerous mission scenarios. LDS consists of multiple configurations to meet delivery requirements for various leaflet missions and environments. Current configurations include Guided Precision Aerial Delivery System-Light (GPADS-L); Staged Leaflet Delivery System (SLDS); and Precision Guidance Canister Bomb (PGCB).

ABOVE OPERATIONAL ELEMENT (DEPLOYED)

- Special Operations Media System (SOMS) B. A rapid deployable, C-130 drive on/drive off tactical radio/TV broadcast, reception and electronic news gathering system. This system replaces 1950-1960s technology and enhances the capability to conduct tactical level PSYOP dissemination in support of regional unified commanders. Reduces the airlift requirement from 7 C-130 aircraft to 2 C-130 aircraft.

- Deployable Print Production Center (DPPC). A rapid deployable, state-of-the-art computerized digital system capable of creating, editing and producing printed PSYOP products in forward locations and remote sites. The DPPC will be shelter-mounted on a heavy HMMWV with C-130 roll-on/roll-off capability. The system is comprised of a computerized development workstation with multiple input sources (graphics, color scanner, etc.), desktop publishing, highspeed digital color duplicator, and paper cutter. Reduces airlift from one C-5 aircraft to one C-130 aircraft. With this capability, PSYOP forces will now be able to respond and deploy rapidly to forward locations and remote sites in support of theater CINC OPLANS and CONPLANS, with the ability to produce PSYOP printed product immediately upon arrival.

- Special Operations Media System (SOMS) A. SOMS A is an operational/strategic mobile television/radio wide area broadcast system which is C-17/C-141 deployable. It will receive and transmit real-time PSYOP products to and from commercial and military sources by satellite and microwave. SOMS A will be interoperable with the fixed site media production center at Fort Bragg, NC, Theater Media Production Center, Air National Guard Commando Solo aircraft, and the tactical Special

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Operations Media System (SOMS) B.

FY 1996 ACCOMPLISHMENTS:

- ($647K) Family of Loudspeakers. Awarded basic contract for delivery of production qualification test article. (3QTR96)
- ($289K) Deployable Print Production Center. Conducted Milestone 0/I review. Conducted market research and evaluated non-developmental item equipment based on operator evaluation of the DPPC prototype developed as a Special Operations Special Technology project. (2QTR96-4QTR96)
- ($164K) SOMS B. Provided continued test support. (2QTR96-3QTR96)

FY 1997 PLAN:

- ($190K) SOMS B. Provide continued test support. (1QTR97-4QTR97)
- ($282K) SOMS A. Conduct Milestone 0 review. Begin research and development efforts with analysis of SOMS B lessons learned and market research of available non-developmental item equipment. Initiate SOMS A architecture study group. Update SOMS A concept study. (2QTR97-3QTR97)
- ($188K) Leaflet Delivery System (LDS). Conduct Milestone 0/I and Milestone II reviews. Update LDS concept study. Perform DT/OT of SLDS Variant. (2QTR97-3QTR97)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D476

FY 1998 PLAN:

- ($1,050K) Special Operations Media System (SOMS) A. Conduct Milestone I review. Conduct Milestone II review. Complete market research and finalize system specifications and configuration. (2QTR98-4QTR98)

- ($149K) Leaflet Delivery System. Complete development test / operational test and conduct Milestone III for Staged Leaflet Delivery System Variant. (2QTR98)

FY 1999 PLAN:

- ($14,184K) SOMS A. Conduct DT/OT and conduct Milestone III review. Award basic development contract with production options. Initiate SOMS A system number 1 integration. (2QTR99-4QTR99)

- ($293K) SOMS B. Provides funding for evolutionary technology insertions to include broadcast quality video transfer, achieving antennae objective range requirements, and other objective requirements not achieved during operational test. (2QTR99)

ACQUISITION STRATEGY:

- SOMS A. SOMS A will be a full and open competitive procurement to take maximum advantage of commercial broadcast industry "best practices." Following an FY97 update of the SOMS A concept study currently in progress at USSOCOM, market research will be conducted to identify potential sources. A competitive award of the basic SOMS A contract with production options is planned for FY99. SOMS A will follow an evolutionary acquisition strategy which provides phased periodic technological insertions to meet objective operational requirements which are not achievable at initial fielding.

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D476

B. Program Change Summary

	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	.295	.484	1.436	14.251	Cont.
Appropriated Value	.295	.484			
Adjustments to Appropriated Value / President's Budget	.805	.176	(.237)	.226	
Current Budget Submit	1.100	.660	1.199	14.477	Cont.

Change Summary Explanation:

Funding: The FY 1996 net increase is the result of a Congressional reduction for inflation adjustments and overhead/management savings and increase in Special Operations Media System (SOMS) B. FY 1997 adjustment includes cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, Congressional adjustment to Defense-wide investment appropriations, and increase for SOMS B testing. FY 1998 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast. FY 1999 adjustment is repricing of budgets to reflect the Administration's revised economic forecast and an increase due to revised cost estimate for SOMS A.

Schedule: Schedule adjustments are due to program restructures.

Technical: None.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, Psyop Equipment	16.914	8.218	10.280	4.916	16.292	11.659	3.957	6.925	Cont.	Cont.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D476

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Special Ops Media System (SOMS) B																
Test and Logistics Spt		x														
DT/OT					x											
MS III								x								
Technology Insert														x		
Family of Loudspeakers																
Test Article Production Contract			x													
MS III							x									
Deployable Print Production Center																
MS 0/I		x														
MS II				x												
MS III										x						
SOMS A																
MS 0						x										
MS I										x						
MS II												x				
DT/OT														x		
Leaflet Delivery System																
MS 0/I (SLDS)						x										
MS II (SLDS)								x								
DT/OT (SLDS)								x								
MS III/FUE (SLDS)									x							

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)				DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project D476		
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. Family of Loudspeakers (DT/OT)	647			
2. Deployable Print Production Center				
Contractor Engineering Support	77			
Integrated Logistics Support	25			
Government Engineering Support	45			
Development Support Equipment Acquisition	142			
3. Leaflet Delivery System				
Contractor Engineering Support		138	74	
DT/OT		50	75	
4. Special Operations Media System - A				
Contractor Engineering Support		282	750	
Government Engineering Support			300	284
Prototype Equipment Acquisition				13,900
5. Special Operations Media System - B				
Contractor Engineering Support	27			
Integrated Logistics Support	105	65		
DT/OT	32			
Technology Insertion		125		293
TOTAL:	1,100	660	1,199	14,477

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project D476

B. Budget Acquisition History and Planning Information

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
USSOCOM, Tampa FL	REQN	Var	Cont.	Cont.		142				Cont.	Cont.
Army, CECOM, Ft Monmouth NJ	ALLOT	Var	Cont.	Cont.	5,457	647				Cont.	Cont.
DOE, Nat'l Engr Lab, Idaho Falls ID	MIPR	May 93	Cont.	Cont.	3,240					Cont.	Cont.
TBD	Var	Var	N/A	N/A						Cont.	Cont.
MISC	C/FPI	Mar 99	13,900	13,900					14,193		N/A
Support and Management Organizations											
SOFSA, Lexington KY	MIPR	May 93			53						
LOGSA, Redstone Arsenal AL	MIPR	VAR			161	130				Cont.	Cont.
Booz-Allen & Hamilton, McLean VA	CPFF	Oct 93				77	65			Cont.	Cont.
MISC	Var	Var	Var	Var		72	420	1,124	284		N/A
Test and Evaluation Organizations											
JITC, Ft Huachuca AZ	MIPR	Mar 94			202		125			Cont.	Cont.
Army ATC, Aberdeen Proving Gd MD	MIPR	Aug 94			193	32				Cont.	Cont.
MISC	Var	Var	Var	Var			50	75			N/A

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					8,697	789			14,193	Cont.	Cont.
Subtotal Support and Management					214	279	485	1,124	284	Cont.	Cont.
Subtotal Test and Evaluation					395	32	175	75		Cont.	Cont.
Total Project					9,306	1,100	660	1,199	14,477	Cont.	Cont.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D615

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
D615, SOF Aviation	3.552	2.145	5.942	7.220	6.661	11.827	8.856	8.268	Cont.	Cont.

A. Mission Description and Budget Item Justification

A requirement exists to provide aviation support to Special Operations Forces (SOF) in world-wide contingency operations and low-intensity conflicts. The specialized aircraft for these missions must be capable of rapid deployment and undetected penetration of hostile areas. These aircraft must be capable of operating at extended ranges under adverse weather conditions to infiltrate, provide logistics for, reinforce, and extract SOF. The threat is characterized by an extensive and sophisticated ground based air defense system and an upgraded air-to-air capability targeted against helicopters. Third World operations are apt to involve greater distances and more challenging geographical environmental conditions than the European theater. This project will develop/upgrade the Special Operations rotary wing aircraft systems that will be capable of successful operations in these increasingly hostile environments. Rotary wing systems supported by this project include: A/MH-6, MH-60G/L/K, MH-53J, TH-53A, and MH-47D/E. Efforts include:

- A/MH-6. (1) Develops lightweight, rapid reconfigurable mission support equipment. (2) Prototypes and tests structural fuselage modifications to increase the maximum gross weight by 25%.

- MH-47E/MH-60K. (1) Develops and tests aircraft survivability equipment hardware and software. (2) Develops and tests the MH-60 fuel control system, conducts Congressionally mandated Live Fire testing on the MH-47E and MH-60K, develops and tests ballistically tolerant composite small arms protection system for vulnerable helicopter systems. (3) Develops and tests cockpit, hardware, and software improvements to communications and navigation systems.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D615

- MH-53J. (1) Conducts independent verification and validation of the software modules developed for the Interactive Defensive Avionics System/Multi-Mission Advanced Tactical Terminal modification; (2) Develops and installs software and hardware interfaces to allow flight line reprogramming of the ALQ-162 Electronic Countermeasures Jammer.

FY 1996 ACCOMPLISHMENTS:

- ($2,500K) A/MH-6. Developed and tested a Full Authority Digital Electronic Control (FADEC) for the A/MH-6. (4QTR96)
- ($1,052K) MH-53J. Conducted independent verification and validation of the software modules developed for the Interactive Defensive Avionics System/Multi-Mission Advanced Tactical Terminal modification and developed software and hardware interfaces to allow flight line reprogramming of ALQ-162 Electronic Countermeasure Jammers. (3QTR96-4QTR96)

FY 1997 PLAN:

- ($243K) MH-53J. Conduct independent verification and validation of software module changes developed for IDAS/MATT modification. (2QTR97-3QTR97)
- ($902K) MH-47/MH-60. Develop software and hardware to accommodate U.S. Army funded common engineering change proposals for the CH-47D and UH-60L in SOF MH-47E/MH-60K aircraft. (2QTR97-3QTR97)
- ($1,000K) A/MH-6. Continues FADEC development and testing. (1QTR97-4QTR97)

FY 1998 PLAN:

- ($149K) MH-53J. Participate in Air Force Mission Support System (AFMSS) software aircraft/weapon/electronic development. (1QTR98-2QTR98)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D615

- ($2,638K) MH-47/MH-60. Develop and prototype a power amplifier to improve the effectiveness of the continuous wave/pulse wave jamming systems and an exhaust suppressor to reduce the infrared signature of the MH-47 helicopter. (1QTR98-2QTR98)

- ($1,480K) MH-47/MH-60. Develop and test integrated fuel control systems for the MH-60 helicopter. Design and start development of a ballistically tolerant composite small arms aircraft protection system. (1QTR98-2QTR98)

- ($633K) MH-47/MH-60. Start integration and testing of a digital map system for the MH-47D and MH-60L Direct Action Penetrator. Start development of the weather radar drop-in card for the Multi-Mode RADAR for the MH-47E and MH-60K. (2QTR98-3QTR98)

- ($1,042K) A/MH6. Develop lightweight, rapid reconfigurable mission support equipment. Prototype and test structural fuselage modifications to increase the maximum gross weight by 25%. (1QTR98-2QTR98)

FY 1999 PLAN:

- ($3,800K) MH-47/MH-60. Start development and integration of an Aircraft Survivability Equipment controller. Start integration and testing of an Infrared Jammer on the MH-47 helicopter. (2QTR99-3QTR99)

- ($1,206K) MH-47/MH-60. Conduct Congressionally mandated Live Fire Testing on MH-47E/MH-60K components. Continue development of a ballistically tolerant composite small arms aircraft protection system. (2QTR99-3QTR99)

- ($1,766K) MH-47/MH-60. Continue integration and testing of a digital map system for the MH-47D and the MH-60L Direct Action Penetrator. Continue development of the weather radar drop-in card for the Multi-Mode RADAR for the MH-47E and MH-60K. (1QTR99-2QTR99)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D615

- ($448K) A/MH-6. Continue development of lightweight, rapid reconfigurable mission support equipment. (1QTR99-2QTR99)

ACQUISITION STRATEGY: NA.

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	3.426	1.163	1.340	28.419	Cont.
Appropriated Value	3.445	2.163			
Adjustments to Appropriated Value / President's Budget	.107	(.018)	4.602	(21.199)	
Current Budget Submit	3.552	2.145	5.942	7.220	Cont.

Change Summary Explanation:

Funding: FY 1996 increase reflects increased requirement for independent validation and verification of software modules for the Interactive Defensive Avionics System/Multi-Mission Advanced Tactical Terminal (IDAS/MATT) modification. FY 1997 net decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 adjustment is due to repricing of budgets to reflect the Administration's revised economic forecast and increased requirements for modernization in Aircraft Survivability Equipment and Pre-programmed Product Improvements across the USSOCOM rotary wing fleet. FY 1999 decrease reflects adjustments to utilize service common modernization efforts, a USSOCOM modernization reprioritization based upon fiscal constraints, and repricing of budgets to reflect the Administration's revised economic forecast.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project D615

Schedule: None.

Technical: None.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, OH-6 Proc/Mods			7.997							15.308
PROC, Rot. Wing Upgds & Sustainment	9.901	5.858	36.042	56.034	44.955	30.666	30.936	57.852	Cont.	Cont.

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
IDAS/MATT IV&V Contract Award		x														
ALQ-162 Contract Award / MS II		x														
A/MH-6 FADEC Contract Award						x										
Mission Enhanced Little Bird MSIIIB										x						
MH-47E/MH-60K																
Begin ECP Integration						x										
Power Amplifier Contract Award										x						
MH-60 Fuel Panel Contract Award										x						
ASE Controller Contract Award														x		
Multimode Radar Weather Card MS II															x	

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)				DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project D615		
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. IDAS/MATT IV&V	769	243	149	
2. ALQ-162	283			
3. MH-47/MH-60 Modifications		902	4,751	6,772
4. A/MH-6 Modifications	2,500	1,000	1,042	448
TOTAL:	3,552	2,145	5,942	7,220

Exhibit R-3

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project D615

B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
IDAS/MATT, WR-ALC	Var	Var				594	243	149			986
ALQ-162, WR-ALC, NAS	Var	Var				147					147
MH-47/60, PM-TAPO	Var	Var					727	4,037	5,751	Cont.	Cont.
A/MH-6, PM-MELB	Var	Var				2,500	1,000	880	448		4,828
Support and Management Organizations											
IDAS/MATT, WR-ALC	Var	Var				105					105
ALQ-162, WR-ALC	Var	Var				86					86
MH-47/60, PM-TAPO	Var	Var								Cont.	Cont.
Test and Evaluation Organizations											
IDAS/MATT, AFOTEC	Var	Var				70					70
ALQ-162, SMOTEC	Var	Var				50					50
MH-47/60, PM-TAPO	Var	Var					175	714	1,021	Cont.	Cont.
A/MH-6, PM-MELB	Var	Var						162			162

Government Furnished Property

Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development						3,241	1,970	5,066	6,199	Cont.	Cont.
Subtotal Support and						191				Cont.	Cont.
Subtotal Test and Evaluation						120	175	876	1,021	Cont.	Cont.
Total Project						3,552	2,145	5,942	7,220	Cont.	Cont.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project SF100

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
SF100, Aviation Systems Advanced Development	5.680	1.570	2.396	16.588	19.334	15.114	11.373	15.564	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project investigates already developed and maturing technologies that have direct application for the development and procurement of specialized equipment to meet unique SOF aviation requirements. Timely application of SOF-unique technology is critical and necessary to meet requirements in such areas as: Low Probability of Intercept/Low Probability of Detection (LPI/LPD) radio frequency radar; LPI formation/rendezvous flight; digital terrain elevation data and electronic order of battle; digital maps; LPI radar altimeter; display technology; situational awareness; near-real-time intelligence to include data fusion; laser radar/millimeter wave radar obstacle avoidance; imagery; threat detection and avoidance; electronic support measures for threat geolocation and specific emitter identification; navigation; target detection and identification technologies; and studies for future SOF aircraft requirements. Sub-projects include:

- AC-130H Weight Reduction. This program removes weight and restores the ability to configure appropriately for all combat missions by correcting center of gravity (CG) problems. Drag reduction is also addressed as an integral part of weight and CG improvements to enhance aircraft performance.

- AC-130U/H AAQ-26 Forward Looking Infrared Detection Set (IDS) Upgrade. Modifies the optics on the existing AN/AAQ-17 IDS and Enhanced AN/AAQ-17E IDS currently installed on 19 AC-130U/H aircraft. The modification will substantially increase the magnification and resolution of the IDS thus allowing the aircrew to identify friendlies/targets while operating outside the range of threat systems.

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- AC-130U P3I. Provides correction of system deficiencies and enhancement of mission capabilities for 13 AC-130U Gunships. Develops fixes for problems identified under the original AC-130U development contract, but determined to be out of scope for that effort.

- Aviation Engineering Analysis. Provides a rapid response capability to support SOF fixed wing aircraft. The purpose is to correct systems deficiencies, improve asset life, and enhance mission capability through the means of feasibility studies and engineering analyses. The sub-project provides the engineering required to improve the design and performance integrity of the aircraft support systems, sub-systems equipment, and embedded computer software as they relate to the maintenance, overhaul, repair, quality assurance, modifications, material improvements and service life extensions.

- MC-130H Combat Talon II Air Refueling System. Converts the MC-130H Combat Talon II into a deep penetrating, air refueling (AR) tanker capable of simultaneous refueling of two rotary and/or tilt-wing receivers. Air refueling pod replacement for 30 year old MC-130E and HC-130P/N hydromechanical hose reel design with a design that requires fewer parts and decreases weight. Enhanced internal fuel tanks replace the existing non-jettison tanks. The system will support ground forward area refueling point (FARP) operations, be capable of supporting small rolling stock, cargo, personnel, will be field loadable, four-man portable when empty. Tanks will be ballistic resistant against small arms up to 50 cal and Anti-Aircraft Artillery up to 14.55 mm. Enhanced 6 o'clock view will replace existing paratroop door window with a window that will provide increased awareness of receivers approaching the pre-contact position and while refueling.

FY 1996 ACCOMPLISHMENTS:

- ($2,984K) AC-130H Low Light Level TV. Awarded a sole-source contract for preliminary engineering studies. (3QTR96)

- ($2,675K) Low Probability of Interception (LPI) Penetration Aids. Continued flight evaluation of LPI modified avionics. (4QTR96)

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- ($21K) AAQ-26 Forward Looking Infrared Detection Set Upgrade. Supported program management operations. (2QTR96-4QTR96)

FY 1997 PLAN:

- ($1,370K) Aviation Engineering Analysis. Conduct a vulnerability assessment study for the AC-130H weight reduction effort and continue engineering analyses of SOF Fixed Wing Aircraft Avionics and Sensors. (2QTR97)
- ($200K) AC-130H Ammo Racks. Begins program management support of the development/design of a prototype ammo rack. (2QTR97-4QTR97)

FY 1998 PLAN:

- ($110K) AC-130H Weight Reduction. Completes development/design of a prototype ammo rack. (1QTR98)
- ($997K) AC-130U P3I. Begin activities for upgrade of Gunship APQ-180 Radar. (3QTR98)
- ($1,289K) Aviation Engineering Analysis. Continue engineering analyses of SOF Fixed Wing Aircraft Avionics and Sensors. (1QTR98-4QTR98)

FY 1999 PLAN:

- ($1,901K) AC-130U/H AAQ-26 Infrared Detection Set (IDS) Upgrade. Conduct a study and analysis of integration of upgraded AAQ-17 to the AC-130U trainer. (2QTR99)
- ($738K) AC-130H Weight Reduction. Begin development of lighter weight 105mm gunmount and new lighter weight armor

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panels. (1QTR99)

- ($3,319K) AC-130U P3I. Begin development efforts for upgrade of the Gunship mission computer to solve reliability problems and increase system memory and throughput capacity. (2QTR99)

- ($1,307K) Aviation Engineering Analysis. Conduct a study and analysis for various preplanned product improvements to the AC-130U Gunship. Continue engineering analysis of SOF Fixed Wing Aircraft Avionics and Sensors. (1QTR99-4QTR99)

- ($9,323) MC-130H Combat Talon II Air Refueling System. Begin design of group A and B for Air Refueling Pod and variable speed drogue. Begin design of Enhanced Six o'Clock View Kit. Begin design of Group B Internal Tanks. (2QTR99)

ACQUISITION STRATEGY:

- AC-130H Weight Reduction. Three phased approach. First phase, design a prototype of a lighter weight ammo rack. Install new ammo racks. Second phase removes armor that can be removed based on results of vulnerability assessment study. Plan on competing development/installation of new lighter weight armor. Last phase further reduces weight by replacing existing gunmount(s) with lighter weight ones.

- AC-130U/H AAQ-26 Infrared Detection Set (IDS) Upgrade. Award a fixed firm price sole source contract to Texas Instruments with production options. Texas Instruments will sub-contract to Lockheed for integration of the AAQ-26 on the AC-130H aircraft.

- AC-130U Mission Computer Upgrade. Pursue a phased modification of 52 mission computers to incorporate improvements to reliability, memory, and throughput capacity.

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- MC-130H Combat Talon II Air Refueling System. Competitive source selection, contract type is to be determined. Down-select to one developer for design, prototype development and test.

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	6.488	4.006	5.746	11.660	Cont.
Appropriated Value	7.634	4.006			
Adjustments to Appropriated Value / President's Budget	(1.954)	(2.436)	(3.350)	4.928	
Current Budget Submit	5.680	1.570	2.396	16.588	Cont.

Change Summary Explanation:

Funding: The FY 1996 decrease was due to revised OMB economic assumptions and restructuring of the Ring Laser Gyro program. FY 1997 and FY 1998 decreases reflect project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations and cancellation of LIDAR. FY 1999 adjustments are repricing of budgets to reflect the Administration's revised economic forecast and increases based upon revised cost estimates for AAQ-26 FLIR, AC-130U P3I and AC-130H weight reduction.

Schedule: None.

Technical: None.

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C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, C-130 Mods*	9.341	16.240	5.228	18.732	17.140	44.971	37.459	45.444	Cont.	Cont.

*Includes C-130 Modifications sub-line item funds for AC-130U/H AAQ-26 Infrared Detection Set Upgrade, AC-130H Low Light Level Television replacement, AC-130U P3I, AC-130H Weight Reduction, and MC-130H Air Refueling System.

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AC-130H LLLTV Contract Award for Studies			x													
AC-130U Mission Computer Study										x						
AC-130H Vulnerability Assessment Study Award						x										
MC-130H Air Refueling Contract Award														x		

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)				DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project SF100		
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. AC-130H Low Light Level TV Replacement	2,984	328		
2. LPI Penaids	2,675			
3. SOF Aviation Engineering Analyses		1,042	1,289	1,307
4. AAQ-26 FLIR	21			1,901
5. AC-130U P3I			997	3,319
6. AC-130H Weight Reduction		200	110	738
7. MC-130H Air Refueling				9,323
TOTAL:	5,680	1,570	2,396	16,588

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / SF100

B. Budget Acquisition History and Planning Information
Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations									1,901		8,426
Texas Instruments (AN/AAQ-17)	SS/FFP	Aug 95	8,426	8,426	6,525			997	3,319	Cont.	Cont.
TBD Contractor (AC-130U P3I)	TBD	TBD		TBD							9,236
TBD Contractor (LPI Penaids)	SS/FP	Mar 96		TBD	6,561	1,875					3,312
Lockheed Martin (LLLTV)	SS/T&M	Apr 96		3,312		2,984	328				Cont.
Lockheed (Weight Red)	SS/TBD	Feb 97	TBD	TBD			200	110	738		Cont.
TBD Contractor (CTII Air Refueling)	C/TBD	Jan 99							9,323	Cont.	Cont.
Various	Various				3,601	21	1,042	1,289	1,307	Cont.	Cont.
Support and Management Organizations											
Booz Allen Hamilton (LPI Penaids)	C/CPFF	Jan 95			1,444	800					2,444
Test and Evaluation Organizations											

Government Furnished Property

Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					16,687	4,880	1,570	2,396	16,588	Cont.	Cont.
Subtotal Support and Management					1,444	800					2,444
Subtotal Test and Evaluation											
Total Project					18,131	5,680	1,570	2,396	16,588	Cont.	Cont.

Exhibit R-3

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S0417

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S0417, Underwater Systems Advanced Development	29.861	21.796	24.229	2.318	5.227	12.446	10.323	5.752	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project funds the development of SEAL support items used during the conduct of hydrographic/inland reconnaissance, beach obstacle clearance, underwater ship attack, and other direct action missions. Sub-projects include:

- Advanced SEAL Delivery System (ASDS). The ASDS is a manned combatant submersible capable of delivering SOF personnel and weapons in a high threat environment. The ASDS will provide the requisite range, endurance, payload, and other capabilities for operation in the full range of threat environments.

- MK 8 Mod 1 SEAL Delivery Vehicle (SDV). This program upgrades and extends the service life of aging MK 8 Mod 0 SDVs; the MK 8s were built with 1960s technology. The new MK 8 Mod 1 SDV will incorporate more modern equipment to improve supportability / maintainability and will include upgrade of selected subsystems. The program was renamed MK 8 Mod 1 to more accurately reflect its nature as a Service Life Extension Program rather than a new, in-depth Research, Development, and Acquisition program.

- Undersea Systems. Development of undersea systems which provide the SOF combat swimmers with the necessary diving and diving related equipment to fulfill assigned underwater combat missions include the following:

  - Naval Special Warfare Mine Countermeasures (NSWMCM). Phased development/improvement of low magnetic and acoustic signature equipment to support the combat swimmer in the NSWMCM operational environment.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S0417

- Non-Gasoline Burning Outboard Engine (NBOE). Development of a submersible outboard engine, which does not use highly volatile gasoline, for use on SOF Combat Rubber Raiding Craft.

FY 1996 ACCOMPLISHMENTS:

- ($26,019K) Advanced SEAL Delivery System (ASDS). Completed all critical design reviews and resolved all major design issues. Production readiness review approved for hull and antenna/mast. Hull fabrication 75 percent complete. Initiated component testing. Continued fabrication and integration of the first ASDS and began system level testing. Began conversion of primary host platform to support system level testing. (1QTR96-4QTR96)

- ($75K) Naval Special Warfare Mine Countermeasures (NSWMCM). Continued development of integrated sensor navigation system and remote command detonation device. (2QTR96-3QTR96)

- ($398K) Non-Gasoline Burning Outboard Engine (NBOE). Awarded contract for prototype engine. (2QTR96-4QTR96)

- ($3,369K) Project Classified. Reported under separate cover.

FY 1997 PLAN:

- ($21,021K) ASDS. Close out all critical review design items. Conduct remainder of production readiness reviews. Continue component testing. Continue fabrication of prototype/first ASDS vehicles. Conduct training of Navy crews. Provide support equipment and fund model testing for the first SSN 688 Class host. Ship pressure vessel of first ASDS to prime contractor for integration. Continue subsystem testing of first ASDS. (1QTR97-4QTR97)

- ($775K) NBOE. Continue development of prototype engine. Initiate early user assessment of prototype engine in the 3rd quarter (April, 1997) and accomplish Milestone II in 4th quarter. (1QTR97-4QTR97)

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FY 1998 PLAN:

- ($22,429K) Advanced SEAL Delivery System (ASDS). Complete integration of prototype/first ASDS vehicle. Conduct final operational test & evaluation of first ASDS, in shallow water. Perform simulated missions for training. Move test site to deep water for deep water testing and operational training with submarine host. Start construction of first follow-on vehicle (ASDS #2). (1QTR98-4QTR98)

- ($997K) Naval Special Warfare Mine Countermeasures (NSWMCM). Continue development of integrated sensor navigation system and remote command detonation device. (1QTR98-3QTR98)

- ($803K) Non-Gasoline Burning Outboard Engine. Complete developmental testing, operational testing, and accomplish Milestone III in the 4th quarter 1998. (1QTR98-4QTR98)

FY 1999 PLAN:

- ($330K) ASDS. Initiate pre-planned product improvements for a communications buoy, to enable communications while submerged. (1QTR99-4QTR99)

- ($993K) ASDS. Initiate pre-planned product improvement to develop nickel-cadmium batteries which could be used for training and shorter missions, to save future costs. (1QTR99-4QTR99)

- ($995K) NSWMCM. Continue development of integrated sensor navigation system and remote command detonation device. (1QTR99-3QTR99)

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S0417

ACQUISITION STRATEGY:

- Advanced SEAL Delivery System (ASDS). To select three qualified companies to develop independent preliminary designs. Following completion of the preliminary design efforts, a request for proposal for the engineering and manufacturing development (EMD) contract was released to these companies for proposal submittal for the design, fabrication, and test of the first ASDS. A single contractor was selected based on a best value source selection process. The selected contractor will also construct the production systems as phased pricing options in the ASDS EMD contract.

- MK 8 Mod 1 SEAL Delivery Vehicle (SDV). To develop a series of hardware modifications using a combination of off-the-shelf equipment and in-house Navy and contractor developed hardware, integrated by the SDV design agent.

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	30.863	18.993	11.921	4.473	Cont.
Appropriated Value	31.587	21.793			
Adjustments to Appropriated Value / President's Budget	(1.726)	.003	12.308	(2.155)	
Current Budget Submit	29.861	21.796	24.229	2.318	Cont.

Change Summary Explanation:

Funding: The FY 1996 decrease reflects revised OMB economic assumptions and realignment of funds to another acquisition program. FY 1997 and FY 1998 net increase and FY 1999 decrease reflects a restructuring of the Advanced SEAL Delivery System program and repricing of budgets to reflect the Administration's revised economic forecast.

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Schedule: None.

Technical: None.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
ASDS										
PROC, ASDS			38.800	38.378	46.402	54.362	50.717	5.079	Cont.	Cont.
PROC, ASDS Adv Buy		4.400	2.465	2.515	2.590	2.668				
MK 8 Mod 1 SDV										
PROC MK8 Mod 1 SDV	10.958	9.255	2.229	.603						34.837
NSWMCM										
PROC, Maritime Equip.					.894	2.087	6.070	10.977	Cont.	Cont.
MK 8 Mod 1 SDV										
PROC, Spares and Repair Parts	.924	1.725								2.660
NBOE										
PROC, Maritime Equip.				2.254	.707				Cont.	Cont.

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D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Advanced SEAL Delivery System																
Complete Critical Design Reviews			x													
Start Testing First Unit					x											
Start Construction of 2nd ASDS									x							
Start Construction of 3rd ASDS													x			
Non-Gasoline Burning Outboard Engine																
Milestone II								x								
Milestone III												x				
NSW Mine Countermeasures																
Milestone I										x						

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)			DATE FEBRUARY 1997	
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1140404BB Special Operations Tactical Systems Development / Project S0417			
	FY96	FY97	FY98	FY99
A. Project Cost Breakdown ($ in thousands)				
1. Advanced SEAL Delivery System				
Detailed Design / Manufacturing Development	25,319	20,343	21,739	
Program Management Office Support	700	678	690	
Pre-Planned Product Improvement				1,323
2. Other Undersea Systems				
Naval Special Warfare Mine Countermeasures Engineering and Manufacturing Dev.	75		997	995
Non-Gasoline Burning Outboard Engine Development	398	775	803	
3. Project Classified	3,369			
TOTAL:	29,861	21,796	24,229	2,318

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project S0417

B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
ASDS, Westinghouse, MD	C/CPIF	Sep 94			44,359	21,419	20,293	21,739	1,323		109,133
ASDS, Newport News Shipbuilding, VA	CPFF	Apr 95			5,100	3,900					9,000
SDV, NSWC, Coastal Systems Station	WR	Various			11,719						11,719
NSWMCM, TBD	Various	Jan-May 95			1,556	75		900	900	Cont.	Cont.
NBOE, CSS	Various	Various				323	540	528			1,391
Project Classified					1,798	3,369					5,167
Support and Management Organizations											
ASDS, NAVSEASYSCOM (PMO)	WR	Various			1,110	700	678	690		Cont.	Cont.
ASDS, P3I	WR	Various			4,208						4,208
SDV, NAVSEASYSCOM	WR	Various			374						374
NSWMCM, NAVSEASYSCOM	WR	Various			223			97	95	Cont.	Cont.
NBOE, CSS	WR	Various				75	235	125			435
Test and Evaluation Organizations											
ASDS, COMOPTEVFOR	WR	Jun 97					50				50
NBOE, CSS								150			150
Government Furnished Property - None											
Subtotal Product Development					64,532	29,086	20,833	23,167	2,223	Cont.	Cont.
Subtotal Support and Mgmt					5,915	775	913	912	95	Cont.	Cont.
Subtotal Test and Evaluation							50	150			200
Total Project					70,447	29,861	21,796	24,229	2,318	Cont.	Cont.

Exhibit R-3

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project 3284

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
3284, SOF Aircraft Defensive Systems	10.744	6.413	8.155	5.464	20.115	17.434	11.383	10.015	Cont.	Cont.

A. Mission Description and Budget Item Justification

Project provides definition, development, prototyping and testing of aircraft defensive avionics systems. The project will identify hardware and software enhancements for each Special Operations Forces (SOF) aircraft that will reduce detection, vulnerability, and threat engagement from threat radars thereby increasing the overall survivability of SOF assets. This project will identify and develop enhancements to each platform to meet the projected threat. Recommendations for equipment modification or replacement will be developed by each System Program Manager based upon the results of on-going engineering assessments and user operational requirements. This project is funding: dispenser upgrade and improvement programs, threat and missile warning receiver enhancements, radio frequency (RF) jammer improvements, and development of an infrared jamming system. Project also provides systems for SOF-unique portions of the Warner Robins-Air Logistics Center Electronic Warfare Avionics Integrated Systems Facility (EWAISF). The EWAISF directly supports software development and testing. The EWAISF effort is a type of Systems Integration Laboratory designed to support the incorporation of SOF aircraft defensive systems modifications into specific SOF platforms. Sub-projects include:

- AAR-44 Missile Warning Receiver. A system improvement modification to the AAR-44 Passive Infrared Warning Receiver to enhance operational capability and reliability against surface-to-air missiles. Program corrects critical high false alarm rate and provides Directional Infrared Countermeasures interface.

- ALQ-172 Electronic Countermeasures (AC-130U/MC-130H). A modification of the ALQ-172 radio frequency jammer that improves capability by adding low band jamming coverage for thirteen AC-130U Gunships and 24 MC-130H Combat Talon II aircraft.

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- Directional Infrared Countermeasures (DIRCM). A joint international cooperative United Kingdom/United States project to develop a jammer for MC-130E/H and AC-130H/U aircraft capable of countering missile threats in the band one, two and four infrared frequency spectrum.

FY 1996 ACCOMPLISHMENTS:

- ($8,647K) Directional Infrared Countermeasures (DIRCM). Continued the cooperative UK/US development/production program. Completed Group A preliminary design review. Completed Group A and B critical design review. Complete qualification testing of prime mission equipment hardware. (1QTR96-3QTR97)

- ($1,502K) ALQ-172 Electronic Countermeasures. Continued to test and support the ALQ-172 Radio Frequency Countermeasures Low-Band Jammer for eight AC-130H aircraft. (1QTR96-4QTR96)

- ($595K) AAR-44 Missile Warning Receiver. Expanded scope of test program, both ground and flight, to certify extensive use of commercial parts in critical areas. (3QTR96-2QTR97)

FY 1997 PLAN:

- ($3,613K) DIRCM. Continue to support a cooperative UK/US development/production program for 59 SOF C-130 aircraft. (1QTR97-3QTR98)

- ($2,800K) Electronic Warfare Avionics Integrated Systems Facility (EWAISF). Continue to support laboratory efforts to include update of the AAR-44 Integrated Support Station update. (1QTR97)

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FY 1998 PLAN:

- ($6,093K) Directional Infrared Countermeasures (DIRCM). Continue to support a cooperative UK/US development/production program for 59 SOC C-130 aircraft. (1QTR98-3QTR99)
- ($299K) ALQ-172 Electronic Countermeasures. Begin test and support of the ALQ-172 Low Band Jammer installation on thirteen AC-130U Gunships. (1QTR98-4QTR98)
- ($1,763K) Electronic Warfare Avionics Integrated Systems Facility (EWAISF). Continue to support laboratory efforts to include update of the Infrared Integrated Support Station. (1QTR98)

FY 1999 PLAN:

- ($2,136K) Directional Infrared Countermeasures (DIRCM). Continue to support a cooperative UK/US development/production program for 59 SOF C-130 aircraft. (1QTR99-3QTR00)
- ($1,493K) ALQ-172 Electronic Countermeasures. Continue test and support of the ALQ-172 Low Band Jammer installation on thirteen AC-130U Gunships. (1QTR99-4QTR99)
- ($1,835K) EWAISF. Continue to support laboratory efforts to include update of the ALQ-196 Integrated Support Station. (1QTR99)

ACQUISITION STRATEGY:

- DIRCM. The Memorandum of Agreement between the UK/US established the cooperative international DIRCM program.

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The UK Ministry of Defence is the lead for the program. UK law applies to all acquisition actions. USSOCOM program manager is the US deputy to the UK Directional Infrared Countermeasures program manager.

- Electronic Warfare Avionics Integrated Systems Facility (EWAISF). Award sole source contracts to the manufacturer of the prime mission equipment required for hardware and hardware/software integration into the EWAISF.

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	12.109	6.567	7.879	3.990	Cont.
Appropriated Value	12.361	6.567			
Adjustments to Appropriated Value / President's Budget	(1.617)	(.154)	.276	1.474	
Current Budget Submit	10.744	6.413	8.155	5.464	Cont.

Change Summary Explanation:

Funding: FY 1996 decrease due to revised OMB economic assumptions and restructuring of the EWAISF and ALQ-172 programs. FY 1997 decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 adjustments reflect repricing of budgets to reflect the Administration's revised economic forecast and acceleration of the follow-on ALQ-172 mod on AC-130U and MC-130H aircraft.

Schedule: None.

Technical: None.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
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C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, C-130 Mods*	66.076	27.325	70.428	96.763	77.363	91.200	75.228	87.485	Cont.	Cont.

*Includes C-130 Modifications sub-line item funds for ALE-47 Chaff and Flare Dispenser, DIRCM, APR-46 Improvements, ALQ-172 Radio Frequency Countermeasures Jammer, Lifeline, AAR-44 Missile Warning Receiver, C-130 Infrared Suppressor, DIRCM P3I, and C-130 Electronic Warfare Data Bus.

D. Schedule Profile	FY96 1	2	3	4	FY97 1	2	3	4	FY98 1	2	3	4	FY99 1	2	3	4
Directional Infrared Countermeasures (DIRCM)																
CDR	x															
Start Formal Testing			x													
Production Decision								x								
Complete AC-130H QOT&E										x						
ALQ-172 Elec Countermeasures MS III	x															
AAR-44 Missile Warning Receiver MS III						x										

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)				DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project 3284		
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. AC-130H ALQ-172	1,502			
2. DIRCM				
Interface Control Document Development				
Preliminary / Functional Design	3,623		2,713	946
Tests	2,698	1,436	1,000	400
ECPs	231	377	400	100
Program Management Office	2,095	1,800	1,980	690
3. EWAISF		2,800	1,763	1,835
4. ALQ-172 (AC-130U/MC-130H)			299	1,493
5. AAR-44 System Improvement Mod	595			
TOTAL:	10,744	6,413	8,155	5,464

Exhibit R-3

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1996
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project 3284

B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
Northrop (DIRCM)	C/FP	Mar 95	TBD	33,670	30,047	3,623		2,713	946		37,329
Georgia Tech (EWAISF)	SS/CPIF	Sep 94	2,490	2,490	2,490						2,490
Amhurst (EWAISF)	SS/FFP	Oct 96		Cont.			2,800	1,763	1,835	Cont.	Cont.
Cincinnati Electronics (AAR-44)	SS/CPIF	Nov 94	7,328	7,328	6,733	595					7,328
TBD (ALQ-172 LBJ)	TBD	Nov 97	TBD	TBD				299	1,493	Cont.	Cont.
Various	Various	Various		Cont.	3,314	407	377	400	100	Cont.	Cont.
Support and Management Organizations											
Booz Allen Hamilton (DIRCM)	C/FP	Apr 93	TBD	14,407	5,842	2,095	1,800	1,980	690	2,000	14,407
SSAI (ALQ-172)	SS/CPFF	Jun 95	2,819	2,819	2,139	680					2,819
MTI (ALQ-172)	SS/FFP	Jul 95	482	482	253	229					482
ITC (ALQ-172)	SS/T&M	Sep 95	308	308	208	100					308
Test and Evaluation Organizations											
AFOTEC/Other (DIRCM)	PO	Dec 95	TBD	6,534		2,698	1,436	1,000	400	1,000	6,534
USAF Flight Test Facility (ALQ-172)	PO	Nov 95	3,817	3,817	3,817	317					4,134

Government Furnished Property

Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
ALQ-172 Group B provided by USAF											
Subtotal Product Development					42,584	4,625	3,177	5,175	4,374	Cont.	Cont.
Subtotal Support and Management					8,442	3,104	1,800	1,980	690	2,000	18,016
Subtotal Test and Evaluation					3,500	3,015	1,436	1,000	400	1,000	10,351
Total Project					54,526	10,744	6,413	8,155	5,464	Cont.	Cont.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project 3326

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
3326, AC-130U	4.282	14.495	6.009	1.164	1.386	1.375	.755	.759	Cont.	Cont.

A. Mission Description and Budget Item Justification

The AC-130U aircraft will be more capable and survivable than the existing AC-130A/H aircraft. The aircraft subsystems will include precision navigation, target acquisition and strike radar, fire control computers integrated on redundant MIL-STD-1553B data buses, electronic countermeasures, infrared countermeasures, aerial refueling, covert lighting, trainable weapons, all light level television, infrared sensor, and secure communications systems. These subsystems will enable the gunship to strike targets with surgical accuracy, to loiter safely in the target area for extended time periods, and to perform these tasks in night or adverse weather conditions. Every effort has been made to adapt off-the-shelf equipment. To the maximum extent possible, the subsystems in the AC-130U will be common with systems on other Air Force Special Operations Command aircraft. AC-130U software will be fixed and/or enhanced using a Systems Integration Laboratory (SIL).

FY 1996 ACCOMPLISHMENTS:

- ($531K) Continued development of SIL. (4QTR96)
- ($991K) Radar software development facility support. (2QTR96)
- ($100K) Continued effort on technical order verification and validation. (2QTR96)
- ($745K) Continued government software and All Light Level TV sensor flight test and support. (2QTR96-3QTR96)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project 3326

- ($1,915K) Continued mission support including contractor advisory and assistance services and travel. (1QTR96-3QTR96)

FY 1997 PLAN:

- ($7,258K) Perform engineering analysis and identify corrections for service reports. (1QTR97)
- ($1,260K) Continue Systems Integration Laboratory development. (1QTR97)
- ($4,150K) Develop depot-level fixtures and holding tools for delivery to Warner Robins Air Logistics Center. (3QTR97)
- ($641K) Continue mission support and contractor advisory services. (1QTR97-4QTR97)
- ($166K) Continue effort on technical order verification and validation. (1QTR97)
- ($550K) Continue radar software development facility support. (1QTR97-4QTR97)
- ($470K) Continue sensor flight test operations and support. (2QTR97-3QTR97)

FY 1998 PLAN:

- ($233K) Continue effort on technical order verification/validation and printing. (1QTR98)
- ($4,580K) Develop I-level support equipment for the trainable gunmount system and the 25mm gun. (2QTR98)
- ($418K) Conduct annual software flight test operations and support. (2QTR98-3QTR98)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project 3326

- ($570K) Continue reliability and maintainability technical studies and analysis. Examine alternative solutions for control and display problems. (3QTR98)
- ($208K) Continue mission support. (1QTR98-4QTR98)

FY 1999 PLAN:

- ($170K) Continue effort on technical order verification/validation and printing. (2QTR99)
- ($395K) Continue annual software flight test operations and support. (2QTR99-3QTR99)
- ($591K) Continue reliability and maintainability technical studies and analysis. Continue control and display analysis. (2QTR99)
- ($8K) Continue mission support (system safety support). (1QTR99)

ACQUISITION STRATEGY: Modify C-130H airframe into a side-firing configuration on a sole-source fixed price incentive development contract. Conduct a combined Qualification Test and Evaluation/Qualification Operational Test and Evaluation(QOT&E) and a dedicated QOT&E. The AC-130U will be logistically supported at organizational, intermediate and depot levels via interim contractor support until organic support is established. Initial operational capability March 1996, full operational capability in FY 2001.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project 3326

B. Program Change Summary

	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	6.124	14.563	6.327	1.668	Cont.
Appropriated Value	6.252	14.563			
Adjustments to Appropriated Value / President's Budget	(1.970)	(.068)	(.318)	(504)	
Current Budget Submit	4.282	14.495	6.009	1.164	Cont.

Change Summary Explanation:

Funding: FY 1996 decrease due to revised OMB economic assumptions. FY 1997 decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast.

Schedule: None.

Technical: None.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project 3326

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, C-130 Mods	10.651	1.030	0	6.665	8.000	16.670	18.933	27.738	Cont.	Cont.
PROC, AC-130U	64.610	44.800	55.105	29.643	27.726	22.597	3.443	1.860	Cont.	Cont.

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Initial Operational Capability		x														
Final Aircraft Delivery						x										

Full Operational Capability: Mar 2001

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)			DATE FEBRUARY 1997	
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project 3326		
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. Other Gov't Test (TOV&V)	100	166	233	170
2. SIL S/W	531	1,260		
3. Depot-level fixtures and holding tools		4,150		
4. Technical Studies / Analyses	991		570	591
5. Development of Service Reports		7,258		
6. Sensor test and support	745	470		
7. Mission support and contractor advisory services	1,915	641	208	8
8. Intermediate-level support equipment			4,580	
9. Flight test and support			418	395
10. Radar software development facility support		550		
TOTAL:	4,282	14,495	6,009	1,164

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project 3326

B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
Rockwell NAA	C/FPIF	Jul 87	194,589	194,589	194,589						194,589
Rockwell Flt Test	SS/FPIF	Various		16,941	16,941						16,941
Rockwell ECPs	SS/CPFF	Various		39,564	14,266	2,267	13,218	5,150	591	4,072	39,564
Loral (IBM)	SS/FPIF	Various		4,777	4,777						4,777
General Electric	SS/FFP	Various		1,436	1,436						1,436
TBD (ECOs)	TBD	Various		135	135						135
LASC	SS/FFP	Oct 94		955	955						955
Rockwell (T-1 Training)	SS/FFP	Nov 89		616	616						616
Miscellaneous	Various	Various		3,798	3,798						3,798
Support and Management Organizations											
Air Force, AFMC ASC/LU	Various			32,240	20,927	1,915	641	208	8	8,541	32,240
Test and Evaluation Organizations											
AFFTC	PO	Various		35,251	33,968		470	418	395		35,251
ITT	SS/FFP	Jan 93		835	835						835
Other Gov't Test (TOVV)	PO	Oct/ea. FY		1,615	946	100	166	233	170		1,615
RADC Testing	PO	Various		748	748						748
WRDC Testing	PO	Various		224	224						224

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)											DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7				R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project 3326							
Government Furnished Property											
Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Property											
Lockheed Airframe	SS/FFP				13,398						13,398
Allison Engines	SS/FFP				2,196						2,196
Various Avionics	MIPR				2,868						2,868
Various Other	MIPR				413						413
Support and Management Property											
None											
Test and Evaluation Property											
Flight Test Support Equipment					1,672						1,672
Other Gov't Test (TOVV) Milstrip					66						66
Subtotal Product Development					256,388	2,267	13,218	5,150	591	4,072	281,656
Subtotal Support and Management					20,927	1,915	641	208	8	8,541	32,240
Subtotal Test and Evaluation					38,459	100	636	651	565		38,673
Total Project					315,774	4,282	14,495	6,009	1,164	12,583	352,569

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S350

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S350, Special Operations Forces Planning and Rehearsal System (SOFPARS)	7.997	7.339	5.640	4.072	3.801	3.535	3.275	3.024	Cont.	Cont.

A. Mission Description and Budget Item Justification

SOFPARS is a joint acquisition program for the United States Special Operations Command. This program is developing an automated mission planning capability to support Special Operations Forces (SOF). SOFPARS will consist of the SOF version of the Air Force Mission Support System and the SOF Portable Computer Flight Planning System. SOFPARS will be provided to Air Force Special Operations Command units and the aviation component of the United States Army Special Operations Command - the 160th Special Operations Aviation Regiment. SOFPARS will automate mission planning thus allowing SOF commanders and crews to plan and respond quickly to missions of national importance as well as day-to-day taskings. To accomplish this task, SOFPARS will provide a multi-command level planning capability at major SOF headquarters, theater headquarters, SOF Forward Operating Bases and Forward Operating Locations. SOFPARS will also provide portable subsystems and mission execution support products for use by crews deployed to operational locations. Present aviation mission planning capabilities cannot adequately support the stated mission need. Existing systems are insufficient for planning SOF operations. Specifically, existing systems lack sufficient processing speed and flexibility, storage capacity, growth potential, graphics (both on-screen and hard copy output), image processing and storage, and the ability to process combat planning folder data in a timely manner. They also lack near-real-time access to national/tactical level data bases and the capability to update data in a timely fashion, along with the means to effectively process the data during mission planning. The mobility, complexity, quantity, and lethality of enemy threats dictate automated data input and systems that can be interfaced via electronic communication systems throughout the SOF community. The SOFPARS effort meets the joint requirement to ensure interoperability and standardization of the mission planning process between SOF and the Services. Develops Aircraft / Weapons / Electronics modules for MH-60G/K/L, MH-47E/D, MH-53J, MC-130E/H, AC-130H/U, A/H-6, HC-130P/N, and CV-22.

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FY 1996 ACCOMPLISHMENTS:

- ($720K) Continued Air Force Mission Support System (AFMSS) Aircraft/Weapons/Electronics (A/W/E) interface software module development for all SOF aircraft. (2QTR96-4QTR96)
- ($1,500K) Continued block C2.O and C2.0+ (now C2.1) software development. Started development of AFMSS C2.2 software. (2QTR96-1QTR97)
- ($2,555K) Continued Common Mapping production system development, develop AFMSS interfaces and Portable Computer (PC) Flight Planning System (PFPS) interfaces. (2QTR96-4QTR96)
- ($3,222K) Began software module enhancements to the PC PFPS to integrate and extend SOF A/W/E software modules to include interface with the AFMSS component of SOFPARS. (2QTR96-4QTR96)

FY 1997 PLAN:

- ($1,930K) Continue AFMSS C2.2 software development. (1QTR97-4QTR97)
- ($1,500K) Continue developing AFMSS interfaces and the PC PFPS interfaces. (1QTR97-4QTR97)
- ($3,909K) Continue PC PFPS enhancements to include aircraft/weapons/electronics interface software module development for all SOF aircraft. (1QTR97-4QTR97)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S350

FY 1998 PLAN:

- ($1,057K) Begin AFMSS C3.0 development (SOF unique features). (1QTR98-4QTR98)
- ($2,233K) Continue PC based development and integration with AFMSS C3.0 software architecture. (1QTR98-4QTR98)
- ($2,350K) Continue aircraft weapons/electronics interface software module development. (1QTR98-4QTR98)

FY 1999 PLAN:

- ($1,055K) Complete AFMSS C3.0 development (SOF unique features). (1QTR99-4QTR99)
- ($1,767K) Continues PC based development and integration with AFMSS C3.0 software architecture. (1QTR99-4QTR99)
- ($1,250K) Continue aircraft weapons/electronics interface software module development. (1QTR99-4QTR99)

ACQUISITION STRATEGY:

Develop mission planning software to support SOF operations leveraging ongoing efforts with common PC PFPS and AFMSS requirements. Integration of PC PFPS and AFMSS to support SOF requirements maximizes use of commercial off-the-shelf software technology and components to reduce overall costs and schedule. Contract strategy combines various contracts and types to include competitively awarded cost plus and sole source cost no fee (educational institution) contracts. Maximize use of existing hardware technology procured via firm fixed price contract to take advantage of software portability and open system architecture. Focuses on aircraft / weapons / electronics interface required to initialize and upload aircraft avionics through the use of electronic data transfer devices. Uses software support facility to maintain and update software.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S350

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	9.456	7.439	5.656	4.092	Cont.
Appropriated Value	9.653	7.439			
Adjustments to Appropriated Value / President's Budget	(1.656)	(.100)	(.016)	(.020)	
Current Budget Submit	7.997	7.339	5.640	4.072	Cont.

Change Summary Explanation:

Funding: FY 1996 decrease is for Congressional inflation adjustments, overhead/management savings, and realignment to fund higher priority MFP-11 requirements. FY 1997 decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast.

Schedule: Software blocks are defined by funding and time. Cost overruns have caused blocks C2.0 to be restructured into C2.0, C2.0+ (now C2.1), C2.2, and Air Force Mission Support System C3.0 and have been deferred accordingly.

Technical: Mission Planning technical architecture has been expanded to include integration of requirements into the Portable Computer Flight Planning System and the Air Force Mission Support System. Expansion is to take best advantage of existing mission planning software and hardware and commercial off-the-shelf software to reduce overall cost and schedule.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S350

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, SOFPARS	1.086	1.876	.568	1.128	2.516	2.680	2.077	.998	Cont.	Cont.

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Block C2.0 FCA/PCA			x													
Block C2.0+(now C2.1) FCA/PCA							x									
AFMSS 3.0 Development Contract Award											x					
Block C2.2 Award					x											
Block C2.2 FCA/PCA									x							
PFPS Release 2.0					x											
PFPS Release 3.0									x							
PFPS Release 4.0													x			

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)				DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7				R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project S350
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. Air Force Mission Support System Mission Planning Core	1,500	1,930	1,057	1,055
2. Aircraft, Weapons, Electronics Interfaces and SOF Common Module/Interfaces	6,497	5,409	4,583	3,017
TOTAL:	7,997	7,339	5,640	4,072

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project S350

B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations Various	Various	Various		Cont.	22,151	5,326	5,375	4,385	3,336	Cont.	Cont.
Support and Management Organizations Various	Various	Various		Cont.	5,709	2,671	1,964	752	486	Cont.	Cont.
Test and Evaluation Organizations	TBD	TBD		Cont.				503	250	Cont.	Cont.

Government Furnished Property

Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					22,151	5,326	5,375	4,385	3,336	Cont.	Cont.
Subtotal Support and Management					5,709	2,671	1,964	752	486	Cont.	Cont.
Subtotal Test and Evaluation								503	250		
Total Project					27,860	7,997	7,339	5,640	4,072	Cont.	Cont.

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S375

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S375, Weapons and Support Systems Advanced Development	.147	3.801	4.109	2.548	4.100	2.525	.463	.276	Cont.	Cont.

A. Mission Description and Budget Item Justification

Special Operations Forces (SOF) often deploy as small, independent, quick reaction, foot-mobile teams independent of primary logistics support. Existing weapons and fire control are frequently too heavy to use under these conditions. This project provides for development and testing of specialized, lightweight individual weapons, fire control/surveillance devices, and combat equipment to meet the unique requirements of SOF. This is a continuing program. Sub-projects include:

- Heavy Sniper Rifle (HSR). HSR provides SOF with a standoff engagement capability against various materiel targets such as parked aircraft, C3I sites, radar equipment, ammunition storage facilities, fuel storage facilities, and light armored vehicles. Allows SOF operators to engage materiel targets at long range before enemy security forces can react.

- Improved Night/Day Observation/Fire Control Device (INOD). Allows the SOF sniper to detect, acquire, and engage targets out to his weapon's maximum effective range under day and night conditions. INOD is intended for use on the M24 sniper rifle (small device) and the .50 caliber heavy sniper rifle (large device).

- M4A1 Carbine SOF Accessories Kit. SOF variant of standard Army M4 Carbine. Allows mounting of optional accessories (up to 30 different functions/capabilities) such as day scopes, night scopes, active aiming laser module, visible lights, grenade launchers, suppressors, and hand grips.

- SOF Personal Equipment Advanced Requirements, formerly called battle dress system. Integrates the development and

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procurement of everything the SOF operator wears, carries, and consumes. It treats the individual SOF operator as a system, and acquires SOF-unique, state of the art equipment in nine functional areas (clothing, body armor/load bearing equipment, ballistic protection, optical protection, nuclear biological chemical protection, signature reduction, physiological management, target acquisition, command control communications computers and information).

FY 1996 ACCOMPLISHMENTS:

- ($147K) SOF Personal Equipment Advanced Requirements (SPEAR). Initiated load bearing and body armor technology studies to identify materials and fabrics which provide measurable improvement over existing load-bearing and body armor systems. (2QTR96-4QTR96)

FY 1997 PLAN:

- ($730K) SPEAR. Develop and test Body Armor / Load Bearing Equipment prototypes. Initiate Modular Integrated Communications Helmet. (1QTR97-3QTR97)
- ($44K) M4A1 Carbine SOF Accessories Kit. Evaluate integration of night scopes with active laser aiming module and/or reflex sight. (3QTR97)
- ($2,737K) Improved Night/Day Observation/Fire Control Device (INOD). Complete front end analysis of feasible technologies. Award contract for development and test of early prototypes. (1QTR97-3QTR97)
- ($290K) Heavy Sniper Rifle. Conduct shoot-off and downselect of NDI vendor samples. Initiate design verification testing of selected weapon. (2QTR97-4QTR97)

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FY 1998 PLAN:

- ($2,392K) Improved Night/Day Observation/Fire Control Device (INOD). Complete evaluation of early prototypes. Initiate fabrication and evaluation of pre-production prototypes. (2QTR98)
- ($1,717K) SOF Personal Equipment Advanced Requirements (SPEAR). Complete evaluation of integrated helmet. Perform evaluation of nuclear, biological and chemical protection and optical protection modules. (1QTR98-3QTR98)

FY 1999 PLAN:

- ($796K) INOD. Complete evaluation of pre-production prototypes. (2QTR99)
- ($1,752K) SPEAR. Complete evaluation of NBC protection and optical protection modules. Initiate development of signature reduction module. (1QTR99-3QTR99)

ACQUISITION STRATEGY:

- INOD. The INOD follows a streamlined acquisition strategy calling for a cost plus development contract award to a single contractor following full and open competition solicitation. The solicitation will be based upon performance specifications flowing from the system's operational requirements document. Production options will be tied to the development contact, incentivizing the contractor to meet or exceed the critical parameters of the performance specification. The system will be required to undergo a combined developmental / operational test prior to a production decision.
- SPEAR. Body Armor/Load Bearing Equipment and Modular Integrated Communications Helmet follow the same acquisition strategy as INOD.

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B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	.150	1.986	2.204	1.760	Cont.
Appropriated Value	.199	3.886			
Adjustments to Appropriated Value / President's Budget	(.052)	(.085)	1.905	.788	
Current Budget Submit	.147	3.801	4.109	2.548	Cont.

Change Summary Explanation:

Funding: FY 1996 decrease was for Congressional inflation adjustment, overhead/management savings, and to fund higher priority MFP-11 requirements. FY 1997 net decrease reflects project cost share for the Small Business Innovative Research Program, Congressional adjustment to Defense-wide investment appropriations, and realignments to fund higher priority MFP-11 requirements. FY 1998 and FY 1999 increases reflect realignments to fund higher priority MFP-11 requirements and repricing of budgets to reflect the Administration's revised economic forecast.

Schedule: None.

Technical: None.

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C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, SOF Small Arms & Spt. Equip.	11.252	10.613	10.269	18.577	14.649	12.694	10.259	8.742	Cont.	Cont.

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SPEAR																
Initiate Studies(BA/LBE)			x													
MS I/II BA/LBE					x											
MS III BA/LBE										x						
M4A1 Carbine SOF Accessories Kit																
MS III on Reflex Scope	x															
MS III Balance of Accessories (less night scope)					x											
Night Scope MS III											x					
Night Scope Contract Award													x			
INOD																
MS I/II					x											
MS III													x			
HSR																
MS III											x					

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project S375

A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. M4A1 Carbine SOF Accessories Kits		44		
2. SOF Personal Equipment Advanced Requirements	147	730	1,717	1,752
3. Improved Night/Day Observation/Fire Control Device		2,737	2,392	796
4. Heavy Sniper Rifle		290		
TOTAL:	147	3,801	4,109	2,548

Exhibit R-3

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
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B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
Naval Surface Warfare Center-Crane	ALLOT	Sep 96,97	NA	NA	5,133		44			1,415	6,592
Soldier Systems Command, USA	C/CPFF	Mar 96	NA	NA		147	730	1,717	1,752	Cont.	Cont.
PM-Night Vision Electro-Optics, USA	MIPR	Var	NA	NA			2,737	2,392	796		5,925
PM-Small Arms, USA	MIPR	Var	NA	NA			290				290
Support and Management Organizations											
Test and Evaluation Organizations											

Government Furnished Property

Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					5,133	147	3,801	4,109	2,548	Cont.	Cont.
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project					5,133	147	3,801	4,109	2,548	Cont.	Cont.

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S625

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S625, SOF Training Systems	4.441	9.759	9.564	24.777	11.359	12.907	29.197	1.933	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project funds analysis, development, test, and integration of SOF aviation-related training and mission rehearsal systems and upgrades. Sub-projects include: AC-130U Gunship Aircrew / Maintenance Training System (GA/MTS). The GA/MTS develops an integrated, ground-based combination training and mission rehearsal system to support initial, mission, special qualification, continuation, upgrade and maintenance training for the AC-130U Gunship aircrews. The need for GA/MTS is driven by the lack of any current training or mission rehearsal capability for the aircrew and maintenance personnel. The GA/MTS will consist of two primary components. The first component, a Battle Management Center (BMC) testbed, will refine requirements for system fidelity and provide an initial operational capability training capability for the Navigator Fire Control Officer (NAV/FCO) crew stations. The second component will complete the BMC with sensor operator and electronic warfare crew stations and build a flight deck with full fidelity, six (6) degree of freedom motion simulation for the pilots and flight engineers. Additionally, the Instructor Operator Station will provide role-playing capabilities for the sensor operators. GA/MTS will be networked with other AFSOC mission rehearsal devices.

FY 1996 ACCOMPLISHMENTS:

- ($3,981K) AC-130U Gunship Aircrew / Maintenance Training System (GA/MTS). Began development of Battle Management Center (BMC) testbed to refine user requirements for navigator and fire control officer workstations. (2QTR96-4QTR96)
- ($460K) Supported Program Management Office. (2QTR96)

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FY 1997 PLAN:

- ($8,769K) AC-130U Gunship Aircrew / Maintenance Training System (GA/MTS). Continue development of the BMC testbed. (1QTR96-1QTR97)
- ($990K) Program Management Office support. (1QTR97-4QTR97)

FY 1998 PLAN:

- ($2,080K) GA/MTS. Complete development of the BMC testbed. (1QTR98)
- ($6,694K) GA/MTS. Begin development of the flight deck and remaining crew stations. (3QTR98)
- ($790K) Program Management Office support. (1QTR98-2QTR98)

FY 1999 PLAN:

- ($23,677K) GA/MTS. Continue development of flight deck and remaining crew stations. (1QTR99-2QTR99)
- ($1,100K) Program Management Office support. (1QTR99-2QTR99)

ACQUISITION STRATEGY: GA/MTS program is currently in Phase I. The two-phase acquisition strategy will first build a BMC testbed using production AC-130U avionics, commercial image generation, and computers to refine user requirements prior to the second phase to procure a complete BMC and Flight Deck Aircrew Training Device (ATD). A Milestone II/III decision is planned for 4QFY97 to support a 3QFY98 contract award for the ATD.

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B. Program Change Summary

	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	2.437	9.759	11.985	8.103	Cont.
Appropriated Value	2.488	9.759			
Adjustments to Appropriated Value / President's Budget	1.953		(2.421)	16.674	
Current Budget Submit	4.441	9.759	9.564	24.777	Cont.

Change Summary Explanation:

Funding: FY 1996 and FY 1999 increases are to accelerate the high priority acquisition of AC-130U aircrew training devices. FY 1998 reduction is required to fund other high priority MFP-11 programs.

Schedule: AC-130H Part Task Trainer development start will be delayed until FY 2001.

Technical: AC-130H Part Task Trainer development start will be delayed until FY 2001.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, SOF Training Systems	19.496	3.874	3.352	2.667	.071	2.438	.116	32.417	Cont.	Cont.

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D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Begin prototyping of Battle Management Center		x														
GA/MTS Milestone II/III								x								
GA/MTS BMC IOC									x							
GA/MTS Flight Deck Contract Award											x					

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
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A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. AC-130U Battle Management Center (BMC) Testbed	3,981	8,769	2,080	
2. Mission Support	460	990	790	1,100
3. AC-130U Aircrew/Maintenance Training Device			6,694	23,677
TOTAL:	4,441	9,759	9,564	24,777

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B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations STRICOM (GAMTS)	SS/CPAF	Mar 96				3,981	8,769	8,774	23,677	Cont.	Cont. 2,694
Support and Management Organizations STRICOM						460	990	790	1,100	Cont.	Cont.
Test and Evaluation Organizations											

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development						3,981	8,769	8,774	23,677	Cont.	Cont.
Subtotal Support and Management						460	990	790	1,100	Cont.	Cont.
Subtotal Test and Evaluation											
Total Project						4,441	9,759	9,564	24,777	Cont.	Cont.

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COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S700, Communications Advanced Development	.730	2.604	2.130	2.890	2.601	2.212	2.077	2.205	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project provides for development and testing of selected items of specialized equipment to meet the unique requirements of Special Operations Forces (SOF). Specialized equipment will permit small, highly trained forces to conduct required operations across the entire spectrum of conflict. These operations are generally conducted in harsh environments, for unspecified periods, and in locations requiring small unit autonomy. Special Operations Forces must infiltrate by land, sea, and air to conduct unconventional warfare, direct actions, or deep reconnaissance operations in denied areas against insurgent units, terrorists, or highly sophisticated threat forces. The requirement to operate in denied areas controlled by a sophisticated threat mandates that SOF systems remain technologically superior to threat forces to ensure mission success.

USSOCOM has developed an overall strategy to ensure that Command, Control, Communications, Computers, and Intelligence (C4I) systems continue to provide SOF with the required capabilities into the 21st century. USSOCOM's C4I systems comprise an integrated network of systems providing positive command and control and timely exchange of intelligence and threat warning to all organizational echelons. The C4I systems that support this new architecture will employ the latest standards and technology by transitioning from separate systems to full integration with the infosphere. The infosphere is a multitude of existing and projected national assets that operate with any force combination in multiple environments. The C4I programs funded in this project are grouped by the level of organizational element they support: Operational Element (Team), Above Operational Element (Deployed), and Above Operational Element (Garrison). Sub-projects include:

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OPERATIONAL ELEMENT (TEAM)

- Aircraft Wireless Intercom System (AWIS). AWIS allows reliable communications between Special Operations aircraft crew members, both external and internal to the aircraft. Eliminates the need for a physical hardwire connection between the crew member and the aircraft increasing safety. Aircraft Wireless Intercom System is self-contained, portable, lightweight, and easily interchangeable between various Special Operations aircraft.

- Multi-Band Inter/Intra Team Radio (MBITR). MBITR will provide lightweight, handheld, inter/intra team communications for Joint SOF. SOF teams conduct air, ground, and maritime missions across the entire operational spectrum. These missions currently require SOF teams carry multiple handheld radios operating in several different frequency bands to ensure positive communications. The MBITR will provide each of these frequency bands in a single handheld radio with embedded communications security (COMSEC).

- Multiband/Multimission Radio (MBMMR). A joint SOF requirement, MBMMR provides a lightweight, secure, manpackable transceiver operating in the following frequency bands: VHF-FM, VHF-AM, UHF-AM, and UHF-FM satellite communications in a single radio, reducing the number of radios carried by each team.

- Special Operations Communications Assemblage (SOCA) Improvement. Program upgrades 80 SOCA units delivered to SOF units in FY93 and prior. Proposed modifications include repackaging/downsizing (no more than 70lbs. less generator), enhanced graphics, UHF SATCOM DAMA capability, advanced data controllers, and document upgrades to enhance interoperability with conventional and other SOF units. The acquisition strategy is to develop and test the proposed improvements (Phase II) prior to system upgrade (Phase III).

- Special Mission Radio System (SMRS). SMRS is a joint radio system that provides SOF a lightweight, Low Probability of Intercept/Low Probability of Detection (LPI/LPD) high frequency radio with co-resident military standard Automatic Link Establishment (ALE), non-standard ALE, and internal communication security capabilities. Deployed in hostile and

clandestine environments, the system consists of manpack radio and base station, and provides hardware improvements and software documentation.

ABOVE OPERATIONAL ELEMENT (DEPLOYED)

- Special Mission Radio System (SMRS). SMRS is also planned for use at this level.

- Joint Base Station (JBS). JBS is an evolutionary acquisition program which encompasses five service-specific requirements: TSC-135 (core capability, commercial vehicle system), TSC-135 (V)1 (military vehicle system with transit case capabilities), TSC-135 (V)2 (transit case system), TSC-135 (V)3 (fixed site system), and TSC-135 (V)4 (modular communications system). JBS will provide SOF with continuous, reliable, communications among SOF component commands while allowing for differences in missions. JBS will contain line-of-sight (LOS) and beyond-LOS radios, and associated message handling and switching equipment, providing command and control voice, imagery, data, and facsimile.

- SOF Tactical Assured Connectivity Systems (SOFTACS) (formerly called Tactical C4I Mod). SOFTACS is an integrated suite of communications systems designed to support the high-capacity, digital, secure, interoperable, transmission and switching requirements of USSOCOM C4I architecture.

ABOVE OPERATIONAL ELEMENT (GARRISON)

- SMRS. SMRS is also planned for use at this level.

- Command, Control, Communications, Computers and Intelligence Automation System (C4IAS). Beginning in FY 1998, C4IAS consolidates and migrates SOF C4I automation systems to a Joint C4I Automation System that will provide a seamless, interoperable and easy to use automation environment for the headquarters USSOCOM, component commands, and the theater SOC users to support SOF worldwide. It will provide accurate and timely information, analysis and planning tools. The

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Joint SOF C4I Automation System will fulfill a wide range of requirements ranging from command and control, office automation to decision-making assistance, mission analysis, as well as planning and execution support. The implementation of state-of-art hardware, software and communications technology will provide the SOF user community with the best, most efficient means to effectively satisfy SOF information and planning needs. Migration objectives include compliance with Defense Information Infrastructure (DII) Common Operating Environment (COE), collaterization, upgraded network communications backplane, tactical extensions and national systems. Legacy systems include USSOCOM LAN/WAN, NAVSPECWARCOM LAN, AFSOC LAN, Special Tactics Network (STN), Army Special Operations Command Network (ASOCNET), SOF Logistics and Acquisition Management System (SLAMS), Command Planning Database (CPD), Special Mission Unit (SMU) network, and Defense Simulation Internet (DSI). The acquisition strategy is to use existing government contracts to obtain required software and hardware upgrades through a structured evolutionary technology insertion process.

FY 1996 ACCOMPLISHMENTS:

- ($20K) Aircraft Wireless Intercom System (AWIS). Performed first Article Testing. (4QTR96)
- ($327K) Multi-Band Inter/Intra Team Radio (MBITR). Provided program management support and began solicitation process for development contract. (3QTR96-1QTR97)
- ($49K) Multiband/Multimission Radio (MBMMR). Conducted Milestone 0 review. Conducted market research. (4QTR96)
- ($334K) Joint Base Station. Performed system engineering, development, integration, and testing for technology insertion of Non-Developmental Item/Commercial Off-the-Shelf/Government Off-the-Shelf equipment. (1QTR96-4QTR96)

FY 1997 PLAN:

- ($15K) AWIS. Follow-on testing support. (1QTR96-4QTR96)

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- ($377K) Multi-Band Inter/Intra Team Radio (MBITR). Conduct Milestone I/II review. Conduct source selection and award EMD contract. (1QTR97-4QTR97)

- ($109K) Multiband/Multimission Radio. Develop acquisition strategy. Develop specification, request for proposal, and cost estimate. (1QTR97-4QTR97)

- ($1,121K) Special Mission Radio System (SMRS). Complete system test and evaluation. Initiate system engineering and development for technology insertion of remote network control, GPS, and improved waveform capabilities. (3QTR97-4QTR97)

- ($331K) Joint Base Station (JBS). Continue system engineering, development, integration, and testing for technology insertion of Non-Developmental Item (NDI)/Commercial Off-the-Shelf (COTS)/Government Off-the-Shelf (GOTS) equipment. (1QTR97-4QTR97)

- ($651K) SOF Tactical Assured Connectivity Systems (SOFTACS). Conduct market research and product development for block two technology insertion. (4QTR97)

FY 1998 PLAN:

- ($822K) SMRS. Continue development of upgrades to remote network control, GPS, and improved waveform. Initiate upgrade of COMSEC capability to Top Secret. Conduct system test and evaluation of upgrade capabilities. (2QTR98-4QTR98)

- ($435K) JBS. Continue system engineering, development, integration, and testing for technology insertion of NDI COTS/GOTS. (1QTR98-4QTR98)

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- ($664K) SOF Tactical Assured Connectivity Systems (SOFTACS). Conduct system test and evaluation. Continue market research and product development for block two evolutionary technology insertions, system program management in support of market research, and initial test bed operations. (2QTR98-3QTR98)

- ($209K) Command, Control, Communications, Computers and Intelligence Automation System (C4IAS). Design, integrate, and test specific adaptive network gateway technologies to permit seamless integration of existing networks. Begin development of database interoperability tools among existing networks using Common Object Request Broker Architecture and Hypertext Markup Language/Virtual Reality Markup Language technologies. (2QTR98-4QTR98)

FY 1999 PLAN:

- ($336K) Special Operations Communications Assemblage Improvement. Conduct market research and perform integration and test of NDI upgrades. (1QTR99-4QTR99)

- ($841K) Special Mission Radio System. Continue development of upgraded COMSEC capability. (1QTR99-3QTR99)

- ($415K) Joint Base Station. Continue system engineering, development, integration, and testing for technology insertion of NDI COTS/GOTS. (1QTR99-4QTR99)

- ($1,084K) SOF Tactical Assured Connectivity Systems. Conduct testbed operations for block 2 evolutionary technological insertions and system program management support. Conduct market research for block 3 evolutionary technological insertions. (2QTR99-3QTR99)

- ($214K) Command, Control, Communications, Computers and Intelligence Automation System (C4IAS). Complete design, integration and testing of database development efforts. (1QTR99)

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ACQUISITION STRATEGY:

- SOF Tactical Assured Connectivity Systems (SOFTACS). The SOFTACS program will be managed under an evolutionary acquisition strategy. Evolutionary technology insertions (ETI) are integrated through block upgrades. ETIs will be supported by market research and test and evaluation which will be used to evaluate the benefits and impacts on the SOFTACS system.

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	1.457	2.648	2.064	3.421	Cont.
Appropriated Value	1.727	2.648			
Adjustments to Appropriated Value / President's Budget	(.997)	(.044)	.066	(.531)	
Current Budget Submit	.730	2.604	2.130	2.890	Cont.

Change Summary Explanation:

Funding: FY 1996 and FY 1997 decreases are a Congressional reduction for inflation adjustment and overhead/management savings, revised OMB economic assumptions, and a reprogramming to fund high priority D476 PSYOP Advanced Development projects (Special Operations Media System B and Family of Loudspeakers). FY 1998 increase due to revised cost estimate for Special Mission Radio System. FY 1999 decrease is to resource higher priority MFP-11 requirements.

Technical: None.

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Schedule: None.

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	TotalCost
PROC, Comm & Electronics	35.272	40.680	57.406	72.576	71.637	67.451	56.650	28.203	Cont.	Cont.

D. Schedule Profile	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SOCA Improvement																
MS I/II													x			
Special Mission Radio System																
MS II (ETIs)								x					x			
DT/OT (ETIs)							x					x				x
MS III							x									
IOC								x								
Joint Base Station																
MS II ETIs All Variants						x				x				x		
CDR (Variant I)		x														

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D. Schedule Profile (Con't)

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Joint Base Station (Con't)																
DT/OT			x													
MS III Variant 1							x									
MS III Variant 2						x										
FUE Variant 1							x									
FUE Variant 2						x										
SOF Tactical Assured Connectivity System																
MS II		x														
DT/OT								x								
MS III								x								
MS II (ETI)								x				x		x		
IOC									x							
C4I Automation																
ETI Block Upgrade (Design Gateway Technology)										x						
DT/OT												x				
ETI Block Upgrade (Design Data Base)												x				
DT/OT													x			

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)			DATE FEBRUARY 1997	
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160404BB Special Operations Tactical Systems Development / Project S700		
A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. Aircraft Wireless Intercom System				
DT&E	20	15		
2. Multi-Band Inter/Intra Team Radio				
Government Engineering Support	327	113		
Hardware Development		264		
3. Multiband/Multimission Radio				
Government Engineering Support	49	109		
4. SOCA Improvement				
Government Engineering Support				236
DT&E				100
5. Special Mission Radio System				
ETIs		766	550	560
Government Engineering Support		75	72	80
DT&E		280	200	201
6. Joint Base Station				
ETIs	234	331	325	300
Government Engineering Support	100		110	115
7. SOF Tactical Assured Connectivity				
DT&E			100	100
Technology Insertion/Integration		414	300	440
Government Engineering Support		237	264	544
8. C4I Automation				
DT&E			149	150
Government Engineering Support			60	64
TOTAL:	730	2,604	2,130	2,890

Exhibit R-3

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
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B. Budget Acquisition History and Planning Information
Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
USA PM SATCOM/CECOM, Ft Mon. NJ	MIPR/ALLOT	Various	Cont.	Cont.	1,147		414				1,147
SSDS, Englewood CO	CPFF	Jun 93	Cont.	Cont.	5,472						5,472
Mitre, McLean VA	CPFF	Oct 93	5,472	5,472	603						603
NAWC-AD, St Inigoes MD	MIPR	Various	Cont.	Cont.	8,420	234	331				8,624
NSMA, Arlington, VA	ALLOT	Various	Cont.	Cont.	1,000		766				1,802
DISA, Reston VA	ALLOT	Various	Cont.	Cont.	500						500
TBD	CFFP	Dec 96	Cont.	Cont.							243
Misc	NA	NA	NA	NA			264	1,175	1,300	Cont.	Cont.
Support and Management Organizations Misc.	Var	Var	Cont.	Cont.	516	476	534	506	1,039	Cont.	Cont.
Test and Evaluation Organizations (Misc)	NA	NA	NA	NA		20	295	449	551		NA

Government Furnished Property

Item Description	Contract Methd/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					17,142	234	1,775	1,175	1,300	Cont.	Cont.
Subtotal Support and Management					516	476	534	506	1,039	Cont.	Cont.
Subtotal Test and Evaluation						20	295	449	551		Cont.
Total Project					17,658	730	2,604	2,130	2,890	Cont.	Cont.

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APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160404BB Special Operations Tactical Systems Development / Project S800

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S800, Special Operations Munitions Advanced Development	9.357	12.208	3.700	4.698	6.432	15.233	15.482	18.563	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project provides for the acquisition of selected, specialized munitions and equipment to meet unique Special Operations Forces (SOF) requirements. This is a continuing program. Sub-projects include:

- Ammunition Development. Air Force Special Operations Command requires a high fragmentation round to defeat light material and personnel targets in order to conduct close air support in increasingly hostile environments while reducing Gunship exposure to anti-aircraft fire, thereby increasing survivability. Additionally, a 105mm guided projectile is required to improve first shot kill capabilities for hardened mobile and stationary targets while minimizing collateral damage.

- Improved Limpet Assembly Modular (ILAM). The ILAM will replace the existing Limpet Assembly Modular. The ILAM is required for SEAL Delivery Vehicle attacks against ships, submarines, nested patrol craft, submerged harbor facilities, and various other maritime targets. The ILAM will provide greater explosive weight to be delivered to the target, decrease time-on-target by improving handling procedures, and result in an enhanced probability of mission success.

- Lethality Enhancements. Conducts a front end analysis to develop necessary improvements to the gun suite for a 25-30 year life cycle. This analysis is critical due to the current inadequacy in the 20mm system and a paradigm shift that has occurred due to necessity of missions requiring increased standoff ranges and the resulting lack of effectiveness.

- Penetration Augmented Munition. Presently SOF has a limited capability to significantly damage concrete structures or pylons

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assigned as targets. This program develops a man portable/emplaced munition that defeats large reinforced concrete structures, replaces more than 200 pounds of C4 explosive, reduces time-on-target, and represents new capability for SOF by being the first hand emplaced munition to use tandem Explosively Formed Penetrator (EFP) warheads and in-line electronic fuzing.

- Remote Activated Munitions System (RAMS). Provides a capability to remotely control detonation of demolition charges or the remote operation of other items of equipment such as beacons, laser markers, radios, and weapons.

- Special Operations Forces (SOF) Demolition Kit. The kit consists of inert hardware sets for EFPs, conical shaped charges and linear shaped charges, along with tools, equipment, and attachment devices for constructing and emplacing a variety of demolition charges. The kit allows the SOF operator to tailor the demolition charges to the target providing greater lethality and mission flexibility.

FY 1996 ACCOMPLISHMENTS:

- ($301K) Ammunition Development. Transitioned the PGU-9A/B fuze retrofit project to sustainment. Formulated a program to develop a high fragmentation 105mm round. Completed analysis for an advanced prototype of a guided 105mm projectile and advance to a Milestone 0 decision. Reviewed technical data package. (2QTR96-4QTR96)

- ($723K) Lethality Enhancements. Completed medium caliber analysis project. (2QTR96-4QTR96)

- ($4,748K) Penetration Augmented Munition. Designed electronic firing train and conducted tactical systems integration tests. (1QTR96-4QTR96)

- ($2,766K) RAMS. Continued Engineering and Manufacturing Development (EMD) and completed testing. Produced technical data package for the transmitter, auxiliary power supply and Type A Receiver. (1QTR96-4QTR96)

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- ($819K) Special Operations Forces (SOF) Demolition Kit. Continued design, fabrication and testing of various size warheads. (1QTR96-4QTR96)

FY 1997 PLAN:

- ($200K) Ammunition Development. Transition adaptable munitions identified through the analysis projects to full program integration for high fragmentation and guided ammunition. (1QTR97-4QTR97)
- ($7,000K) Penetration Augmented Munition. Complete EMD and testing; conduct Milestone III review. (1QTR97-4QTR97)
- ($3,507K) Remote Activated Munitions System (RAMS). Complete technical data package for the transmitter, auxiliary power supply and Type A receiver. Conduct Milestone III review for transmitter and Type A receiver. Initiate design of Type B receiver. (1QTR97-4QTR97)
- ($1,501K) SOF Demolition Kit. Complete EMD and testing; conduct Milestone III review for the small, medium, and large warheads. (1QTR97-4QTR97)

FY 1998 PLAN:

- ($975K) SOF Demolition Kit. Initiate design, fabrication and testing of extra large warhead and preplanned product improvement warheads. (1QTR98-4QTR98)
- ($1,896K) RAMS. Complete EMD and conduct Milestone III review for Type B receiver. Initiate design of Type C receiver. (1QTR98-4QTR98)

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- ($829K) Improved Limpet Assembly Modular (ILAM). Initiate program and engineering efforts for the design and test. (1QTR98-4QTR98)

FY 1999 PLAN:

- ($945K) Special Operations Forces (SOF) Demolition Kit. Continue design, fabrication and testing of preplanned product improvement warheads. Complete Engineering and Manufacturing Development (EMD) and testing; conduct Milestone III review for extra large warhead. (1QTR99-4QTR99)

- ($1,045K) Remote Activated Munitions System (RAMS). Complete EMD and testing and conduct Milestone III review for Type C receiver. (1QTR99-4QTR99)

- ($2,708K) ILAM. Continue design and test of ILAM. Conduct Milestone I/II review to enter EMD. (1QTR99-4QTR99)

ACQUISITION STRATEGY:

- RAMS. Developmental program managed by the Army Project Manager for Mines, Countermine and Demolitions. Design being developed by government engineering at the Army Research Laboratory. Initial production to be conducted at the Naval Air Warfare Center, Indianapolis, IN.

- ILAM. Program managed by Naval Sea Systems Command, PMS 340. Designs will be developed by Naval Surface Warfare Centers.

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B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	7.639	9.016	3.212	2.740	Cont.
Appropriated Value	8.254	12.816			
Adjustments to Appropriated Value / President's Budget	1.103	(.608)	.488	1.958	
Current Budget Submit	9.357	12.208	3.700	4.698	Cont.

Change Summary Explanation:

Funding: FY 1996 increase reflects realignments to fund higher priority MFP-11 requirements. FY 1997 net decrease reflects project cost share for the Small Business Innovative Research Program and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 adjustments are repricing of budgets to reflect the Administration's revised economic forecast and increases to fund high priority MFP-11 requirements.

Schedule: None.

Technical: None.

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C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, Ordnance Acq.	18.110	13.161	17.202	15.828	9.185	8.928	9.574	12.594	Cont.	Cont.

D. Schedule Profile

	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SOF Demolition Kit																
MS I/II		x														
MS III (Small, Medium, Large Warheads)								x								
MS III (Extra Large Warhead)																x
Penetration Augmented Munition																
MS III								x								
Remote Activated Munitions System																
MS III (Transmitter and Type A Receiver)								x								
MS III (Type B Receiver)												x				
MS III (Type C Receiver)																x
Improved Limpet Assembly Modular																
MS I/II															x	

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A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. AC-130U Gunship Ammo Development	301	200		
2. AC-130U Gunship Lethality Enhancements	723			
3. Demolition Kit	819	1,501	975	945
4. Penetration Augmented Munition	4,748	7,000		
5. Remote Activated Munitions System	2,766	3,507	1,896	1,045
6. Improved Limpet Assembly Modular			829	2,708
TOTAL:	9,357	12,208	3,700	4,698

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B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
Air Force Materiel Command, LIW-A	ALLOT	various	NA	NA	6,465	1,024	200			Cont.	Cont.
Army PM-MCD, ARDEC, ARL	ALLOT	various	NA	NA	36,867	4,595	5,015	3,200	4,198	Cont.	Cont.
Alliant Tech Systems, MN	CPIF	Jul 88	35,740	35,740	27,309	3,738	4,693			0	35,740
Support and Management Organizations											
Test and Evaluation Organizations											
AF Special Mission OT&E Center	ALLOT	Dec 94	NA	NA	1,500						1,500
US Army Test & Evaluations Command	MIPR	Jan 97	NA	NA			2,300	500	500		3,300

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					70,641	9,357	9,908	3,200	4,198	Cont.	Cont.
Subtotal Support and Management											
Subtotal Test and Evaluation					1,500		2,300	500	500		4,800
Total Project					72,141	9,357	12,208	3,700	4,698	Cont.	Cont.

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COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160405BB (Special Operations Intelligence Systems Development)	2.880	1.946	4.914	1.839	2.077	3.862	1.432	1.466	Cont.	Cont.
S400, SOF Intelligence R&D	2.880	1.946	4.914	1.839	2.077	3.862	1.432	1.466	Cont.	Cont.

A. Mission Description and Budget Item Justification

Projects provide for identification, development, testing, and integration of selected SOF intelligence equipment to eliminate deficiencies in providing timely intelligence to deployed forces.

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COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S400, SOF Intelligence R&D	2.880	1.946	4.914	1.839	2.077	3.862	1.432	1.466	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project provides for the identification, development, and testing of Special Operations Forces (SOF) intelligence equipment to identify and eliminate deficiencies in providing timely intelligence to deployed forces. The following distinct sub-projects address the primary areas of intelligence dissemination, sensor systems, integrated threat warning to SOF mission platforms, and tactical exploitation of national capabilities. USSOCOM has developed an overall strategy to ensure that Command, Control, Communications, Computers, and Intelligence (C4I) systems continue to provide SOF with the required capabilities into the 21st century. USSOCOM's C4I systems comprise an integrated network of systems providing positive command and control and timely exchange of intelligence and threat warning to all organizational echelons. The C4I systems that support this new architecture will employ the latest standards and technology by transitioning from separate systems to full integration with the infosphere. The infosphere will allow SOF elements to operate with any force combination in multiple environments. The C4I programs funded in this project are grouped by the level of organizational element they support: Operational Element (Team), Above Operational Element (Deployed), and Above Operational Element (Garrison). Sub-projects include:

OPERATIONAL ELEMENT (TEAM)

- Multi-mission Advanced Tactical Terminal (MATT). The MATT project provides near-real-time operational intelligence information from national and tactical sources directly to Special Operations Forces (SOF) aircraft, ground-based units, and eventually maritime elements. The information will provide situational awareness, threat avoidance, and target acquisition, and will support mission planning. The MATT receiver/processor is a miniaturized, UHF, multi-channel receiver. It has embedded communications security and correlation, and programmable capability, including the potential incorporation of

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advanced cryptographic devices and transmit capabilities, which will transform the MATT into a highly integrated, scalable C4I system.

- Joint Intelligence System Integration. Funds a series of integration efforts to incorporate various SOF intelligence systems on the respective platforms employed by each of the SOF commands. Integration efforts will permit the operation of each intelligence system from within a controlling suite installed aboard a SOF platform without any system or platform degradation. Supports the joint compatibility and interoperability strategy of USSOCOM, as well as ensuring maximum use of Joint Deployable Intelligence Support System (JDISS)-compliant, UNIX-based hardware and software. This sub-project ends in FY 1996.

- PRIVATEER. PRIVATEER is part of an evolutionary signal intelligence system migration and acquisition program that provides a permanent full spectrum Radar and Communications Early Warning capability aboard Cyclone-Class Patrol Coastal (PC) and the MK V Special Operations Craft (SOC). The PC configuration is confined to the electronic surveillance mission area, while the MK V SOC configuration has been expanded to include an electronic attack capability for self-defense. A subset of the Joint Threat Warning System, PRIVATEER hosts a common software architecture that controls a variety of hardware modules designed to satisfy the unique platform requirements of each ship class. System configuration provides the equipment necessary to monitor and provide direction finding on radar and communications signals of interest. Also provides broadcast threat warning capability. Architecture is JDISS/Joint Maritime Communications and Intelligence Support System compliant with UNIX-based software.

- SILENT SHIELD. The SILENT SHIELD is part of an evolutionary Joint Threat Warning System migration being developed to support SOF-wide operations. System development emphasizes a rapid prototyping effort to develop, test and field systems that provide direct threat warning and enhanced situational awareness data to SOF aircrews at the Collateral SECRET level.

- Tactical Exploitation of National Capabilities (TENCAP). TENCAP is a project to introduce and integrate national systems capabilities into the SOF force structure and operations. TENCAP activities include increasing national systems awareness;

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demonstrating the tactical utility of national system data; testing technology and evaluating operational concepts in biennial Joint Staff Special Projects; and transitioning promising concepts and technologies into the SOF materiel inventory.

- Joint Threat Warning System (JTWS). JTWS develops a modular, scaleable system that consists of user defined, integrated common hardware modules driven by an interoperable software architecture and configurable for use in manpack, unattended, and platform versions (aircraft, ground, and maritime). JTWS functional requirements include communications monitoring and direction finding, and receipt and correlation of near-real-time tactical intelligence broadcasts.

ABOVE OPERATIONAL ELEMENT (DEPLOYED)

- Multi-mission Advanced Tactical Terminal and Joint Deployable Intelligence Support System-Special Operations Command Research, Analysis, and Threat Evaluation System (JDISS-SOCRATES) are also planned for this level.

ABOVE OPERATIONAL ELEMENT (GARRISON)

- JDISS-SOCRATES. JDISS-SOCRATES provides a wide range of mission required automated intelligence and imagery support to USSOCOM, component commands and operating forces. JDISS-SOCRATES, a Wide Area Network based multi-functional intelligence system, incorporates a variety of computers, data bases, intelligence communication systems, secure phones, facsimile equipment, imagery processing, secondary imagery dissemination and map handling equipment. JDISS-SOCRATES provides SOF with unprecedented access to both national and specially-focused intelligence products, satisfying long-standing intelligence deficiencies identified in all five regional Commander In Chief Theater Intelligence Architectures. Product improvements are focused on integration of emerging intelligence community systems, technology, and standards into the JDISS-SOCRATES architecture. Near-term improvements are focused on implementation of UNIX-based client server environment and integration of Department of Defense Intelligence Information System Management Board directed Joint Deployable Intelligence Support System (JDISS) standards.

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FY 1996 ACCOMPLISHMENTS:

- ($823K) Joint Intelligence Systems Integration. Developed, downsized, integrated, and tested a deployable electronic intelligence package. Provided a multi-scanner/modern modulation intercept capability for testing and evaluation. Continued to integrate and test secure satellite communications for PRIVATEER aboard Patrol Coastal ships. (2QTR96-4QTR96)

- ($690K) Tactical Exploitation of National Capabilities. Assessed technology and operational utility of HAMLET'S FOREST project and provided systems engineering and technical assistance (SETA) support. (2QTR96-1QTR97)

- ($97K) JDISS-Special Operations Command Research, Analysis and Threat Evaluation System (JDISS-SOCRATES). Engineered development and technical integration of intelligence migration products into the JDISS-SOCRATES architecture. (2QTR96)

- ($1,270K) Multi-mission Advanced Tactical Terminal (MATT). Continued platform integration efforts and software development. (2QTR96-4QTR96)

FY 1997 PLAN:

- ($1,019K) Joint Threat Warning System (JTWS). Design and develop a multi-functional trainer for the JTWS, beginning with the maritime modules supporting the cyclone-class Patrol Coastal (PC) and the MK-V Special Operations Craft (SOC). (2QTR97)

- ($807K) Tactical Exploitation of National Capabilities (TENCAP). Develop and test HAMLET'S TRACK tagging devices. Evaluate new imagery exploitation applications using the HAMLET'S COMMON test facility. Demonstrate the capability to

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inject Special Reconnaissance reporting into intelligence broadcasts by Project TOWN CRIER. Continue to provide systems engineering and technical assistance. (1QTR97-2QTR97)

- ($120K) JDISS-SOCRATES. Provide an on-site Long-Range Information Networked Communications Services (LINCS) representative at USSOCOM for Alpha design and Beta demonstration. (1QTR97)

FY 1998 PLAN:

- ($947K) TENCAP. Continue to assess technology and operational utility of HAMLET's TRACK (tagging and tracking technologies). Participate in JCS and theater CINC advanced concepts technology demonstrations which evaluate National Technical Means support to amphibious operations. (1QTR98-3QTR98)

- ($3,488K) PRIVATEER. Support technology insertion of broadcast threat warning capabilities and migration to Defense Information Infrastructure (DII) Common Operating Environment (COE). Effort includes related special processing, analysis and display capability supporting both Patrol Coastal and MK V Special Operations Craft (SOC). Continue Joint Deployable Intelligence Support System/Joint Maritime Communications and Intelligence Support System architecture migration into the DII COE. Deliver, install and evaluate electronic attack capability for initial operational test and evaluation onboard the MK V SOC. (1QTR98-3QTR98)

- ($479K) SILENT SHIELD. Continue integration and testing aboard SOF aircraft initiated under the Joint Intelligence Systems Integration Program in FY 1996. (1QTR98-2QTR98)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160405BB Special Operations Intelligence Systems Development / Project S400

FY 1999 PLAN:

- ($1,079K) TENCAP. Participate in JCS and theater CINC advanced concepts technology demonstrations which continue to evaluate National Technical Means support to amphibious operations, overall interoperability and support of combined SOF and conventional operations. Assess technology and operational utility of HAMLET's FOREST and HAMLET's TRACK. (1QTR99-3QTR99)

- ($760K) SILENT SHIELD. Continue integration and testing aboard SOF aircraft. (1QTR99)

ACQUISITION STRATEGY:

- PRIVATEER. An evolutionary acquisition program and signal intelligence migration system that provides a permanent full spectrum Radar and Communications Early Warning capability aboard Patrol Coastal (PC) and MK V Special Operations Craft (SOC). The PC configuration is confined to the electronic surveillance mission area, while the MK V SOC configuration has been expanded to include an electronic attack capability for self-defense. A subset of the Joint Threat Warning System, PRIVATEER hosts a common software architecture that controls a variety of hardware modules developed and integrated to satisfy the unique platform requirements of each ship class.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160405BB Special Operations Intelligence Systems Development / Project S400

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	2.843	1.315	4.996	2.446	Cont.
Appropriated Value	2.901	2.315			
Adjustments to Appropriated Value / President's Budget	(.021)	(.369)	(.082)	(.607)	
Current Budget Submit	2.880	1.946	4.914	1.839	Cont.

Change Summary Explanation:

Funding: FY 1996 decrease for Congressional inflation adjustment and overhead/management savings. FY 1997 net decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, Congressional adjustment to Defense-wide investment appropriations, and realignments to resource other high priority MFP-11 requirements. FY 1998 and FY 1999 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast and realignments to resource other high priority MFP-11 requirements.

Schedule: None.

Technical: None.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160405BB Special Operations Intelligence Systems Development / Project S400

C. Other Program Funding Summary

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	To Complete	Total Cost
PROC, SOF Intel Systems	25.979	19.846	21.175	21.188	23.823	30.876	25.215	15.575	Cont.	Cont.

D. Schedule Profile	FY96				FY97				FY98				FY99			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JDISS-SOCRATES Version Upgrades		x	x	x												
SILENT SHIELD Integration and Test			x						x	x	x	x	x	x	x	x
Milestone II					x											
Milestone III										x						
PRIVATEER Evolutionary Technology Insertion Special Program Review										x						

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160405BB Special Operations Intelligence Systems Development / Project S400

A. Project Cost Breakdown ($ in thousands)	FY96	FY97	FY98	FY99
1. JDISS-SOCRATES				
Government Engineering Support	97			
Software Development and Integration		120		
2. Joint Intelligence Systems Integration				
OT&E	233			
Government Engineering Support	66			
Software Development	524			
3. Tactical Exploitation of National Capabilities				
Systems Engineering	440	387	400	420
Hardware Prototyping	250	420	547	659
4. Multi-Mission Advanced Tactical Terminal				
Software Development and Integration	666			
Platform Integration Study	200			
Hardware Development	404			
5. SILENT SHIELD				
DT&E/IOT&E			479	760
6. PRIVATEER				
Software Development			488	
DT&E			1,500	
OT&E			1,500	
7. JTWS				
Hardware Prototyping		1,019		
TOTAL:	2,880	1,946	4,914	1,839

RDT&E PROGRAM ELEMENT / PROJECT COST BREAKDOWN (R-3)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160405BB Special Operations Intelligence Systems Development / Project S400

B. Budget Acquisition History and Planning Information

Performing Organizations — Actual or Budget Value ($ in thousands)

Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Product Development Organizations											
SAIC, McLean VA	C/CPFF	Various	166	166	166		120				286
NRL, Washington DC	MIPR	Various	1,456	1,456	1,456						1,456
E-Systems, Greenville TX	C/CPFF	Sep 92	3,960	3,960	3,960						3,960
Delfin Systems, Santa Clara CA	C/CPFF	Aug 92	2,953	2,953	2,192	761					2,953
USAF, SAF Washington DC	Various	Various	Cont.	Cont.	1,950	150				Cont.	Cont.
Defense, Opnl Spt Ofc, Wash DC	Various	Various	Cont.	Cont.	200					Cont.	Cont.
LORAL Fed Sys, Owego NY	SS/CPFF	Aug 94	10,450	10,450	10,450						10,450
NRAD, San Diego CA	Various	Various	Cont.	Cont.	892	536				Cont.	Cont.
NISE-E, Charleston, SC	Various	Various	Cont.	Cont.	1,375	252	1,000	3,488		Cont.	Cont.
NSA, Washington, DC	MIPR	Dec 95	215	215	215						215
NAWC-AD, St. Inigoes, MD	PA	Jul 95	Cont.	Cont.	55					Cont.	Cont.
Aeronix, Melbourne, FL	C/CPFF	Jul 96	404	404		404					404
Miscellaneous	Various	Various	N/A	N/A	13,325	337	439	1,026	1,419		N/A
Support and Management Organizations Booz-Allen & Hamilton	CPFF	Apr 93			760	440	387	400	420	Cont.	Cont.
Test and Evaluation Organizations DESA, Kirkland AFB, NM	MIPR	Feb 95	217	217	217						217
Government Furnished Property											

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY96	Budget FY96	Budget FY97	Budget FY98	Budget FY99	Budget to Complete	Total Program
Subtotal Product Development					36,236	2,440	1,559	4,514	1,419	Cont.	Cont.
Subtotal Support and Mgmt					760	440	387	400	420	Cont.	Cont.
Subtotal Test and Evaluation					217					217	217
Total Project					37,213	2,880	1,946	4,914	1,839	Cont.	Cont.

Exhibit R-3

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE FEBRUARY 1997						
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE PE 1160407BB SOF Medical Technology Development									
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160407BB (SOF Medical Technology Development)	1.747	1.803	2.029	2.077	2.126	2.177	2.224	2.277	Cont.	Cont.
S275, SOF Medical Technology R&D	1.747	1.803	2.029	2.077	2.126	2.177	2.224	2.277	Cont.	Cont.

A. Mission Description and Budget Item Justification

Projects provide studies and laboratory prototypes for USSOCOM to link non-system basic research and exploratory development to SOF specific system engineering and manufacturing development and procurement. The focus is on medical technologies, centering on physiologic, psychologic and ergonomic factors affecting the ability of forces to perform their missions.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160407BB SOF Medical Technology Development / Project S275

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S275, SOF Medical Technology R&D	1.747	1.803	2.029	2.077	2.126	2.177	2.224	2.277	Cont.	Cont.

A. Mission Description and Budget Item Justification

This program provides studies and non-system exploratory advanced technology development. The focus is on medical technologies, centering on physiologic, psychologic, and ergonomic factors affecting the ability of Special Operations Forces (SOF) to perform their missions. Current equipment and technology does not meet force requirements. The unique nature of special operations requires unique approaches to combat casualty care, medical equipment and other life support capabilities including life support for high altitude parachuting, combat swimming and other SOF unique missions. This program provides guidelines for the development of selection and conditioning criteria, thermal protection, decompression procedures, combat casualty procedures and life support systems. The program supports the development of biomedical enhancements for the unique requirements of all SOF in the conduct of their diverse missions. This effort is defined by the following seven areas of investigation:

- Combat casualty management in SOF operations will: (1) review the emergency medical equipment currently used in the SOF community and compare this to currently available civilian technology; it will also provide field testing of emergency medical equipment in the adverse environmental conditions encountered in SOF; (2) evaluate current tactical combat casualty care doctrine to ensure consideration of the wide variety of tactical scenarios encountered and apply the latest concepts in casualty care to these circumstances; and, (3) develop CD-ROM based computer programs with voice capability to conduct medical interviews in multiple foreign languages.

- Decompression procedures for SOF diving operations will: (1) decrease the decompression obligation in SOF diving operations through the use of surface-interval oxygen breathing; and, (2) investigate pre-oxygenation requirements for high-altitude SOF parachute operations.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160407BB SOF Medical Technology Development / Project S275

- Exercise-related injuries will evaluate the effectiveness of applying sports medicine diagnostic, therapeutic, and rehabilitative techniques in management of the traumatic and overuse injuries commonly encountered among SOF operators.

- Inhaled gas toxicology will: evaluate the feasibility of using pharmacologic intervention to reduce or eliminate the possibility of central nervous system toxicity.

- Medical sustainment training techniques will: (1) examine novel ways of both providing and documenting medical sustainment training for SOF corpsmen and physicians; and, (2) develop a system for constantly upgrading the medical expertise of SOF medical personnel by incorporating new research reports and clinical information into a CD-ROM base computer system which can be used by medical personnel in isolated duty circumstances.

- Mission-related physiology will: (1) develop accurate measures to evaluate SOF mission-related performance; (2) evaluate the suitability of photorefractive keratectomy, a new refractive surgical procedure, for special operations personnel; (3) delineate nutritional strategies designed to help personnel apply known nutritional concepts to optimize performance in mission and training scenarios; (4) evaluate potential ergogenic agents as they apply to enhancing mission-related performance; (5) study the safety and efficacy of using caffeine to increase performance in sustained operations; (6) develop a quantitative test for night vision suitable for screening SOF candidates and study ways to enhance unaided night vision; (7) develop techniques for using oxygen to increase breathhold dive time; and, (8) study pharmacologic measures to prevent acute mountain sickness in high terrestrial SOF operations.

- Thermal protection will: (1) conduct a survey of available thermal protection garments and conduct a comparative study to determine their relative effectiveness at protecting personnel engaged in small boat operations; and, (2) evaluate the efficacy of current thermal protective measures in maintaining combat swimmer performance.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160407BB SOF Medical Technology Development / Project S275

FY 1996 ACCOMPLISHMENTS:

- ($1,350K) Continued ongoing studies as follows: SOF Computer-Assisted Medical Reference System; Computer-Based SOF Corpsman Training Program; Quantification of Mission-Related Performance; Excimer Laser Photorefractive Keratectomy in SOF Personnel; Tactical Combat Casualty Care in Special Operations; Combat Casualty Equipment Review; Air/0.7 Atmosphere Absolute Decompression; Thermal Protection in Small Boat Operations; Ergogenics (Performance Enhancing Agents) in SOF Operations; Performance Enhancement with Caffeine; Pre-Oxygenation Requirements in High Altitude Low Opening/High Altitude Parachute Operations; Night Vision Enhancement; and, Hypercarpia Recognition Training. (1QTR96-2QTR96)

- ($397K) Initiated new studies such as: Thermal Protection and Diver Performance in SOF Combat Swimmers; Laser Eye Protection in Special Operations; Reduction of Oxygen Toxicity Risk with Modified Draegar LAR V Operating Procedures; SOF Physical Fitness Guide. (1QTR96-2QTR96)

FY 1997 PLAN:

- ($1,206K) Continue ongoing studies as follows: SOF Computer-Assisted Medical Reference System; Special Operations Interactive Medical Training Program; Combat Casualty Equipment Review; Ergogenics (Performance Enhancing Agents) in Special Operations; Laser Eye Protection in Special Operations; Thermal Protection and Diver Performance in Special Operations Forces (SOF) Combat Swimmers; Tactical Combat Casualty Care in SOF Operations; Excimer Laser Photorefractive Keratectomy in SOF Personnel; Night Vision Enhancement; Pre-Oxygenation Requirements in High Altitude Low Opening Operations; SOF Physical Fitness Guide; Air/0.7 Atmosphere Absolute Decompression. (1QTR97)

- ($597K) Initiate new studies such as: Thermal Stress in Current Special Operations; Draegar LAR V Canister Limits for SEAL Delivery Vehicle (SDV) Operations; Special Operations World Wide Area Medical Information; and, Oxygen Enhanced Breathhold Diving. (1QTR97-2QTR97)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160407BB SOF Medical Technology Development / Project S275

FY 1998 PLAN:

- ($1,527K) Continue ongoing studies as follows: SOF Interactive Medical Training Program, Tactical Combat Casualty Equipment Review, Combat Casualty Care in SOF Operations, Thermal Stress in Current Special Operations, Draeger LAR V Canister Limits for Seal Delivery Vehicle (SDV) Operations and Cold Water Immersion and SDV Performance, SOF Computer Assisted Medical Reference System, Ergonomics (Performance Enhancing Agents) in Special Operations, Laser Eye Protection in Special Operations, Excimer Laser Photorefractive Keratectomy in SOF Personnel, Night Vision Enhancement, Pre-Oxygenation Requirements in High Altitude Low Opening/High Altitude Parachute Operations, and Special Operations World Wide Area Medical Information. (1QTR98)

- ($502K) Initiate new studies as follows: Respiratory Muscle Endurance Testing, Loadbearing Conditioning, Effect of Submarine Deployments on SOF Mission-Related Performance, Adjuncts to Recompression Therapy, Testing of Exotemp Active Thermal Protection System, Oxygen Arterial Gas Embolism, Tactical Health Risk Assessment in SO, and Evaluation of Thermal Protection in AFSOC Operations. (1QTR98)

FY 1999 PLAN:

- ($1,252K) Continue ongoing studies as follows: Combat Casualty Equipment Review, Tactical Combat Casualty Care in SOF Operations, Thermal Stress in Current Special Operations, Respiratory Muscle Endurance Testing, Special Operations World Wide Area Medical Information System, Special Operations Interactive Medical Training, SOF Computer-Assisted Medical Reference System, and Cold Water Immersion and SEAL SDV Performance. (1QTR99)

- ($825K) Initiate new studies as follows: Tactical Combat Casualty Care/Acute Trauma Management System, Preventive Medicine, Potable Water Sanitation System, Advanced SOF Diving Procedures, Enhanced Life Support for ASDS, Application of Telecommunication Technology to support SOF Medics, SOF Medical Virtual Training and Humanitarian/Refugee/Crisis Response Medical Support. (1QTR99)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 1997
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160407BB SOF Medical Technology Development / Project S275

ACQUISITION STRATEGY: NA

B. Program Change Summary	FY96	FY97	FY98	FY99	Total Cost
Previous President's Budget	1.814	1.887	2.035	2.087	Cont.
Appropriated Value	1.891	1.887			
Adjustments to Appropriated Value / President's Budget	(.144)	(.084)	(.006)	(.010)	
Current Budget Submit	1.747	1.803	2.029	2.077	Cont.

Change Summary Explanation:

Funding: The FY 1996 decrease for Congressional inflation adjustments and overhead/management savings. FY 1997 decrease reflects project cost share for the Small Business Innovative Research Program, Non-Federally Funded Research and Development Centers, and Congressional adjustment to Defense-wide investment appropriations. FY 1998 and FY 1999 decrease is due to repricing of budgets to reflect the Administration's revised economic forecast.

Schedule: None.

Technical: None.

C. Other Program Funding Summary None.

D. Schedule Profile NA.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE FEBRUARY 1997					
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7		R-1 ITEM NOMENCLATURE PE 1160408BB SOF Operational Enhancements								
COST (in millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
PE 1160408BB (SOF Operational Enhancements)	16.646	28.177	26.357	13.790	14.554	40.992	12.816	12.747	Cont.	Cont.
S500A, SOF Operational Enhancements	16.646	28.177	26.357	13.790	14.554	40.992	12.816	12.747	Cont.	Cont.

A. Mission Description and Budget Item Justification

Provides funding for classified SOF projects as directed by the Secretary of Defense and/or the Joint Staff. Specific justification is provided under seperate cover.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE JUNE 1996
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSEWIDE / 7	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160408BB SOF Operational Force Enhancements / Project S500A

COST (In Millions)	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	Cost to Complete	Total Cost
S500A, SOF Operational Enhancements	16.646	28.177	26.357	13.790	14.554	40.992	12.816	12.747	Cont.	Cont.

A. Mission Description and Budget Item Justification

Provides funding for classified RDT&E efforts. Description and justification is provided under separate cover.

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DEVELOPMENTAL TEST AND EVALUATION, DEFENSE

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Defensewide
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0450 D Developmental Test & Eval, Defense

Date: FEB 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999	Sec
				Thousands of Dollars				
1	0604940D	Central Test and Evaluation Investment Development (CTEIP)	6	112,751	142,809	131,353	138,793	U
2	0605130D	Foreign Comparative Testing	6	32,195	32,851	33,836	33,759	U
3	0605804D	Development Test and Evaluation	6	102,136	100,132	102,994	106,215	U
		RDT&E Management Support		247,082	275,792	268,183	278,767	
Total		Developmental Test & Eval, Defense		247,082	275,792	268,183	278,767	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)			February 1997							
DIRECTOR TEST AND EVALUATION, DEFENSE (0450) BUDGET ACTIVITY SIX			CENTRAL TEST AND EVALUATION INVESTMENT PROGRAM (CTEIP) PE 0604940D							
$'s in Thousands	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	COST TO COMPLETE	TOTAL COST
PE 0604940D	112,751	142,809	131,353	138,793	143,558	147,711	140,982	154,620	Cont'g	Cont'g

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Since FY90 this program element has been, and continues to be, used to provide for and fund the development of critically needed, high priority, Test & Evaluation (T&E) Capabilities for joint/multi-Service requirements. The Central Test and Evaluation Investment Program (CTEIP) uses a corporate investment approach to combine Service and Defense Agency T&E needs, maximize opportunities for joint efforts, and eliminate unwarranted duplication of test capabilities. CTEIP focuses investments on projects that will have high productivity returns on investment. Projects under the CTEIP Program Element (PE) support two basic tasks: investments to improve the test capabilities base (Joint Improvement and Modernization (JIM) projects), and development of near-term solutions to test capability shortfalls in support of an ongoing operational test program (Resource Enhancement Project (REP)).

The JIM projects fund critically needed test and evaluation investments in the major functional areas of: test mission command, control, communications and instrumentation; electronic warfare systems; threat and computational simulation test and evaluation; space systems T&E; weapons effects test capabilities; targets; and physical and environmental test capabilities. The investments include both the demonstration of advanced technologies needed to test increasingly complex and sophisticated weapon systems and the transition of these technologies into test capabilities. Examples of project subject matter include: automated data collection, processing, display and archiving; smart munitions testing; simulation and modeling; advanced electronic combat systems; low-observable technologies and signature measurements ; targets and target control; time-space-position-indication; end-game measurement; testing of advanced materials application; test design; and advanced sensors and space systems. CTEIP continues as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and links between test and training ranges. CTEIP has provided special focus to institutionalize the use of modeling and simulation as practical test methods; to link ranges through internetting to enhance inter-range and inter-Service cooperation and resource sharing; and, to ensure development and acquisition of common instrumentation necessary for a more efficient test infrastructure. These efforts directly support the Department's new initiative for T&E, the Simulation, Test and Evaluation Process (STEP). Test Capabilities Benefit Analysis are conducted to validate T&E requirements, to define integrated support systems, and determine overall cost effectiveness of the proposed test investments. The use of DoD-wide criteria for requirement validation, prioritization, and risk assessment ensures an effective test resource investment program.

The REP funds development of near-term solutions for critical ongoing operational test support. The requirements for these solutions and test assets are generally not known more than two years in advance of a critical test requirement, and as such are not programmable within the normal planning and budgeting process. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements. Further, as the JIM Program projects become reality and test infrastructure capabilities increase, the requirements for additional test investment in REP to support unique, near-term operational test requirements decrease.

This Research Category 6.4 PE supports the development of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1996 Accomplishments:

JIM Projects

- Initiated the Virtual Test and Training Range (VTTR) project.
- Initiated development of Common Data Acquisition and Processing System (CDAPS).
- Initiated development of Transportable Range Augmentation and Control System (TRACS).
- Initiated Hardened Subminiature Telemetry and Sensor System (HSTSS) project.
- Initiated Target Threat Validation Project.
- Initiated Automated Threat Measurement Equipment (Silver Bullet).
- Initiated development of DoD Software Alpha Test Bed capability.
- Initiated development of a Target Signature Measurement System.
- Initiated Multi-Spectral Scene Projection project.
- Initiated the Translator Global Positioning Satellite (GPS) Range System (TGRS) project.
- Completed the facility, sensor and data systems for the Plume Measurement project and initiate integration.
- Completed prototype testing of Non-Cooperative Vector Scoring.
- Completed development of subminiature video for use in "bore sighting" smart munitions from inside the munitions.
- Completed Rotary Wing Stores Integration for Weapons Modification & Simulation project.
- Achieved interim air-air capability of the Installed Systems Test Facility Radar Target Generator.
- Continued the Infrared Sensor Simulator (IRSS) project.
- Achieved open-loop capability for the Communication-Navigation-Identification (CNI) simulator.
- Completed joint requirements review of Test and Training Enabling Architecture (TENA).
- Awarded contract for the development of Next Generation Target Control System (NGTCS).
- Completed Smart Munitions Test Suite system integration - level 1.
- Completed initial phase demonstration of Hardware-In-The-Loop (HWIL) simulator with a live fire target.
- Completed the GPS Range Application Joint Program.
- Completed the Anti-Radiation Missile Target systems project.

- Achieved Full Operational Capability (FOC) for the Aerial Cable Test Facility.

Resource Enhancement Projects
- Initiated modification of a second BIG CROW aircraft to support EW testing.
- Initiated development of GPS jamming capability.
- Initiated Vulnerability Assessment project.
- Initiated fabrication of a ship hull to enable unmanned launch of aerial targets.
- Completed critical tasks based on current Operational Test & Evaluation (OT&E) test capability shortfalls.
- Continued Test Resource, Analysis and Planning task.
- Completed modification of the BIG CROW HIP-J jammer and VHF transmitter for heliborne operations.
- Initiated and completed characterization of foreign hardware and response to U.S. electronic countermeasures (ECM) systems.
- Completed the establishment of a distributed Global Command and Control System test bed.
- Completed development, fabrication, instrumentation, integration, and validation of an airborne emitter test tool.
- Completed design and development of the Range Signal Density Enhancement System.
- Completed modification and upgrade of a Flying Infrared Signature Test Aircraft (FISTA) capable of measuring the infrared signatures of weapon systems and backgrounds.
- Completed development of an interface between Core Battlefield Simulation (CBS) and Army Tactical Command and Control System (ATCCS).
- Completed development of the Mobile Integrated Non-Intrusive C3 Instrumentation system.
- Completed development of telemetry and over-the-horizon relay/command destruct capability on E-9A airborne system.

FY 1997 Plans:

JIM Projects
- Initiate Magnetic Levitation Upgrade project at Holloman High Speed Sled Track.
- Initiate Advanced Range Telemetry (ARTM) to increase efficiency and through put of telemetry channels.
- Initiate Electromagnetic Effects project.
- Initiate Joint Advanced Integrated Missile Instrumentation project.
- Demonstrate proof of concept for Joint Advanced Distributed Interactive Simulation based T&E Networking Architecture.
- Continue Bistatic Coherent Measurement System (BICOMS) development.
- Release RFP for HSTSS Project development.
- Complete development of an advanced digital, high resolution, color capable camera for Airborne Separation Video (ASV).
- Complete Real-Time Digitally Controlled Analyzer Processor Activity (REDCAP/ACETEF) data link evaluation.
- Continue Test Technology Development and Demonstration project.
- Achieve closed-loop capability for the CNI simulator.
- Complete prototype design of CDAPS.
- Complete CDR of DoD Software Alpha Test Bed capability.
- Initiate Critical Design Review (CDR) process of TRACS.

- Continue TGRS development.
- Demonstrate prototype design of NGTCS.
- Transition Advanced Airborne Interceptor Simulator (AAIS) from JIM to REP.
- Complete Silver Bullet project.
- Achieve FOC of the Smart Munitions Test Suite.
- Achieve FOC for the Common Airborne Instrumentation System (CAIS).
- Achieve FOC for Plume Measurement Facility.
- Complete TENA to enable information sharing and inter-operability.

Resource Enhancement Projects
- Initiate Missile on a Mountain (MOM) sub-project.
- Initiate the Enhanced Threat System Replica (XM-43S) sub-project.
- Continue Test Resource, Analysis and Planning task.
- Resolve critical near-term OT&E resource shortfalls.
- Continue fabrication of a ship hull to enable unmanned launch of aerial targets.
- Continue development of a GPS jamming capability.
- Complete development of the Video Tracking System for airdrop operations.

FY 1998 Plans:

JIM Projects
- Initiate Advance Multiple Object Acquisition System (AMOAS) project to develop the next generation acquisition and tracking system.
- Initiate Joint Regional Range Complex to develop required internetting capabilities to maximize affordable realism.
- Initiate Aerial Target Systems Modeling and Simulation project to develop and enhance target signature predictive models.
- Initiate the Information System Test Bed project.
- Continue Test Technology Development and Demonstration project.
- Achieve Initial Operational Capability (IOC) of the NGTCS.
- Complete conceptual design for VTTR project.
- Demonstrate prototype of TRACS to Services.
- Complete prototype design of the Target Signature Measurement and Database System.
- Demonstrate prototype of Multi-Spectral Scene Projection capability.
- Demonstrate the Flight Data Link Simulator portion of the CNI simulator.
- Achieve IOC for the digital injection capability of the IRSS.
- Complete final design of the CDAPS.
- Complete Target Threat Validation Project.
- Complete TGRS upgrade to the Analog Translator/Translator Processor System.
- Complete final design for DoD Software Alpha Test Bed capability.
- Complete Joint Advanced Distributed Simulation project.

REP Projects
- Continue REP test resources, analysis and planning tasks.
- Resolve critical near term OT& E test asset shortfalls.
- Complete modification of a second BIG CROW aircraft to support EW testing.
- Complete the Vulnerability Assessment project.
- Complete Enhanced Threat System Replica (XM-43S) for testing U. S. Weapon Systems.
- Complete MOM sub-project.
- Complete development of GPS jamming capability.
- Complete Aerial Target Launch Ship sub-project.
- Complete AAIS Sub-system fabrication and integration testing.

FY 1999 Plans:

JIM Projects
- Initiate High Speed Massive Memory(HSMM)/Electronic Film Capability to modernize range/test event imaging capabilities.
- Initiate Land and Sea Vulnerability Test Capability to develop instrumentation for underwater explosion testing.
- Initiate the Flexible Nuclear Effects Study project.
- Initiate Mobile Imaging Radar project.
- Complete installation of NGTCS at Pacific Missile Range, Point Mugu, CA.
- Define software module list for CDAPS.
- Demonstrate VTTR proof-of-concept.
- Initiate system integration and test and evaluation of HSTSS.
- Continue Test Technology Development and Demonstration project.
- Achieve IOC for HSTSS project.
- Complete Phase I demonstration for Magnetic Levitation Upgrade.
- Achieve IOC for TRACS.
- Complete Advanced RCS Measurement project.
- Achieve FOC of the Multi-Spectral Scene Generator project within the Installed Systems Test Facility.
- Achieve FOC of the Radar Target Generator within the Installed Systems Test Facility.

REP Projects
- Continue REP test resources, analysis and planning tasks.
- Resolve critical near-term OT&E test asset shortfalls.

B. (U) **PROGRAM CHANGE SUMMARY**

	FY 1996	FY1997	FY1998	FY 1999
Previous President's Budget	112,751	116,007	129,413	139,564
Appropriated Value	112,751	146,007		
Adjustments to Appropriated Value				
a. Congressional Adjustments		(3,198)		
b. Purchase Inflation Adj			(560)	(771)
c. Tail for AVS			2,500	
Current Budget Submit	112,751	142,809	131,353	138,793

C. (U) **OTHER PROGRAM FUNDING** NA

D. (U) **SCHEDULE PROFILE** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)					February 1997					
DIRECTOR TEST AND EVALUATION, DEFENSE (0450) BUDGET ACTIVITY SIX			FOREIGN COMPARATIVE TEST (FCT) PE 0605130D							
$'s in Thousands	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	COST TO COMPLETE	TOTAL COST
PE 0605130D	32,195	32,851	33,836	33,759	34,861	35,816	36,609	37,492	Cont'g	Cont'g

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The mission of the Foreign Comparative Test (FCT) program is to test and evaluate foreign non-developmental items (NDI) identified by the CINCs and Services in order to avoid costly and time consuming U. S. new start acquisition programs. The FCT program funds test and evaluation of allied and friendly nation's weapons and equipment to provide procurement alternatives to satisfy U.S. Armed Forces requirements or correct mission area shortcomings. The FCT program is congressionally mandated in Title 10, USC, Section 2350a. FCT projects are nominated by U. S. Special Operations Command (SOCOM) and the Services each year and submitted to Congress for approval prior to expenditure of funds. Approved projects are normally funded for one or two years.

This Research Category 6.5 PE is assigned and identified in this descriptive summary in accordance with existing Department of Defense policy.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1996 Accomplishments:

- Completed Advanced Short Range Air to Air Missile (ASRAAM)
- Initiated Aircrew Laser Eye Shield
- Initiated AJU Communications Faired Mast
- Initiated Atmospheric Diving Suit for Deep Water Rescue
- Initiated Automatic Chemical Agent Detector Alarm (ACADA)
- Initiated Bearing Ambiguity Resolving Sonar (BARS)
- Initiated Chemring Chaff Block System for SOCOM Aircraft Protection
- Initiated Cordless Communication for Combat Vehicle Crewman
- Initiated Close-Up Support/All-Up Round Unitary Warhead for JSOW (CAS/AUR)
- Completed DYAD Magnetic Countermines Sweep System

- Initiated Focal Plane Array (FPA) Phase IIA - Standard Advanced Dewar Assembly (SADA)
- Initiated Focal Plane Array (FPA) Phase IIB - One Watt Linear Drive Cooler (OWLDC)
- Initiated Improved Ballistic Armor Grille (IBAG)
- Initiated Interim Vehicle-Mounted Mine Detector (IVMMD)
- Initiated Joint Service RAAWS Ammunition Upgrades (HEAT/HE/TPT141)
- Completed K-36 Ejection Seat
- Initiated Light Defender Suppression of Enemy Air Defense (SEAD) Weapon)
- Completed M-31 Supersonic Sea Skimming Target (SSST)
- Continue Maritime Craft Air Deployment System (MADS)
- Initiated MILSTAR Traveling Wave Tube
- Initiated Minimum Aircraft Operating Strip Landing Kit (MOSKIT)
- Initiated Mobile Torpedo Decoy C303S for Ship Protection
- Initiated Modular 5"/54 Gun System for DDG-51 Class Ships
- Initiated Modular Reconnaissance Pod (MRP)
- Initiated Multi-Scanner for Aging & Surveillance
- Completed Projectile Attack Explosive Ordnance Disposal System
- Completed PROPSCAN/CSCAN Marine Propeller Inspection System
- Completed 84mm Insensitive Munition High Explosive Anti-Tank (HEAT) Round
- Initiated Renaissance View Satellite Imagery
- Continue Submarine Antenna Outfit (AVD [1])
- Initiated Submarine Mast Detection System
- Initiated TerNav Land Navigation System
- Initiated Universal Precision Time Mortar Fuze

FY 1997 Plans:

- Initiate 1.75 Watt Linear Drive Cooler
- Initiate 7.62mm Short Range Training Ammunition
- Initiate Advanced Tactical Parachute Systems
- Continue AJU Communications Faired Mast
- Continue Atmospheric Diving Suit for Deep Water Rescue
- Initiate Attitude Heading Reference System (AHRS)
- Complete Automatic Chemical Agent Detector Alarm (ACADA)
- Complete Bearing Ambiguity Resolving Sonar
- Complete C-17 Infrared Decoy Flare
- Continue Chemring Chaff Block System for SOCOM Aircraft Protection
- Continue Close Air Support/Advanced All-Up Round Warhead for JSOW
- Complete Cordless Communication for Combat Vehicle Crewmen
- Initiate Emergency Evacuation Hyperbaric Stretcher

- Initiate F-15 Countermeasures Dispenser
- Initiate F-16 600 Gallon Tanks
- Initiate Improved Mobile Subscriber Equipment UHF Radios
- Initiate Insensitive Munition Hellfire Missile Motor
- Complete Joint Service RAAWS Ammunition Upgrades
- Initiate Joint RAAWS Ammunition Upgrade Phase II
- Initiate M-31 Supersonic Sea Skimming Target (SSST)
- Initiate M72 Light Anti-Tank Weapon (LAW) Insensitive Rocket Motor Propellant
- Initiate Micro-Satellite for Space Experiments
- Complete MILSTAR Traveling Wave Tube
- Continue Mobile Torpedo Decoy C303S for Ship Protection
- Continue Modular 5"/54 Gun System for DDG-51 Class Ships
- Continue Modular Reconnaissance Pod
- Initiate NBC Analysis System (HAZWARN)
- Initiate Next Generation Small Loader
- Initiate Night Vision Goggle Camera
- Initiate Parachute Flare Pylon for the F-16
- Initiate Remote Operating Vehicle Hot Tap and Pump System
- Continue Renaissance View Satellite Imagery
- Continue Standard Advanced Dewar Assembly I (SADA I)
- Initiate Supportable Technology for Affordable Fighter Structures (STAFS) Casting Comparison
- Continue Surface Ship Periscope Detection Radar
- Initiate Titanium Nitride Coatings for Compressor Blades
- Continue Special Warfare Mine Hunting Outboard Motor

1998 Plans:

- Complete Advanced Tactical Parachute System
- Complete AJU Communications Faired Mast
- Complete Castings for Affordable Fighter Structures (CAFS)
- Complete Close-Up Support/All-Up Round Unitary Warhead for JSOW
- Continue Emergency Evacuation Hyperbaric Stretcher
- Complete F-15 Electronic Counter Measures Chaff Dispenser
- Complete Insensitive Munition Hellfire Missile Motor
- Complete Joint Ranger Anti-Armor Anti-Personnel Weapon System (JRAAWS) Ammunition Upgrade, Phase II
- Complete Micro-Satellite for Space Experiments
- Complete Mobile Decoy C303S for Ship Protection
- Complete M-72 Light Anti-Weapon (LAW) Insensitive Rocket Motor Propellant
- Complete Next Generation Small Loader

- Complete Night Vision Goggle Camera
- Complete Parachute Flare Pylon for the F-16
- Continue Remote Operating Hot & Pump System
- Continue Special Warfare Mine Hunting Outboard Motor
- Complete Standard Advanced Dewar Assembly (SADA I)
- Complete Short Range Training Ammunition
- Complete Titanium Nitride Coatings for Compression Blades
- Compete Watt Linear Drive Cooler
- Fund approximately 35 new or continuing foreign system tests and evaluations and/or technology assessments

FY 1999 Plans :

- Fund approximately 35 new or continuing foreign system tests and evaluations and/or technology assessments.

B. (U) PROGRAM CHANGE SUMMARY

	FY 1996	FY 1997	FY 1998	FY 1999
Previous President's Budget	32,195	33,560	33,980	33,946
Appropriated Value	32,195			
Adjustments to Appropriated Value				
a. Congressional Adjustments		(709)		
b. Purchase Inflation Adj			(144)	(187)
Current Budget Submit	32,195	32,851	33,836	33,759

C. (U) OTHER PROGRAM FUNDING NA

D. (U) SCHEDULE PROFILE NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)						February 1997				
DIRECTOR TEST AND EVALUATION, DEFENSE (0450) BUDGET ACTIVITY SIX			TEST AND EVALUATION (T&E) PE 0605804D							
$'s in Thousands	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	COST TO COMPLETE	TOTAL COST
PE 0605804D	102,136	100,132	102,994	106,215	109,207	111,852	114,329	117,084	Cont'g	Cont'g

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The program element supports the activities of the Director, Test, Systems Engineering, and Evaluation, Office of the Under Secretary of Defense for Acquisition and Technology (OUSD(A&T)), to manage the DoD test and evaluation process. Unique programs within this PE include Joint Test and Evaluation (JT&E) and the T&E Programs (Threat Systems (TS), Precision Guided Weapons Countermeasures (PGWCM), Defense Evaluation Support Activity (DESA), and Joint Technical Coordinating Groups on Aircraft Survivability (JTCG/AS) and for Munitions Effectiveness (JTCG/ME)).

JT&E programs are coordinated with OSD elements, the Joint Staff and the Services and focus on evaluating, in a joint military environment, whether weapon systems and equipments meet their detailed technical/operational performance requirements, solving technical problems, developing T&E methodologies including those needed for validating models and simulations and/or databases. The T&E Programs are continuing efforts that provide T&E expertise to the DoD and/or management and oversight of DoD T&E functions. TS provides OSD oversight and management of Service Threat Simulator developments to ensure increased commonality, minimize duplications and provide consistent validation. TS funds the management and oversight functions for development of threat specifications and threat simulators, targets used for T&E, integration of T&E requirements for Foreign Material Acquisition (FMA), and DoD validation of threat simulators, threat representative targets, and digital threat models. PGWCM, a DoD Joint Service T&E Directorate, conducts T&E of Electro-Optical (EO), Infrared (IR), Radar, and Millimeterwave (MMW) weapons, countermeasures (CM) equipment and warning devices for the Services, T&E Agencies, and the Intelligence Community. DESA, a DoD T&E Activity, provides T&E expertise to the Services, Defense Agencies, and other Departments and Agencies. DESA provides non-traditional, rapid response, state-of-the-market, and priority technology and evaluation support to DoD and other U.S. Government agencies. DESA plans and conducts technology demonstrations and field tests and maximizes utilization of off-the-shelf technology. The JTCG/AS supports joint development test and evaluation programs to enhance the combat survivability of aircraft. This tri-Service organization serves as the DoD focal point for aircraft survivability and represents the Joint Logistics Commanders (JLC) and their Joint Aeronautical Commanders Group (JACG) in dealings with OSD, industry, and other Service agencies. JTCG/ME develops and publishes the Joint Munitions Effectiveness Manuals (JMEM) which contain weapons effectiveness estimates for all fielded non-nuclear weapons for the DoD. JMEMs are used to develop weapons requirements, plan operational missions, support training and tactics development, and support force-level analyses. The JTCG/ME also develops and standardizes methodologies for evaluation of munitions effectiveness and maintains databases for target vulnerability, munition lethality and weapon system accuracy. JTCG/AS and JTCG/ME jointly sponsor the Survivability/Vulnerability Information Analysis Center (SURVIAC). This PE

also funds T&E support, including independent analyses, specific and generic, of weapons systems tests and evaluation process improvements.

This Research Category 6.5 PE is assigned and identified in this descriptive summary in accordance with existing Department of Defense policy.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 1996 Accomplishments:

JT&E Programs

- Continued Joint Theater Missile Defense (JTMD), Joint Advanced Distributed Simulation (JADS), and Band IV CM testing.
- Distributed Joint Tactical Missile Signatures (JTAMS) and Joint Camouflage Concealment and Deception (JCCD) final reports.
- Chartered Joint Combat Search and Rescue (JCSAR) as a JT&E program.
- Conducted JT&E annual nominations review.
- Continued JT&E Feasibility Studies: Joint Suppression of Enemy Air Defense (JSEAD) and Joint Warfighter.
- Completed JT&E Feasibility Studies: Joint Operations Intelligence Network (JOIN WARRIOR) and Joint Electronic Combat Simulation (JECSIM).
- Initiated Night Close Battle (NCB) Feasibility Study.

T&E Programs

- PGWCM tested 24 EO and MMW precision guided weapons systems (all U.S. Services and foreign exploitation) in a countermeasures environment (e.g. LONGBOW, BAT, STINGER, VIPER countersniper, SFW, AGM-65H, CMWS, Developmental missile and laser warning systems, and Foreign PGW, MANPAD, and Laser systems).
- DESA continued to provide T&E and test and environmental protection (T&EP) expertise to the DoD, Congressionally-directed programs, and other Government Agencies focusing on Advanced Concept Technology Demonstrations (ACTDs) (High Altitude Endurance Unmanned Aerial Vehicle (UAV) ACTD and Mountain Top ACTD) and efforts to leverage state-of-the-art technology.
- The Susceptibility Model Assessment and Range Test (SMART) project, under the auspices of the JTCG/AS, concluded development and has demonstrated its verification, validation, and configuration management process to increase the credibility of models used in the aircraft survivability discipline. The SMART methodology is being employed by the Joint Strike Fighter (JSF) and Ballistic Missile Defense (BMD) offices in their development efforts.
- Threat Systems:
  Threat Simulators
  - Began selected "Rest of World" (ROW) threat system studies/designs and digital threat models.
  - Executed the DoD validation program for threat simulators and threat digital models.
  - Continued management and oversight over Service threat and threat digital models.

- Completed development of an Advanced Radar Test Bed which will serve as the primary element for Service SA-X-17 development programs.
- Continued threat support of T&E by investigations of current scientific and technical developments for insertion in Service threat representation programs.
- Updated the Threat Systems Handbook database to maintain inventory of threat assets available for T&E.
- Conducted technical exchanges between T&E and Intelligence communities through symposiums/workshops.

Targets
- Continued management and oversight over Service threat representative targets.
- Executed the DoD validation program for threat representative targets.

- JTCG/AS initiated the Imaging Missile Flare and the Imaging IRCM damage assessment efforts. The Low Energy Laser Advanced Weapon Simulation (LELAWS) was entered into SURVIAC while three high usage survivability models were integrated into one common model for addressing low altitude radar multipath and clutter. The development of a short pulse laser technique to defeat IR missiles was completed. Techniques aimed at mitigating the hazards associated with internal weapons carriage were developed and evaluated.
- JTCG/ME published a CD/ROM JMEM for Air-to-Surface Weapons Systems (JAWS); continued development of a CD-ROM JMEM for World Artillery, Rocket and Mortar Systems (WAMS); began multi-year programs to improve and standardize methodologies for blast effects versus surface targets, bridge vulnerability, and vulnerability of industrial building targets; and continued development of the Advanced Joint Effectiveness Model (AJEM) for aircraft analyses.
- Together, JTCG/AS and JTCG/ME developed solutions to answer the National Science Foundation's F-22 study conclusions and recommendations addressing shortfalls in analytical tools for vulnerability and lethality.

T&E Independent Activities includes funding for independent analyses and T&E oversight of the more than 220 Major weapon acquisition programs; the Command, Control, Communications and Intelligence (C3I); the Major Automated Systems Programs; the JT&E Programs; and travel for ODTSE&E.

FY 1997 Plans:

JT&E Programs
- Complete Band IV testing.
- Distribute Band IV final report.
- Continue JADS, JCSAR and JTMD testing.
- Charter JECSIM and commence testing.
- Conduct JT&E annual nominations review.
- Complete JSEAD, Joint Warfighter, and NCB Feasibility Studies.
- Explore with joint training officials the means by which the JT&E community can verify and validate large scale campaign/theater level simulators through use of data captured during joint training exercises.
- Charter new JT&E programs after completion of FY 1996 JT&E Feasibility Studies.

T&E Programs

- PGWCM will conduct 30 to 35 tests of US (ACAT I-III) and foreign guided weapons systems in a countermeasures environment, countermeasures systems, and air, sea, and land warning devices (e.g. CMWS, SIIRCM, Precision Guided Mortar Munition (PGMM), BAT and BAT P31, AAR-47, ATIRCM, Tactical DIRCM, AELJ, SFW and SFW P31, LANTIRN, AGM-65H, AGM-130, and several developmental laser beamrider CM tests).
- DESA will continue to provide T&E expertise to the JCS, Office of the Secretary of Defense, the Services, Defense Agencies, National Level Programs, Congressionally Directed Programs, and other National Agencies.
- Threat Systems:

  Threat Simulators
  - Execute the DoD validation program for threat simulators and threat digital models.
  - Continue management and oversight over Service threat simulators and threat digital models.
  - Continue threat support to T&E by investigations of current scientific and technical developments for insertion in Service threat representation programs.
  - Continue cooperative technical research and test bed projects to facilitate threat representation.
  - Complete selected ROW threat system studies/designs and digital threat models.
  - Conduct technical exchanges between T&E and Intelligence communities through symposiums/workshops.
  - Update the Threat Systems Handbook database to maintain inventory of threat representative assets available for T&E.
  - Begin design of one multispectral threat system.

  Targets
  - Continue management and oversight over Service threat representative targets.
  - Execute the DoD validation program for threat representative targets.
  - Evaluate T&E deficiencies in current target systems, such as common/interoperable control systems, and determine common solutions.
  - Initiate development of target unique M&S capabilities, such as near-field signature prediction, to support common multi-Service T&E requirements.
- JTCG/AS will complete short pulse laser CM, post burn-out missile tracking, and kinematic flare developments. Initiate the CM techniques integration study. Complete hydrodynamic ram analytical methods development. Initiate engine control and weapons bay vulnerability reduction efforts. Complete development of advanced Joint Effectiveness model that will enhance vulnerability, lethality, and end game modeling capability.
- JTCG/ME will standardize development of CD/ROM JMEMs; begin conversion of existing JMEMs to CD/ROM format; begin execution and technical coordination efforts to address Target Vulnerability methodology improvements; formulate detailed master plan for Verification, Validation, and Accreditation (VV&A) of JTCG/ME legacy models; and continue task work to develop an AJEM for aircraft analyses.

T&E Independent Activities includes funding for independent analyses and T&E oversight of the more than 220 Major weapon acquisition programs; the Command, Control, Communication and Intelligence (C3I); the Major Automated Systems Programs; the JT&E Programs; and travel for ODTSE&E.

FY 1998 Plans:

JT&E Programs

- Complete JADS and JTMD testing.
- Continue JCSAR, JECSIM, and FY97 chartered JT&E testing.
- Conduct JT&E annual nominations review.
- Determine the feasibility of FY 1997 new nominations for potential JT&Es.
- Continue to explore with joint training officials the means by which the JT&E community can verify and validate large scale campaign/theater level simulators through use of data captured during joint training exercises.
- Charter new JT&E programs after completion of FY 1997 JT&E Feasibility Studies.

T&E Programs

- PGWCM will conduct 30 to 35 tests of US (ACAT I-III) and foreign guided weapons systems in a countermeasures environment, countermeasures systems, and air, sea, and land warning devices (e.g., ATIRCM, DIRCM, BAT, Foreign Weapons, CM and Warning Devices, LONGBOW, SFW, OWL, VIPER, Missile Warning Receivers, AAR-47 Upgrades, AELJ).
- DESA will continue to provide T&E expertise to the JCS, Office of the Secretary of Defense, the Services, Defense Agencies, National Level Programs, Congressionally Directed Programs, and other National Agencies.
- Threat Systems:

  Threat Simulators
  - Execute the DoD validation program for threat simulators and threat digital models.
  - Continue management and oversight over Service threat simulators and threat digital models.
  - Continue threat support to T&E by investigations of current scientific and technical developments for insertion in Service threat representation programs.
  - Continue cooperative technical research and test bed projects to facilitate threat representation.
  - Update the Threat Systems Handbook database to maintain inventory of threat representative assets available for T&E.
  - Begin design of one multispectral threat system.
  - Conduct technical exchanges between T&E and Intelligence communities through symposiums/workshops.

  Targets
  - Continue management and oversight over Service threat representative targets.
  - Execute the DoD validation program for threat representative targets.
  - Promote the development of prototype solutions to highest priority deficiency in current target systems.
  - Continue to develop new target M&S capabilities/tools that meet multi-Service T&E needs, use common/DoD standard architectures, and make maximum use of reusable code when possible.
  - Initiate cooperative technical research to address shortfalls identified within the target validation program.
- JTCG/AS will complete imaging and beam rider missile CM developments, rotorcraft fluidic flight control demonstration, and next generation Halon replacement evaluations for fuel system applications. Initiate CM development for next

generation threat seekers. Develop integrated modeling environment for assessing one-on-one air weapon systems survivability.

- JTCG/ME will continue conversion of existing JMEMs to CD/ROM format; continue execution and technical coordination efforts to address Target Vulnerability methodology improvements; begin execution of VV&A efforts on specific JTCG/ME models; and finalize AJEM methodology, begin beta testing and initiate documentation to support users and analysts.

T&E Independent Activities includes funding for independent analyses and T&E oversight of the more than 220 Major weapon acquisition programs; the Command, Control, Communication and Intelligence (C3I); the Major Automated Systems Programs; the JT&E Programs; and travel for ODTSE&E.

FY 1999 Plans:

JT&E Programs

- Complete JCSAR testing.
- Distribute JADS, JCSAR and JTMD final reports.
- Continue JECSIM and FY97 chartered JT&E testing.
- Conduct JT&E annual nominations review.
- Determine the feasibility of FY 1998 new nominations for potential JT&Es.
- Charter new JT&E programs after completion of FY 1998 JT&E Feasibility Studies.

T&E Programs

- PGWCM will conduct 30 to 35 tests of US (ACAT I-III) and foreign guided weapons systems in a countermeasures environment, countermeasures systems, and air, sea, and land warning devices.
- DESA will continue to provide T&E expertise to the JCS, Office of the Secretary of Defense, the Services, Defense Agencies, National Level Programs, Congressionally Directed Programs, and other National Agencies.
- Threat Systems:

  Threat Simulators
  - Execute the DoD validation program for threat simulators and threat digital models.
  - Continue management and oversight over Service threat simulators and threat digital models.
  - Continue threat support to T&E by investigations of current scientific and technical developments for insertion in Service threat representation programs.
  - Continue cooperative technical research and test bed projects to facilitate threat representation.
  - Update the Threat Systems Handbook database to maintain inventory of threat representative assests available for T&E.
  - Conduct technical exchanges between T&E and Intelligence communities through symposiums/workshops.

  Targets
  - Continue management and oversight over Service threat representative targets.
  - Execute the DoD validation program for threat representative targets.
  - Promote the development of prototype solutions to highest priority deficiency in current target systems.

- Continue to develop new target M&S capabilities/tools that meet multi-Service T&E needs, use common/DoD standard architectures, and make maximum use of reusable code when possible.
- Continue cooperative technical research to address shortfalls identified within the target validation program.

- JTCG/AS will complete advanced IR signature programming and initiate composite laser vulnerability. Along with JTCG/ME, complete development of component dysfunction archive incorporating methodologies, analyses and test data due to a damage mechanism. Complete qualification of survivablity improvements of a more electric aircraft over a typical hydraulic system.
- JTCG/ME will continue conversion of existing JMEMs to CD/ROM format; develop a transfer process for Target Vulnerability models to appropriate users in government and industry; document and continue VV&A efforts on specific JTCG/ME models; and finalize AJEM documentation, publish and distribute the AJEM for DoD use, and continue collecting data for its VV&A.

T&E Independent Activities includes funding for independent analyses and T&E oversight of the more than 220 Major weapon acquisition programs; the Command, Control, Communication and Intelligence (C3I); the Major Automated Systems Programs; the JT&E Programs; and travel for ODTSE&E.

B. (U) PROGRAM CHANGE SUMMARY

	FY 1996	FY 1997	FY 1998	FY 1999
Previous President's Budget	102,136	102,471	103,433	106,805
Appropriated Value	102,136			
Adjustments to Appropriated Value				
a. Congressional Adjustments		(2,339)		
b. Purchase Inflation Adj			(439)	(590)
Current Budget Submit	102,136	100,132	102,994	106,215

C. (U) OTHER PROGRAM FUNDING SUMMARY **NA**

D. (U) SCHEDULE PROFILE **NA**

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OPERATIONAL TEST AND EVALUATION, DEFENSE

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Defensewide
FY 1998/1999 R D T & E Program

Exhibit R-1

Appropriation: 0460 D Operational Test & Evaluation, Defense

Date: FEB 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999	Sec
				Thousands of Dollars				
1	0605118D	Operational Test and Evaluation	6	12,183	11,437	13,187	13,216	U
2	0605131D	Live Fire Testing	6	10,404	12,782	10,197	10,231	U
		RDT&E Management Support		22,587	24,219	23,384	23,447	
Total		Operational Test & Evaluation, Defense		22,587	24,219	23,384	23,447	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) February, 1997

Appropriation:	Operational Test and Evaluation, Defense	Program Element Name:	Director of Operational Test and Evaluation
Budget Activity:	06	Program Element Number:	0605118D

Cost ($ in Millions)	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003
Total Program Element Cost	12.183	11.437	13.187	13.216	13.365	13.663	13.953	14.237

A. Mission Description and Budget Item Justification

The Director of Operational Test and Evaluation (DOT&E) is responsible for policy and procedures for all aspects of operational test and evaluation within the Department of Defense (DoD), with particular focus on OT&E that supports major weapon system production decisions. Currently there are approximately 200 Major Defense Acquisition Programs (MDAPs) on the DOT&E oversight list. These MDAPs may not proceed beyond low-rate initial production (LRIP) until adequate operational test and evaluation of the program is completed. This requires early involvement by DOT&E in the planning phase of each program to ensure adequate testing and satisfactory progress through the acquisition milestones toward operational effectiveness, suitability goals and full-scale production. Key elements of the DOT&E's authority for MDAPs include: the approval of Service Test and Evaluation Master Plans (TEMPs) and Service operational test and evaluation (OT&E) plans; assessment of the adequacy of OT&E and the operational effectiveness and suitability of the weapon system; and participation in DoD-wide planning, programming and budgeting activities to highlight test and evaluation capabilities, needs and priorities. As management support of research and development, these funds are budgeted for in Program Element Research Category 6.5.

DOT&E also has statutory responsibility for oversight of the Live Fire Test and Evaluation Program within DoD which is budgeted for under Program Element 0605131D (See Section C of this exhibit).

The Secretary of Defense set forth "Five Themes" for operational testing. These "Themes" or initiatives are designed to gain the most insight and understanding for every dollar invested in test and evaluation while reducing overall test costs. The "Five Themes" are:

Theme #1: Early Involvement. This concerns the early involvement by the operational testers in the acquisition process in order to gain earlier understanding of how systems will be used once they are fielded and to identify the tools and resources needed to achieve that good understanding.

Theme #2: More Effective Use of Modeling and Simulation (M&S). Effective M&S and testing are inevitably intertwined. Increased effort is needed to develop test plans and test programs that use M&S that truly contributes to reducing the scope and risks of testing and perhaps even eliminates the requirement for certain tests. We need to move in the direction of simulations that are realistic, highly predictive, and which lead to a real physical understanding of the system being modeled.

Theme #3: Combining Different Types of Testing. This includes the possible combination of operational tests of different systems as well as more emphasis on combined developmental testing (DT) and operational testing (OT). For example, test planners need to give more thought to how to collect DT data that can be used in M&S or other evaluations to gain operational test insights.

Theme #4: Combining Testing and Training. Combining testing and training can add value to each activity, add realism, and obtain opportunities for cost sharing. In the complex environment of training, it can also provide the kinds of stressing conditions that both systems developers and testers are interested in.

Theme #5: Using Operational Testing and the Above Approaches to Support Advanced Concept Technology Demonstration (ACTD) Programs. The challenge is to apply the techniques of operational testing in ways that support the ACTD process. The emphasis must be on providing understanding regarding an ACTD's contribution to military effectiveness and defining ways to provide that insight. A critical key to success with testing in the ACTD arena is the establishment of effective working partnerships with the CINCs.

The "Five Themes" set out by Secretary Perry will require a series of major initiatives with the test community, the military services, and the acquisition programs.

(U) FY 1996 Accomplishments

• Reviewed Service TEMPs and test plans and provided appropriate guidance to ensure test adequacy; observed preparation for, and conduct of, field operational tests; evaluated OT results and reported evaluations to Congress and DoD senior management; and conducted assessments on programs to include evaluation of projected resource requirements and funding levels for OT&E. Programs benefiting from this oversight service included:

Land Warfare Programs: Abrams Tank Upgrade, Army Tactical Missile System--Brilliant Anti-Armor Submunition (ATACMS-BAT), Army Tactical Missile System Block 1A, Bradley Fighting Vehicle System (BFVS)-A3/M2A3 and M3A3 Program, Close Combat Tactical Trainer (CCTT), Comanche RAH-66, CRUSADER Advanced Field Artillery System/Future Ammunition Resupply Vehicle (AFAS/FARV), Family of Medium Tactical Vehicles (FMTV), Improved Target Acquisition System (ITAS), Javelin Antitank Missile, Joint Surveillance and Target Attack Radar System Common Ground Station (JSTARS-CGS), JSTARS Ground Station Module (JSTARS-GSM), Kiowa Warrior OH-58D, Multiple Launched Rocket System--Improved Fire Control System and Improved Launcher Mechanical System (MLRS-IFCS and MLRS-ILMS), Multiple Launched Rocket System-—Extended Range Rocket (MLRS-ERR), NBC Reconnaissance System, Palletized Loading System (PLS), and Stinger Reprogrammable Microprocessor 1 (RMP1) and 2 (RMP2) and Tactical Unmanned Vehicle--Outrider.

Naval Warfare Programs: Advanced Amphibious Assault Vehicle (AAAV), Advanced Combat Direction System (ACDS) Block I, Advanced Integrated Electronic Warfare System (AIEWS), Aegis Spy Radar (AN/SPY-1B/DEDM-4B), Auxiliary Dry Cargo Carrier (ADC/X), AN/SOQ-89 Antisubmarine Warfare Combat System, Cooperative Engagement Capability(CEC) and the associated Advanced Concept Technology Demonstration (ACTD) "Mountain Top", DDG-51 Burke Class Destroyer, Fixed Distribution System(FDS)/Antisubmarine Warfare Surveillance, FutureSea-Based Tactical Aviation Platform(CV/X), Light Airborne Multi-Purpose System (LAMPS) MK III, LPD-17 Amphibious Assault Ship, Mine Countermeasure Ship (MCM-1), Coastal Mine Hunter (MHC-51), MK-48 Advanced Capability (ADCAP) Torpedo, MK-50 Advanced Lightweight Torpedo, New Attack Submarine (NSSN), Rolling Airframe Missile (RAM), SC-21 21st Century Surface Combatant, Sea Sparrow, Ship Self-Defense System (SSDS), SSN-21/BSY-2 Seawolf Class Nuclear Attack Submarine/Combat System, Strategic Sealift Naval Transport Ship (SSP), Standard Missile 2/IIIB-IV/IVA, Submarine Communications Subsystem (SUBCOMMS/SCSS), and TAGOS/SURTASS Surveillance Ship.

Air Warfare Programs: Advanced Medium Range Air-to-Air Missile (AMRAAM), AIM 9X Infrared Air-to-Air Missile System, AH-1 and UH-1 Helicopter Upgrades (4BW/4BN Upgrade), AV-8B Remanufacture, C-17 Airlift Aircraft, C-130J Cargo Plane, F-16 Fighter Block 50, F-22 Advanced Tactical Fighter, F/A-18 C/D Hornet, F/A-18 E/F Hornet, Joint Air-to-Surface Strike Missile (JASSM), Joint Direct Attack Munition (JDAM), Joint Primary Aircraft Training System (JPATS), Joint Standoff Weapon (JSOW), JSOW BLU-108B, JSOW Unitary, Joint Surveillance and Target Attack Radar System (JSTARS) E-8, JT-UAV Medium Altitude Endurance (Predator), JT-UAV High Altitude Endurance, JT-UAV High Altitude Endurance Low Observables, Sensor Fused Weapon (SFW), JT-45 Training System (T45TS), V-22 Osprey (Joint Vertical Airlift), Standoff Land Attack Missile--Expanded Response (SLAM-ER), and Tactical Aviation Mission Planning System (TAMPS).

Electronic Warfare Programs: ALE-50 Electronic Warfare Countermeasures System, ALR-67(V)2 Radar Warning Receiver, ALR-67(V) Advanced Special Receiver, B-1 Bomber Defensive System Upgrade Program, EA-6B Tactical Jamming System (All Upgrades), F-14/Airborne Self-Protection Jammer (ASPJ), F-15 Tactical Electronic Warfare System (TEWS), Integrated Electronic Countermeasures Suite (IDECM), Suite of Integrated Infrared Countermeasures/Common Missile Warning System (SIIRCM/CMWS), and Suite of Integrated Radio Frequency Countermeasures (SIRFCM).

Command, Control, Communications and Intelligence (C3I) Programs: All Source Analysis System (ASAS), Army Global Command and Control System (AGCCS), Army Tactical Command and Control System (ATCCS) Capstone, Base Level System Modernization Phase II (BLSM II), Battlefield Digitization, Broad Area Coverage Image Capability (BACIC), C2 Vehicle, Cheyenne Mountain Upgrade, Combat ID, Composite Health Care System (CHCS), Consolidated Space Operations Center (CSOC), Defense Civilian Personnel Data System (DCPDS), Defense Commissary Info System, Defense Medical Logistics Standard Support (DMLSS), Defense Message System (DMS), Defense Commissary Point-of-Sale (POS) System, Defense Fuel Automated Management System (DFAMS), Defense Satellite Communications System (DSCS), Defense Support Program (DSP)/EWS, Depot Maintenance Support System (DMSS), Digital Production System (DPS), Distribution Standard System (DSS), E-2C Hawkeye Airborne Early Warning, E-3A Airborne Warning and Control System (AWACS) Radar System Improvement Program (RSIP), E-6A TACAMO (multiple subprograms), F-15 Fighter Data Link, Forward Area Air Defense System (FAADS) C3I, Global Transportation Network (GTN), High Performance Computing Modification Plan (HPCMP), Integrated Maintenance Data System (IMDS), Joint Computer Aided Acquisition and Logistic Support (JCALS), Joint Engineering Data Management and Control System (JEDMCS/EDMCS), Joint Receiving Information Support System, Joint Service Imagery Processing System (JSIPS), Joint Tactical Information

Distribution System (JTIDS), Maneuver Control System (MCS), Material Management Support System (MMSS), Multifunctional Information Distribution System (MIDS), MILSTAR Satellite Communications System, NAVSTAR GPS User Equipment (UE), Navy Standard Integrated Personnel System (NSIPS), Non-Tactical Command Support System (NTCSS), Reserve Component Automation System (RCAS), Space Based Infrared System (SBIS), Standard Installation/ Division Personnel System 3 (SIDPERS3), Standard Procurement System (SPS), Strategic War Planning System (SWPS), Theater Medical Information Program (TMIP), Ultra-High Frequency Follow-On (UFO) Satellite, and Unit Level Logistic System (ULLS).

Strategic Warfare and Space Systems Programs: B-1B Lancer, B-2 Advanced Technology Bomber, Block IV All-Up-Round, Theater Missile Defense (BM/C3), Corps Surface-to-Air Missile (SAM), Evolved Expendable Launch Vehicle (EELV), Global Missile Defense System (GMDS), National Airspace System (NAS), National Missile Defense System (NMDS), Navy Theater Ballistic Missile Defense (TBMD), Patriot P3I, Patriot Upgrade, Theater High Altitude Area Defense (THAAD), TITAN IV Space Booster, Tomahawk Block IV, and Tomahawk Theater Mission Planning Center (TMPC).

Other Systems: Chemical Demilitarization.

- During fiscal year 1996, DOT&E was a major participant in the DoD-wide study team developing a comprehensive plan, for test and evaluation (T&E) centers for the 21st century. The development of the plan, known as "Vision 21", has been in response to Congressional direction in the National Defense Authorization Act for Fiscal Year 1996.

- Performed official travel to carry out DOT&E programmatic oversight of DoD operational testing and evaluation.

(U) FY 1997 Plans:

- Review Service TEMPs and test plans and provide appropriate guidance to ensure test adequacy; observe preparation for, and conduct of, field operational (OT) tests; evaluate OT results and report evaluations to Congress and DoD senior management; and conduct assessments on programs to include evaluation of projected resource requirements and funding levels for OT&E. Programs benefiting from this oversight service will include:

Land Warfare Programs: Abrams Tank(M1A2) System Enhancement Program (SEP), Army Tactical Missile System Brilliant Anti-Armor Submunition (ATACMS/BAT), ATACMS-BAT/Pre-Planned Product Improvement(P3I), Army Tactical Missile System Block 1A, Pedestal Mounted Stinger--Avenger, Bradley Fighting Vehicle System-A3/M2A3 and M3A3 Program, Close Combat Tactical Trainer (CCTT), Comanche RAH-66, CRUSADER Advanced Field Artillery System/Future Ammo Resupply Vehicle (AFAS/FARV), Enhanced Fiber Optic Guided Missile (EFOG-M), Follow-on to TOW Missile System (FOTT), High Mobility Multi-Purpose Light Tactical Vehicle (HMMLTV), Improved Target Acquisition System (ITAS), Javelin Advanced Anti-Tank Weapon System, Joint Surveillance Target Attack Radar System (JSTARS) Common Ground Station (CGS), Kiowa Warrior (OH-58D), Line of Sight Anti-Tank (LOSAT) Weapon System, Longbow Hellfire Missile System, Multiple Launched Rocket System—Extended Range Rocket, Multiple Launched Rocket System (M270A1 Launcher), NBC Reconnaissance System, Palletized Loading System (PLS), Sense and Destroy Armor(SADARM), STINGER Reprogrammable Microprocessor (RMP) and Tactical Unmanned Aerial (UAV)--Outrider.

Naval Warfare Programs: Advanced Amphibious Assault Vehicle (AAAV), Advanced Combat Direction System (ACDS) Block I, Advanced Integrated Electronic Warfare System (AIEWS), Auxiliary Dry Cargo Carrier (ADC/X), Aegis Spy Radar (AN/SPY-1B/DEDM-4B), AN/SQQ-89 Antisubmarine Warfare Combat System, Arsenal Ship, Cooperative Engagement Capability (CEC), DDG-51 Burke Class Destroyer, Future Sea-Based Tactical Aviation Platform (CV/X), SH-6 Multi-Mission Helo Program, LPD-17 Amphibious Assault Ship, Coastal Mine Hunter (MHC-51), MK48 Advanced Capability (ADCAP) Torpedo, New Attack Sub (NSSN), Phalanx Close-in Weapon System (CIWS), Rolling Airframe Missile (RAM), SC-21 21st Century Surface Combatant, Sea Sparrow, Ship Self-Defense System (SSDS), Smart Ship Technology, SSN-21/BSY-2 Seawolf Class Nuclear Attack Submarine/Combat System, Strategic Sealift Naval Transport Ship (SSP), Standard Missile-2/IIIB-IV/IVA, Submarine Communications Subsystem (SUBCOMMS/SCSS), and TAGOS/SURTASS Surveillance Ship.

Air Warfare Programs: AH-1 and UH-1 Helicopter Upgrades (4BN/4BW Upgrade), AIM-9X Missile, Advanced Medium Range Air-to-Air Missile (AMRAAM), C-17 Airlift Aircraft, C-130J Cargo Plane, F-14D Fighter, F/A-18 C/D Hornet, F/A-18 E/F Hornet, F-22 Air Superiority Fighter, Joint Air-to-Surface Strike Missile (JASSM), Joint Direct Attack Munition (JDAM), Joint Primary Aircraft Training System (JPATS), Joint Standoff Weapon (JSOW), Joint Strike Fighter, Joint Surveillance and Target Attack Radar System (JSTARS) E-8, JT-UAV Medium Altitude Endurance (Predator), JT-UAV High Altitude Endurance, JT-UAV High Altitude Endurance Low Observables, Sensor Fused Weapon (SFW), Standoff Land Attack Missile—Expanded Response (SLAM-ER), Tactical Aviation Mission Planning System (TAMPS), and V-22 Osprey (Joint Vertical Airlift).

Electronic Warfare Programs: ALE-50 Electronic Warfare Countermeasure System, ALR-67(V)3/4 Advanced Special Receiver, ALR-69 Radar Warning Receiver, B-1B Bomber Defensive System Upgrade Program, EA-6B Tactical Jamming System (All Upgrades), F-15 Tactical Electronic Warfare System (TEWS), Integrated Defensive Electronic Countermeasures Suite (IDECM), Suite of Integrated Infrared Countermeasures/Common Missile Warning System (SIIRCM/CMWS), and Suite of Integrated Radio Frequency Countermeasures (SIRFCM).

Command, Control, Communications and Intelligence (C3I) Programs: All Source Analysis System (ASAS), Army Global Command and Control System (AGCCS), Army Tactical Command and Control System (ATCCS) Capstone, Base Level System Modernization Phase II (BLSM II), Battlefield Digitization, Broad Area Coverage Image Capability (BACIC), C2 Vehicle, Cheyenne Mountain Upgrade, Combat ID, Composite Health Care System (CHCS), Consolidated Space Operations Center (CSOC), Defense Civilian Personnel Data System (DCPDS), Defense Commissary Info System, Defense Medical Logistics Standard Support (DMLSS), Defense Message System (DMS), Defense Commissary Point-of-Sale (POS) System, Defense Fuel Automated Management System (DFAMS), Defense Satellite Communications System (DSCS), Defense Support Program (DSP)/EWS, Depot Maintenance Support System (DMSS), Digital Production System (DPS), Distribution Standard System (DSS), E-2C Hawkeye Airborne Early Warning, E-3A Airborne Warning and Control System (AWACS) Radar System Improvement Program (RSIP), E-6A TACAMO (multiple subprograms), F-15 Fighter Data Link, Forward Area Air Defense System (FAADS) C3I, Global Transportation Network (GTN), High Performance Computing Modification Plan (HPCMP), Integrated Maintenance Data System (IMDS), Joint Computer Aided Acquisition and Logistic Support (JCALS), Joint Engineering Data Management and Control System (JEDMCS/EDMCS), Joint Receiving Information Support System, Joint Service Imagery Processing System (JSIPS), Joint Tactical Information Distribution System (JTIDS), Maneuver Control System (MCS), Material Management Support System (MMSS), Multifunctional Information Distribution System (MIDS), MILSTAR Satellite Communications System, NAVSTAR GPS User Equipment (UE), Navy Standard Integrated Personnel System (NSIPS), Non-Tactical Command Support System (NTCSS), Reserve Component Automation System (RCAS), Space Based Infrared System (SBIS), Standard Installation/Division Personnel System 3 (SIDPERS3), Standard Procurement System (SPS), Strategic War Planning System (SWPS), Theater Medical Information Program (TMIP), Ultra-High Frequency Follow-On (UFO) Satellite, and Unit Level Logistic System (ULLS).

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Other Systems: Chemical Demilitarization.

- Perform official travel to carry out DOT&E programmatic oversight of DoD operational testing and evaluation.

- During fiscal year 1997, DOT&E will continue to be a major participant in the DoD-wide study team developing a comprehensive plan for test and evaluation (T&E) centers for the 21st century. The development of the plan, to be known as "Vision 21", is in response to Congressional direction in the National Defense Authorization Act for Fiscal Year 1996.

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- Review Service TEMPs and test plans and provide appropriate guidance to ensure test adequacy; observe preparation for, and conduct of, field operational tests; evaluate OT results and report evaluations to Congress and DoD senior management; and conduct assessments on programs to include evaluation of projected resource requirements and funding levels for OT&E. Programs benefiting from this oversight service will include:

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Air Warfare Programs: AH-1 and UH-1 Helicopter Upgrades (4BN/4BW Upgrade), AIM-9X Missile, Advanced Medium Range Air-to-Air Missile (AMRAAM), C-17 Airlift Aircraft, C-130J Cargo Plane, F-22 Air Superiority Fighter, F/A-18 C/D Hornet, F/A-18 E/F Hornet, Joint Air-to-Surface Strike Missile (JASSM), Joint Direct Attack Munition (JDAM), Joint Primary Aircraft Training System (JPATS), Joint Standoff Weapon (JSOW), Joint Strike Fighter, Joint Surveillance and Target Attack Radar System (JSTARS) E-8, JT-UAV Medium Altitude Endurance, JT-UAV High Altitude Endurance, JT-UAV High Altitude Endurance Low Observables, Sensor Fused Weapon (SFW), Standoff Land Attack Missile---Expanded Response (SLAM-ER), Tactical Aviation Mission Planning System (TAMPS), and V-22 Osprey (Joint Vertical Airlift).

Electronic Warfare Programs: ALE-50 Electronic Warfare System, ALR-67(V)3/4 Advanced Special Receiver, B-1 Bomber Defensive System Upgrade Program, EA-6B Tactical Jamming System (All Upgrades), F-15 Tactical Electronic Warfare System (TEWS), Integrated Defensive Electronic Countermeasures Suite (IDECM), Suite of Integrated Infrared Countermeasures/Common Missile Warning System (SIIRCM/CMWS), and Suite of Integrated Radio Frequency Countermeasures (SIRFCM).

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Defense Support Program (DSP)/EWS, Depot Maintenance Support system (DMSS), Digital Production System (DPS), Distribution Standard System (DSS), E-2C Hawkeye Airborne Early Warning, E-3A Airborne Warning and Control System (AWACS) Radar System Improvement Program (RSIP), E-6A TACAMO (multiple subprograms), F-15 Fighter Data Link, Forward Area Air Defense System (FAADS) C3I, Global Transportation Network (GTN), High Performance Computing Modification Plan (HPCMP), Integrated Maintenance Data System (IMDS), Joint Computer Aided Acquisition and Logistic Support (JCALS), Joint Engineering Data Management and Control System (JEDMCS/EDMCS), Joint Receiving Information Support System, Joint Service Imagery Processing System (JSIPS), Joint Tactical Information Distribution System (JTIDS), Maneuver Control System (MCS), Material Management Support System (MMSS), Multifunctional Information Distribution System (MIDS), MILSTAR Satellite Communications System, NAVSTAR GPS User Equipment (UE), Navy Standard Integrated Personnel System (NSIPS), Non-Tactical Command Support System (NTCSS), Reserve Component Automation System (RCAS), Space Based Infrared System (SBIS), Standard Installation/ Division Personnel System 3 (SIDPERS3), Standard Procurement System (SPS), Strategic War Planning System (SWPS), Theater Medical Information Program (TMIP), Ultra-High Frequency Follow-On (UFO) Satellite, and Unit Level Logistic System (ULLS).

Strategic Warfare and Space Systems Programs: B-1B Lancer, B-2 Advanced Technology Bomber, Block IV All-Up-Round, Theater Missile Defense (BM/C3), Corps Surface-to-Air Missile (SAM), Evolved Expendable Launch Vehicle (EELV), National Airspace System (NAS), National Missile Defense System (NMDS), Navy Theater Ballistic Missile Defense (TBMD), Patriot P3I, Patriot Upgrade, Theater High Altitude Area Defense (THAAD), TITAN IV Space Booster, Tomahawk Block IV, and Tomahawk Theater Mission Planning Center (TMPC).

Other Systems: Chemical Demilitarization.

- Perform official travel to carry out DOT&E programmatic oversight of DoD operational testing and evaluation.

(U) FY 1999 Plans:

- Review Service TEMPs and test plans and provide appropriate guidance to ensure test adequacy; observe preparation for, and conduct of, field operational tests; evaluate OT results and report evaluations to Congress and DoD senior management; and conduct assessments on programs to include evaluation of projected resource requirements and funding levels for OT&E. Programs benefiting from this oversight service will include:

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Air Warfare Programs: AH-1 and UH-1 Helicopter Upgrades (4BN/4BW Upgrade), AIM-9X Missile, Advanced Medium Range Air-to-Air Missile (AMRAAM), C-17 Airlift Aircraft, C-130J Cargo Plane, F/A-18 C/D Hornet, F/A-18 E/F Hornet, F-22 Air Superiority Fighter, Joint Advanced Strike Technology (JAST), Joint Air-to-Surface Strike Missile (JASSM), Joint Direct Attack Munition (JDAM), Joint Primary Aircraft Training System (JPATS), Joint Standoff Weapon (JSOW), Joint Surveillance and Target Attack Radar System (JSTARS) E-8, JT-UAV Medium Altitude Endurance, JT-UAV High Altitude Endurance(Predator), JT-UAV High Altitude Endurance Low Observables, Sensor Fused Weapon (SFW), Standoff Land Attack Missile--Expanded Response (SLAM-ER), Tactical Aviation Mission Planning System (TAMPS), and V-22 Osprey (Joint Vertical Airlift).

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Strategic Warfare and Space Systems Programs: B-1B Lancer, B-2 Advanced Technology Bomber, Block IV All-Up-Round, Theater Missile Defense (BM/C3), Corps Surface-to-Air Missile (SAM), Evolved Expendable Launch Vehicle (EELV), National Airspace System (NAS), National Missile Defense System (NMDS), Patriot P3I, Patriot Upgrade, Navy Theater Ballistic Missile Defense (TBMD), Theater High Altitude Area Defense (THAAD), TITAN IV Space Booster, Tomahawk Block IV, and Tomahawk Theater Missile Planning Center (TMPC).

Other Systems: Chemical Demilitarization.

- Perform official travel to carry out DOT&E programmatic oversight of DoD operational testing and evaluation.

B. Program Change Summary

	FY1996	FY1997	FY1998	FY1999	Total Cost
Previous President's Budget	12.183	11.980	13.217	13.270	NA
Appropriated Value	12.183	11.980	13.217	13.270	NA
Adjustments to Appropriated Value					NA
a. Congressional Reductions					
(1) FFRDC Reductions (Sec. 8037)		-530			
(2) Canceled Funds (Sec. 8138)		-13			
b. Change in Nonpay Purchases Inflation			-30	-54	
Current Budget Submit/President's Budget	12.183	11.437	13.187	13.216	NA

C. Other Program Funding Summary

Since the passage of the Federal Acquisition Streamlining Act of 1994, DOT&E has had responsibility within the Office of the Secretary of Defense for monitoring and reviewing the live fire test and evaluation (LFT&E) activities of the Department of Defense. In the FY1997 DoD Appropriations Act, Congress added $3.0 million for "Alternative Uses of Simulation and Training Technologies". Thus, the current budgeted funding for live fire test oversight is:

Program Element 0605131D Live Fire Test and Evaluation

Cost (in Millions)	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003
Total Program Element Cost	10.404	12.782	10.197	10.231	10.884	11.173	11.409	11.649

D. Schedule Profile

Fiscal Year actual and planned events by quarter

FY1996				FY1997				FY1998				FY1999			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Contract Milestones: (See activities under Part A above.)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) February, 1997

Appropriation: Operational Test and Evaluation, Defense
Budget Activity: 06
Program Element Name: Live Fire Test
Program Element Number: 0605131D

Cost (in Millions)	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003
Total Program Element Cost	10.404	12.782	10.197	10.231	10.884	11.173	11.409	11.649

A. Mission Description and Budget Item Justification

This program element directly supports the Congressional statutory requirements for oversight of Live Fire Test and Evaluation (LFT&E). The Federal Acquisition Streamlining Act of 1994 amended Title 10 to transfer, within the Office of the Secretary of Defense, responsibility for monitoring and reviewing the live fire testing activities of the Department of Defense. Responsibility was reassigned from the Director of Test, Systems, Engineering & Evaluation, Office of the Under Secretary of Defense (Acquisition and Technology), to the Director of Operational Test and Evaluation (DOT&E). This action occurred in FY 1995.

The primary objectives of LFT&E is to assure that the vulnerability of DoD crew-carrying weapons platforms and the lethality of our conventional munitions are known and acceptable before entering full-rate production. LFT&E encompasses realistic tests involving actual U.S. and threat hardware or, if not available, acceptable surrogate threat hardware. The objective is to identify and correct design deficiencies early in the development process, and is required to be completed before weapons proceed beyond low-rate initial production (LRIP). This program is essential, especially in view of the escalating costs of technologically-sophisticated weapons systems.

These funds support Joint Live Fire (JLF) and LFT&E studies, analyses and projects, including enhancement of the process used to form LFT policy, and to provide oversight for LFT&E issues across the Services. LFT&E funding is part of management support of research and development, as well as R&D of fielded systems, and therefore budgeted in Program Element Research Category 6.5.

The Secretary of Defense set forth "Five Themes" for operational testing including live fire testing. These "Five Themes" are designed to gain the most insight and understanding from every dollar invested in test and evaluation while reducing overall test costs. Secretary Perry's "Five Themes" are as follows. Theme #1, Early Involvement; Theme #2, More Effective Use of Modeling and Simulation (M&S); Theme #3, Combining Different Types of Testing; Theme #4, Effective Use of Operational Testing and Training Exercises Together; and Theme #5, Use of Operational Testing, including the Above Approaches, to Support Advanced Concept Technology Demonstration (ACTD) Programs. The Secretary's themes establish the basis for many aspects of future budgeting for LFT&E, including significantly increased modeling and simulation funding plans for beyond FY 1998 in the category of Assured Modeling and Simulation, shown below.

In the FY 1997 DoD Appropriations Act, the Congress appropriated an initial $3,000,000 for the Live Fire Test and Training (LFT&T) Program. This program emphasizes the natural relationship between live fire testing and the models and simulations being developed to support the Services testing and training activities. This program is directed by a Senior Advisory Group consisting of the Deputy Director for Live Fire Test (Chair) and the four Services' leaders for training technology located in Orlando, Florida.

The FY 1997 Appropriations Bill also provided, with regard to the DOT&E budget, that "The conferees agree that up to $3,000,000 in this account may be available for the operational field assessment program." The Operational Field Assessment (OFA) program is based on Operations Desert Shield/Desert Storm lessons learned. Its purpose is to provide resources for the Commanders-in-Chief (CINCs) of the Unified Commands to conduct stressful operational experiments in realistic environments to improve doctrine, tactics, procedures and equipment. Following on this Congressional guidance, FY 1997 funds are being allocated for proof-of-principle projects to test the concept of the OFA program.

(U) FY 1996 Accomplishments

COMPLETED:

Review and Monitor Major T&E Programs: Reviewed, modified and approved more than thirty-five (35) detailed Live Fire Test Plans including such systems as F-22 Air Superiority Fighter, F/A-18E/F Hornet, etc. Completed development of LFT&E strategies for LPD-17 Amphibious Assault Ship and H-1 Upgrades (AH-1W, UH-1N). Reviewed test plans for all tests currently in the execution phase. Completed three (3) LFT&E reports: for the Longbow Apache Attack Helicopter (including the Longbow Hellfire Modular Missile System), the C-17 Globemaster III Airlift Aircraft, and the M430A1 40mm Cartridge.

Review and Monitor Joint T&E Programs: Completed testing on the static and dynamic vulnerability of UH-1 helicopter blades. Completed assessment of battle damage and repair techniques on those blades. Continued testing of classified targets and threats.

Crew Casualty Assessment: Completed the reports on the use of virtual reality as a tool in assessing real time crew casualties. Held workshop on shock and blunt trauma injuries at Wright-Patterson AFB. Held, as necessary, executive committee meetings to coordinate activities of the Crew Casualty Working Group (CCWG). Walter Reed Army Medical R&D studies completed the study on combined effects of multiple toxic fumes present in the combat environment; the results of this study will be incorporated into the models and criteria used by the Live Fire Test and Evaluation community. This effort was started in FY1996 and will continue into FY1997.

Exploring New Technologies/Advanced Concepts and Survivability Initiative: Since fire is the primary damage/injury mechanism on board many of our fighting platforms, and halon and other ozone-depleting compounds are used widely for this purpose, we have been instrumental in preparing the first DoD-wide plan to develop and test replacements to these ozone depleting compounds to assure that they adequately suppress fires while minimizing the hazards to crews. This will include the assessment of the effects of these materials in more than 20 difference air, land and sea weapons platforms. Assessed the thermal effects of high temperature weapons (in conjunction with the Defense Nuclear Agency) against hard-to-kill underground hardened targets such as buried bunkers found in Operation Desert Storm. Completed a study on the vulnerability effects of multiple redundant components such as those found in helicopters, against two proximity-fuzed bursting high energy (HE) munitions. Additional aircraft and threats are being considered for FY1997.

Assuring Modeling & Simulation Adequacy: Completed collection of first set of ballistic data to provide an experimental basis for ballistic penetration equations. Published the proceedings from the second Target Interaction Lethality and Vulnerability (TILV) workshop held in 1995, and finished the draft of the second Master Plan for TILV Modeling & Simulation efforts. This draft will be finalized later this fiscal year or early in FY 1997.

Reaching Out to the LFT&E Community: Sponsored a workshop on Advanced Technology Demonstrators (ATDs) and Advanced Concept Technology Demonstrators (ACTDs) in conjunction with the American Defense Preparedness Association (ADPA) in Austin, Texas. Participated in the Joint Technical Coordinating Group/ Aircraft Survivability (JTCG/AS) Symposium held at the Johns Hopkins Applied Research Lab and at the International Test and Evaluation Association (ITEA) "Live Fire Testing Workshop" in Seattle, Washington. Conducted and participated in numerous LFT briefings and presentations at the Defense Systems Management College (DSMC) as well as at DSMC's Patuxent River Naval Air Station extension courses. Participated in LFT&E presentations and site visits at various private industries and government agencies.

ONGOING:

Review and Monitor Major T&E Programs: Assessed vulnerability testing of the Armored Gun System (AGS), arena and impact tests of the Advanced Medium Range Air-to-Air Missile (AMRAAM), arena tests of the ATACMS, fuel characterization tests, hydrodynamic RAM tests and ullage explosive testing of the B-1B Bomber, performance and subassembly vulnerability tests of the Command and Control Vehicle (C2V), fuselage dry bay, avionics dry bay and wing torque box tests of the F/A-18E/F Hornet, vulnerability analysis of the Hercules, LFT Phase B/C of the Javelin, LFT Phase II of the Joint Standoff Weapon 97 (JSOW97), technical tests of the MH-47E Special Operations Helicopter (Chinook), sled tests of the Patriot Advanced Capability-3 (PAC-3), first article LFT of the Sense and Destroy Armor (SADARM), LFT of the Standoff Land Attack Missile (SLAM) gearbox and rotor testing of the V-22 Osprey (Joint Vertical Airlift), aft fuselage fuel tank hydrodynamic RAM tests of the F-22 Advanced Tactical Fighter, and LFT of the Wide Area Munition (WAM).

Review and Monitor Joint T&E Programs: Continued oversight of the Joint Live Fire (JLF) test programs: Armor/Anti-Armor, Aircraft, and Sea Systems. Initiated testing on the static and dynamic vulnerability of UH-1 helicopter rotor blades to (1) assess their vulnerability when under load, (2) assess the adequacy of the test procedures followed for evaluating blade vulnerability and (3) assess the adequacy of damage models to predict the vulnerability of rotor blades and resulting probability of kills. Provide helicopter damage predictions and aerodynamic effects of damage for UH-1 helicopter blade testing. Procure land-based and sea-based targets for JLF T&E program. Continue development of JLF CD-ROM Database.

Crew Casualty Assessment: Continuing the enhancement and maintenance of the Crew Casualty Assessment Reference System (CCARS). The CCARS links the civilian shock trauma data base, which includes bullet wounds, industrial accidents, highway accident data, and other sources into the military data base to generate a set of parameters to enable a more realistic assessment of the loss of life and military function of armor, aircraft, and shipboard crews. Continued development of the Operational Requirements-Based Casualty Assessment (ORCA) model to assess overall crew casualties and the ability for combat personnel to perform under the rigors of war and potential injury. Support this activity this year are the investigations of taxonomy methodology and eye insult modeling as well as continuation of the ongoing studies at the Walter Reed Medical R&D Hospital on the combined effects of several toxic fumes present.

Exploring New Technologies/Advanced Concepts and Survivability Initiative: Continued participation in the development of new technologies such as High Powered Microwaves (HPM) and Directed Energy Weapons (DEW). There is an ongoing effort, to conduct a strategic warhead vulnerability exploitation to gain insights into defeat of strategic missiles in flight. These efforts are restricted to the Live Fire Test and Evaluation aspects of these technologies, rather than the development of the technology. Many of these programs are jointly funded in concert with the military services' in-house funded efforts. This ensures adequate linkage between the Office of the Secretary of Defense (OSD) and the technical communities such as the Joint Technical Coordinating Group/Munitions Effectiveness (JTCG/ME), the Joint Technical Coordinating Group/Aircraft Survivability (JTCG/AS), the Survivability Vulnerability Information Analysis Center (SURVIAC), and Joint Live Fire (JLF).

Assuring Modeling & Simulation Adequacy: Work was initiated on the first DoD wide plan to prepare a tech base program for on-target effects of non-ballistic damage mechanisms. This included high powered microwave, charged particle beams, incendiaries, fuel air explosives, and lasers of various strengths and types. Continued monitoring and evaluation of the Validation, Verification, and Accreditation (V,V,&A) process by which various lethality and vulnerability models have been certified for use in LFT&E applications. This is an area that all the Military Services, including the JTCG/ME, the JTCG/AS, and SURVIAC have played a major role. Also, continued to develop damage prediction/verification algorithms and a threat-based fire start model and battle damage repair methodology as well as develop ship vulnerability trade-off methodology. Developed detailed plans for funding deficiencies in modeling and simulations to support live fire prediction techniques.

Reaching Out to the LFT&E Community: Continued development of the Target Interaction Lethality and Vulnerability (TILV) Program Master Plan as well as well as continue maintenance and enhancements to use of the LFT&E "Homepage" on the World Wide Web to provide information to the LFT&E community. Provided Instructional Support at Levels II and III at the Defense Systems Management College (DSMC) in the Test and Evaluation Program Management Courses. Hosted "Lessons Learned" Workshops to communicate to the national defense community the vulnerability lessons learned through Joint Live Fire (JLF) and Live Fire Test and Evaluation (LFT&E) programs. Placed LFT&E test data and reports into the Survivability and Vulnerability Information and Analysis Center's computer retrieval system for national use. Updated course materials taught and distributed at DSMC and Defense Acquisition University (DAU) to reflect changes in DoD regulations and directives relating to live fire testing. Also, prepared and presented Ethics in Test and Evaluation materials for core curricula at Defense Test and Evaluation course at Pt. Magu and Naval Post Graduate School.

(U) FY 1997:

Review and Monitor Major T&E Programs: Complete LFT&E technical assessments for those systems approaching Milestone III, such as Army Tactical Missile System (ATACMS), the JAVELIN Anti-Armor System, and Wide Area Munitions (WAM). Oversight of continuing efforts in FY 1997 include the Advanced Amphibious Assault Vehicle (AAAV), Advanced Medium Range Air-to-Air Missile (AMRAAM), Command and Control Vehicle (C2V), F/A-18E/F Hornet, Joint Standoff Weapon 97 (JSOW97), Joint Standoff Weapon 108 (JSOW108), MH-47E Special Operations Helicopter (Chinook), Patriot Advanced Capability-3 (PAC-3), Sense and Destroy Armor (SADARM), Standoff Land Attack Missile (SLAM), SSN21/BSY-2 Seawolf Class Nuclear Attack Submarine, and TOMAHAWK Weapon System.

Review and Monitor Joint T&E Programs: Continue the Joint Live Fire (JLF) Air (Rotary Wing) Programs that were initiated and/or continued in FY 1996. The JLF Armor/Anti-Armor, JLF Air (Fixed Wing), and JLF for Ships and Subs Programs were suspended for higher priority activities (see Operational Field Assessments below).

Crew Casualty Assessment: This work, to improve and maintain the Crew Casualty Assessment Reference System (CCARS), was suspended for FY 1997 for higher priority activities (see Operational Field Assessments below).

Exploring New Technologies/Advanced Concepts and Survivability Initiative: Continue monitoring Advanced Technology Demonstrators (ATDs) and Advanced Concept Technology Demonstrators (ACTDs) that are ready to enter the acquisition phase II. Continue work to characterize the effects of special warhead technologies to damage special targets of interest. Continue development of capability to test systems against high powered microwave threats. Initiate an activity to explore and validate battle damage and repair capabilities and technologies.

Assuring Modeling & Simulation Adequacy: Continue development of ballistic data to support modification of ballistic penetration equations. Initiate an activity to exploit a threat laser using unique technologies to characterize the effects on U.S. production materials. Other activities in this area were suspended for FY 1997 for higher priority activities (see Operational Field Assessments below).

Reaching Out to the LFT&E Community: Redesign of the Internet communications medium for promulgating LFT&E information and inquiries. Update the LFT&E guidelines. Continue the efforts to reach out to the LFT&E community, by way of educational videos, teaching LFT&E courses at the Defense Systems Management College (DSMC), Naval Postgraduate School (NPS), and participate in sponsoring workshops and symposia.

Live Fire Test and Training: Initiate projects to integrate live fire testing into the modeling and simulation activities being used to support the four Services' test and training programs. The projects include small arms effectiveness, human patient modeling, combat mobility criteria, visual engagement models, and synthetic support for LFT of ground vehicles.

Operational Field Assessment Program (OFA): Provide funding for proof-of-principle projects that would produce evidence as to the benefits and advantages of the Operational Field Assessment (OFA) program. A 1996 Defense Science Board (DSB) Summer Study Task Force recommended that an experimentation fund be established for the Commanders-in Chief (CINCs) of the Unified Commands to pursue new expeditionary force concepts. The DSB report recommended the establishment of a dedicated joint effort to develop, test, analyze and evolve expeditionary force concepts. The OFA program is designed to provide resources for the Commanders-in-chief (CINCs) of the Unified Commands to conduct stressful operational experiments in realistic environments to improve doctrine, tactics, procedures and equipment.

(U) FY 1998 Plans:

Review and Monitor Major T&E Programs: Initiate LFT&E assessments and monitor programs in the acquisition development cycle that are on the OSD oversight list. Activity is expected on the Advanced Medium Range Air-to-Air Missile (AMRAAM), B-1B Lancer Bomber, Brilliant Anti-Armor Submunition BAT), Command and Control Vehicle (C2V), CRUSADER Advanced Field Artillery System, Joint Standoff Weapon 97 (JSOW97), Line-of-Sight Anti-Tank (LOSAT) Weapon System, M2A3 Bradley Fighting Vehicle System, MH-47E Special Operations Helicopter (Chinook), Multiple Launch Rocket System (MLRS), Patriot Advanced Capability-3 (PAC-3), Sense and Destroy Armor (SADARM), Standoff Land-Attack Missile (SLAM) and TOMAHAWK Weapon System programs.

Review and Monitor Joint T&E Programs: Conduct tests of fielded systems not previously tested under Air, Land and Sea Joint Live Fire (JLF) programs. This fiscal year should see the completion of the third phase of testing for JLF-Helos, and initiate tests of foreign system acquired for exploitation.

Crew Casualty Assessment: The Operational Requirements-based Casualty Assessment (ORCA) system should be updated this fiscal year (version 2.0), and run a series of pilot studies similar to the initial pilot study (for comparison).

Exploring New Technologies/Advanced Concepts and Survivability Initiative: Continue the investigation into new technologies that have application to LFT&E. Initiate monitoring of Advanced Technology Demonstrators(ATDs)/Advanced Concept Technology Demonstrators(ACTDs) that are ready to enter acquisition phase II.

Assuring Modeling & Simulation Adequacy: Develop/improve methodologies for predicting damage to modern vehicles such as F-22 Air Superiority Fighter, Joint Strike Fighter, V-22 Osprey (Joint Vertical Fighter) and a host of other platforms. This will also result in overall savings for the Department by establishing a reduction in the number of tests to be performed to assess vulnerability. Also, continue development of LFT&E data base work related to verification of model input data. Continue monitoring and updating of activities related to on-target effects of non-ballistic damage mechanisms. Conduct realistic testing against components and full-up system level helicopters to assess the adequacy of current models and simulations to substitute for realistic live fire testing and to predict the outcomes of LFT&E events. Models verification, validation and accreditation activities will be conducted to assure that models are accepted to review test adequacy and system performance in the preparation of OSD LFT&E reports for the Congress.

Reaching Out to the LFT&E Community: Continue the efforts to reach out to the LFT&E community, by way of educational videos, teaching LFT&E courses at the Defense Systems Management College (DSMC), Naval Postgraduate School (NPS), and participate in sponsoring workshops and symposia. Continue expansion of LFT&E's World Wide Web "Homepage" for providing information to the community.

(U) FY 1999 Plans:

Review and Monitor Major T&E Programs: Initiate LFT&E assessments and monitor programs in the acquisition development cycle that are on the OSD oversight list. Activity is expected on the Advanced Medium-Range Air-to-Air Missile (AMRAAM), B-1B Lancer Bomber, Brilliant Anti-Armor Submunition (BAT), Command and Control Vehicle (C2V), CRUSADER Advanced Field Artillery System, Joint Standoff Weapon 97 (JSOW97), Line-of-Sight Anti-Tank (LOSAT), M2A3 Bradley Fighting Vehicle System, MH-47E Special Operations Helicopter (Chinook), Multiple Launch Rocket System (MLRS), Patriot Advanced Capability-3 (PAC-3), Sense and Destroy Armor (SADARM), Standoff Land Attack Missile (SLAM) and TOMAHAWK Weapon System programs.

Review and Monitor Joint T&E Programs: Conduct tests of fielded systems not previously tested under Air, Land and Sea Joint Live Fire programs. Initiate tests of Classified foreign system acquired for exploitation.

Crew Casualty Assessment: Test the Operational Requirements-based Casualty Assessment (ORCA) system with a series of pilot studies. Assess the impact of newly generated toxic fume vulnerability data on the survivability assessment of combat crews in land combat systems, ships and aircraft.

Exploring New Technologies/Advanced Concepts and Survivability Initiative: Continue the investigation into new technologies that have application to LFT&E. Initiate monitoring ATDs/ACTDs that are ready to enter acquisition phase II.

Assuring Modeling & Simulation Adequacy: Continue the modeling and simulation effort arising from deficiencies related to damage prediction of modern platforms. Continue development of LFT&E data base work related to model verification. Continue monitoring and updating of activities related to on-target effects of non-ballistic damage mechanisms.

Reaching Out to the LFT&E Community: Continue the efforts to reach out to the LFT&E community, by way of educational videos, teaching LFT&E courses at the Defense Systems Management College (DSMC), Naval Postgraduate School (NPS), and participate in sponsoring Workshops and Symposia. Continue expansion of the LFT&E "Homepage" for providing information to the community.

B. Program Change Summary

	FY1996	FY1997	FY1998	FY1999	Total Program
Previous President's Budget	10.404	9.988	10.220	10.273	NA
Appropriated Value	10.404	9.988	10.220	10.273	NA
Adjustments to Appropriated Value					
a. Congressional Actions					
(1) FFRDC Reductions (Sec 8037)		-196			
(2) Canceled Funds (Sec. 8138)		-10			
(3) Alternative Uses of Simulation and Training Technologies		+3.000			
b. Change in Nonpay Purch. Inflation			-23	-42	
Current Budget Submit	10.404	12.782	10.197	10.231	NA

C. Other Program Funding Summary

DOT&E is responsible for policy and procedures for all aspects of operational test and evaluation (OT&E) conducted within the Department of Defense. The authorization legislation which established DOT&E specifically requires that DOT&E: provide guidance on all OT&E within DoD; report on the adequacy of OT&E resources; approve plans for, monitor, and analyze the results of OT&E conducted for each Major Defense Acquisition Program (MDAP); coordinate operational testing conducted jointly by more than one DoD component; and coordinate joint OT&E programs. Funding for these responsibilities is under Program Element 0605118D, Director of Operational Test and Evaluation, and is as follows:

	Cost (in Millions)							
	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003
Total Program Element Cost	12.183	11.437	13.187	13.216	13.365	13.663	13.953	14.237

D. Schedule Profile

Fiscal Year actual and planned events by quarter

FY1996				FY1997				FY1998				FY1999			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Contract Milestones: (See activities under Part A above.)