

UNCLASSIFIED

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

DATE

FEBRUARY 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)**

COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	103159	118458	100815	166231	183528	119095	74497	Continuing	Continuing
BJ5 BIOLOGICAL DEFENSE (EMD)	32924	14912	6005	46734	60265	15657	1504	Continuing	Continuing
CA5 CONTAMINATION AVOIDANCE (EMD)	43893	58733	54289	25798	9771	21365	21097	Continuing	Continuing
CO5 COLLECTIVE PROTECTION (EMD)	1190	5734	7802	7742	7657	4541	5190	Continuing	Continuing
CP5 COUNTERPROLIFERATION SUPPORT (EMD)	0	5589	0	0	0	0	0	0	5589
DE5 DECONTAMINATION SYSTEMS (EMD)	1355	3764	3611	7279	15393	11825	11475	Continuing	Continuing
IP5 INDIVIDUAL PROTECTION (EMD)	7485	10053	3819	20009	19902	21785	0	0	83053
MB5 MEDICAL BIOLOGICAL DEFENSE (EMD)	14635	18927	24198	57206	68991	42357	33619	Continuing	Continuing
MC5 MEDICAL CHEMICAL DEFENSE (EMD)	1677	746	1091	1463	1549	1565	1612	Continuing	Continuing

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 Chemical and Biological (CB) warfare capabilities and for medical treatment of casualties in medical treatment facilities. Congress has directed centralized management of Department of Defense (DoD) CB Defense initiatives, both medical and non-medical. This program element supports the Engineering and 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.

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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 equipment.

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 and identification 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 standoff detection systems. The detection system concept will provide detection, identification, warning and sample collection for verification that a biological agent attack has occurred. The Counterproliferation Support Program was funded in FY00 to complete the development of the Long Range Biological Stand-off Detection System (LR-BSDS) for Initial Operational Test and Evaluation (IOT&E) prior to production. 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 phase of the acquisition process and are therefore correctly placed in Budget Activity 5.

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	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 2000/FY 2001)	110943	116365	100296
Appropriated Value	124943	119365	
Adjustment to Appropriated Value			
a. Congressional General Reductions			
b. SBIR/STTR	-1832		
c. Omnibus or Other Above Threshold Reductions	-18431	-739	
d. Below Threshold Reprogramming	-1521	245	
e. Rescissions		-413	
Adjustments to Budget Years Since FY 2000/2001 PRES BUD			519
Current Budget Submit (FY2001/PRES BUD)	103159	118458	100815

Change Summary Explanation:

Funding: FY99 - SBIR (-1832). FY99 - Above Threshold - BJ5 (-14000) reprogramming to Defense Wide Procurement for Airbase Port Bio Detection (Portal Shield) equipment; IP5 (-3534) moved to IP4 for the Joint Service General Purpose Mask (JSGPM); (-897) for revised economic assumptions. FY99 - Below Threshold - (-1099) moved to higher priority programs; CA5 (1300) for Automatic Chemical Agent Detector and Alarm (ACADA) and Joint Chemical Agent Detector (JCAD) RDTE; DE5 (-2422) moved to CB3 for Joint Fixed Site Decon; IP5 (700) for Joint Service Lightweight Suit Technology (JSLIST).

Schedule:

Technical:

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT BJ5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
BJ5 BIOLOGICAL DEFENSE (EMD)	32924	14912	6005	46734	60265	15657	1504	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project BJ5 BIOLOGICAL DEFENSE (EMD): Department of Defense (DoD) Biological Defense mission requires the detection and identification of biological threat agents to provide early-warning capabilities to mobile forces and high-value fixed-site assets. The detection system concept will provide detection, identification, warning, and sample collection for verification of large area and point source biological agent attacks.

The Joint Biological Point Detection System (JBPDS) program is an integration of the Army Biological Integrated Detection System (BIDS), Navy Interim Biological Agent Detector (IBAD) and Air Force and Marine Corps Service-specific development programs. The common detection suite will meet the Service requirements as outlined in the Joint Operational Requirements Document (JORD). The suite will be capable of identifying, within 15 minutes, as a minimum, Biological Warfare (BW) agents listed in Category A of International Task Force (ITF) 6 Report, dated 9 Feb 90. The suite will be integrated into each Service's platform (e.g. High Mobility Multi-Purpose Wheeled Vehicle (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 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 with a common point detection capability. The program is structured into two Block Engineering & Manufacturing Development (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 more fully comply with the JORD requirements by taking advantage of a robust and mature technical base.

This project includes the completion of installation of IBAD rapid prototypes aboard naval ships in FY99 and their continued operational support. 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 beginning in FY02.

This project also supports the Air Base/Port Biological Detection (Portal Shield) System with Contractor Logistics Support (CLS), spares/repairs of network detection sensors, and an upgrade to the sampling system at four sites in the Central Command/Pacific Command (CENTCOM/PACOM) Area of Responsibility (AOR).

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The Critical Reagent Program (CRP) will integrate and consolidate all Department of Defense (DoD) reagents/antibodies/DNA biological detection requirements in demonstration/validation through production). CRP will ensure the availability of high-quality reagents throughout the life-cycle of all Biological Warfare (BW) detection/identification systems. This project supports all aspects of manufacturing "SCALE-UP" of developmental protocols for Critical Reagent Program-developed products.

FY 1999 Accomplishments:

- 1440 Air Base/Port Biological Detection (Portal Shield) Advanced Concept Technology Demonstration (ACTD) - Provided contractor logistics support and fielding at Central Command/U.S. Forces Korea (CENTCOM/USFK) Air Base/Port Biological Detection (Portal Shield) sites.
- 2170 CRP - Developed five new antibody-based reagents to support the development of the Airbase/Port Biological Detection (Portal Shield) and Joint Biological Point Detection System (JBPDS) Block I.
- 1659 CRP - Completed fabrication of prototype hand-held assays to support development of identification technologies for the Airbase/Port Biological Detection (Portal Shield) ACTD and the Joint Biological Point Detection System (JBPDS) Block I.
- 221 IBAD - Continued support of rapid prototype systems, continued installation on Naval ships, and investigated aerosol background of Naval areas of operations.
- 533 JBPDS - Initiated Pre-Production Qualification Testing (PPQT) and Initial Operational Test & Evaluation (IOT&E) planning.
- 2870 JBPDS - Completed software integration and acceptance testing.
- 850 JBPDS - Completed Engineering Design Test (EDT) Safety Assessment and Human Factors Testing.
- 1455 JBPDS - Completed first draft operator manual and PPQT training packages.
- 2311 JBPDS - Completed Phase I EDT modifications and design change documentation of Block I System components.
- 1550 JBPDS - Developed and input technical data on EDT systems into the provisioning database.
- 1950 JBPDS - Completed Phase I EDT and eight prototype systems.
- 480 JBPDS - Completed system integration for United States Navy (USN) shipboard configurations.
- 1950 JBPDS - Completed initial Logistic Support Analysis (LSA) task analyses and Reliability Availability Maintainability (RAM) analysis.

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5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****BJ5****FY 1999 Accomplishments (Cont):**

- 1600 JBPDS - Completed system integration for and fabrication of US Air Force fixed-site and United States Marine Corps (USMC) man-portable environmental control units.
- 3995 JBPDS - Completed system integration for fabrication of eight Block I biological detection shelter systems.
- 7890 JBPDS - Completed fabrication and 90% integration of 17 PPQT Block I biological suites in shipboard, fixed-site, shelter and man-portable configurations.

Total 32924

FY 2000 Planned Program:

- 2017 Air Base/Port Biological Detection (Portal Shield) - Provide contractor logistics support of installed ACTD detector networks in Central Command/Pacific Command (CENTCOM/PACOM) Areas of Operations (AO).
- 431 Air Base/Port Biological Detection (Portal Shield) - Provide depot repairs and spares for detector networks in CENTCOM/PACOM AO.
- 320 Air Base/Port Biological Detection (Portal Shield) - Initiate upgrades to trigger and sampling components.
- 726 CRP - Transition newly-developed reagent protocols to full-scale production. Transition newly developed Hand-Held Assays (HHAs) to production.
- 500 CRP - Support operation and maintenance of reagent repository and reagent validation.
- 340 IBAD - Continue material support of rapid prototype systems and investigation of aerosol background.
- 1752 JBPDS - Complete Pre-Production Qualification Testing (PPQT).
- 3145 JBPDS - Complete Logistic Support Analysis Records, Provisioning DataBase, Technical Manuals, Drawings and Performance Specifications.
- 909 JBPDS - Complete procurement planning, solicitation and award documentation for Block I production contract.
- 750 JBPDS - Conduct annual Joint Field Trial at Dugway Proving Ground.
- 2357 JBPDS - Conduct JPBDS Block I IOT&E.
- 800 JBPDS - Complete early user assessment and operational evaluation.
- 700 JBPDS - Complete PPQT for USN shipboard, USN and USAF fixed site, USMC man-portable, and USA shelter variants.
- 165 SBIR/STTR.

Total 14912

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FY 2001 Planned Program:

- 1133 CRP - Continue transition of newly developed reagent protocols to full-scale production.
- 332 IBAD - Continue material support of rapid prototype systems.
- 4540 JBPDS Blk II - Initiate common Biological Suite Enhancement Design Engineering efforts. These efforts include reducing system size and weight, as well as development and integration of advanced "dry" detection/identification technologies to reduce life cycle costs and logistics demands.

Total 6005

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
G47101 JOINT WARNING & REPORTING NETWORK (JWARN)	10107	8939	9035	11660	10602	12200	12260	16000	Cont
JP0100 JOINT BIO POINT DETECTION SYSTEM (JBPDS)	0	22614	53596	61689	91533	59415	46167	0	335014
JPO200 JT BIO REM EARLY WARNING SYS (JBREWS)	0	0	0	0	0	34251	36023	25000	Cont
JPO210 CRITICAL REAGENTS PROGRAM (CRP)	1735	2412	1911	1914	2007	1849	1903	2257	Cont
JPO220 LONG RANGE BIO STANDOFF DET SYS (LRBSDS)	0	1907	11733	11799	0	0	0	0	25439
JPO230 PORTAL SHIELD EQUIPMENT	14564	3877	24746	3868	0	0	0	0	47055
M93001 BIO INTEGRATED DETECTOR SYSTEM (BIDS)	14082	19322	0	0	0	0	0	0	33404
MC0100 JT SVC LTWT NBC RECON SYS (JSLNBCRS)	0	0	60702	97614	66953	60520	69609	71835	Cont

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5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****BJ5****C. Acquisition Strategy:**

AB/Port Advanced C In-house development and fabrication of detection prototypes and use of competitive omnibus contract for fabrication of upgrades.

CRP Development of reagents to detect threat agents and procurement of more effective agents to replace older stocks. Consolidated research and development (R&D) effort for all Department of Defense (DoD) biological detector/identification requirements. The BJ4 Program provides for the development of new reagents, while the BJ5 Program transitions these reagent protocols into production following the testing of these reagents in fielded platforms. ITF-6A Priority List completed in FY00. Continuing efforts focus on developing and transitioning reagents against ITF-6B Priority List in order to meet JBPDS Block II requirement.

JBPDS Contractor design, fabrication, platform integration and testing of JBPDS prototypes. Low Rate Initial Production (LRIP) decision contract award prior to completion of Initial Operational Test and Evaluation (IOT&E).

JBPDS Block II Government run modeling and simulation results will be given to one or more contractors for brass board development and testing. The preferred design will be carried through the rest of EMD by a prime systems contractor. JBPDS Block II will advance biological point detection from the operational level to the tactical level (i.e., smaller, low-powered devices employable by front-line units).

IBAD In-house installation and support of rapid prototypes.

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PROJECT
BJ5

D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ABPDS																												
Modeling and Simulation	X	X	X	X																								
Trigger/Sampler Upgrade Development					X	X	X																					
Sys Field Test and Evaluation							X	X																				
Site Installation and Training								X																				
CRP																												
ITF-6A List Complete						X																						
Antibodies Against 20 BW Agents									X																			
ITF-6B List Complete																X												
JBPDS																												
Perform EDT			X	X	X	X																						
Perform PPQT							X																					
Perform IOT&E									X																			
Block I Milestone III											X																	
JBPDSBLK2																												
EMD RFP Release and Source Selection							X	X	X	X																		
Milestone II Contract Award									X																			
Preliminary Design Review													X	X														
Critical Design Review															X	X												
FAB Hardware															X	X	X	X	X									
EDT																X	X	X										
PPQT																				X	X							

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PROJECT
BJ5

D Schedule Profile:

	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JBPDSBLK2 (Cont)																												
IOT&E																									X	X		

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PE NUMBER AND TITLE

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5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****BJ5****E. Project Cost Breakdown:**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Contractor Engineering Support	6189	1150	1074
Contractor Hardware Development	2430	100	1490
Contractor ILS Support	6160	2477	0
Contractor Software Development	2870	535	740
Development Test and Evaluation	4639	2954	693
Government Engineering Support	1070	100	668
Government Hardware Development	1174	1112	250
Government ILS Support	762	2723	440
Government Software Development	504	0	0
Operational Test and Evaluation	2037	2357	0
Program Management/Management Support	2537	566	150
SBIR/STTR	0	165	0
Technical data/documentation	2552	673	500
Total	32924	14912	6005

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CA5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
CA5 CONTAMINATION AVOIDANCE (EMD)	43893	58733	54289	25798	9771	21365	21097	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project CA5 CONTAMINATION AVOIDANCE (EMD): This project funds Engineering and Manufacturing Development (EMD) of an array of reconnaissance, detection, identification equipment and warning systems.

Efforts funded in this project are: (1) M22 Automatic Chemical Agent Alarm (ACADA); (2) CB Mass Spectrometer (CBMS); (3) Joint Chemical Agent Detector (JCAD); (4) Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD); (5) Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System (JSLNBCRS); (6) Joint Warning and Reporting Network (JWARN); and (7) Nuclear, Biological and Chemical Reconnaissance System (NBCRS) BLK II.

The M22 ACADA is more sensitive and responsive than current detectors with similar applications and is capable of concurrent nerve and blister agent detection. The M22 is intended to replace the M8A1 series alarms.

The CBMS will provide significant enhancements by simultaneously detecting and identifying chemical and biological threat agents at lower system cost. CBMS will replace the MM1 Mass Spectrometer.

The NBCRS is a dedicated system of Nuclear and Chemical detection and warning equipment, and Biological sampling equipment integrated into a high speed, high mobility armored carrier capable of performing NBC reconnaissance on primary, secondary, or cross country routes throughout the battlefield. The NBCRS BLK II improvement of the NBCRS will meet all of the requirements contained in the approved requirements document.

The Joint Chemical Agent Detector (JCAD) program will develop a miniaturized, ruggedized, and portable point chemical agent detector that automatically and simultaneously detects, identifies, quantifies, and alerts in the presence of nerve, blister and blood agents. JCAD will be used for aircraft, shipboard, wheeled vehicles, stand alone and individual soldier applications.

The Joint Service Lightweight Standoff Chemical Agent Detector Program (JSLSCAD) utilizing passive infrared technology, provides a first-time on-the-move automatic scanner and chemical standoff detection capability to the Services. The JSLSCAD will replace the M21 Remote Standoff Chemical Agent Alarm (RSCAAL).

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The JSLNBCRS is a new lightweight NBC detection and identification system and will consist of a Base Vehicle (BV) equipped with hand-held, portable and mounted, current, and advanced NBC detection and identification equipment. The JSLNBCRS will provide on-the-move reconnaissance and surveillance in support of combat, combat support, and combat service support forces. There will be two variants of the JSLNBCRS: the HMMWV variant and the LAV variant.

The Joint Warning and Reporting Network (JWARN) will provide standard integration and analysis of NBC detection information with Command, Control, Communications and Computers Information and Intelligence (C4I2) on the battlefield automating the NBC warning and reporting processes currently performed manually throughout the Services. The JWARN will collectively consist of: Commercial Off the Shelf (COTS) materiel and JWARN software for C4I2. JWARN is being developed for deployment with NBC detectors in the following battlefield applications: combat and armored vehicles; tactical vehicles; vans; shelters; shipboard application; area warning; semi-fixed sites; and fixed sites. Phase I was the initial acquisition and fielding of Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf software to standardize NBC warning and reporting throughout the Armed Forces. Phase II will integrate NBC legacy and future detector systems, NBC Warning and Reporting Software Modules, and NBC battlespace Management Modules in the Joint Services C4I systems. 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 transmittal on the Joint C4I battlespace and also can be used by stand alone systems.

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- 300 ACADA - Initiated development of Surface Sampler Module which transitions to procurement.
- 5280 CBMS - Developed final design of Block II to allow simultaneous detection and identification of all chemical and biological threat agents at a lower system cost.
- 738 CBMS - Built engineering prototypes.
- 2355 CBMS - Developed final detection algorithm to allow simultaneous detection of chemical and biological agents.
- 3820 CBMS - Conducted engineering tests to establish technical performance baseline.
- 5332 JCAD - Continued development of test unit hardware and software to include mission-specific components.
- 1486 JCAD - Initiated and conducted surety testing and began Engineering Development Test (EDT).
- 1083 JCAD - Continued systems integration.
- 1267 JCAD - Continued to perform program planning and execution of project management functions. Prepared for and developed program documentation and coordinated program with Joint Service Integrated Product Team (IPT) representatives.
- 205 JCAD - Continued development and documentation of technology options for chemical and biological defense requirement and concept of operations for aircraft survivability.
- 874 JSLSCAD - Provided platform/service specific integration information to the contractor and supported test methodology development.
- 2134 JSLSCAD - Initiated fabrication of Engineering Design Test (EDT) articles.
- 1850 JSLSCAD - Completed software and Chemical Agent Detection Support Environment (CADSE) tools.
- 520 JSLSCAD - Completed initial design and conducted Preliminary Design Review (PDR).
- 3925 JSLSCAD - Completed detailed design and conducted Detailed Design Review (DDR).
- 7146 JSLNBCRS - Completed Analysis of Alternatives (AoA) of HMMWV JSLNBCRS variant and continue System Design Review (SDR).
- 5578 JWARN - Conducted competitive source selection for EMD Block II.

Total 43893

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PROJECT

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- 1770 CBMS - Finalize design of the Block II to allow simultaneous detection and identification of all chemical and biological threat agents at lower system cost.
- 2413 CBMS - Complete fabrication of nine pre-production units.
- 2578 CBMS - Complete engineering tests to establish technical performance baseline.
- 2534 CBMS - Complete engineering drawings and specifications for integration into the Joint Light NBCRS and NBCRS Block II.
- 4781 JCAD - Continue EMD test units hardware and software development.
- 2879 JCAD - Continue application development, testing and evaluation.
- 1536 JCAD - Continue systems integration.
- 1238 JCAD - Continue in-house program management and support.
- 3171 JCAD - Continue technology development options in preparation for repeatability between Engineering Test & Evaluation prototypes.
- 1800 JSLSCAD - Complete fabrication of 15 Engineering Design Test (EDT) articles.
- 4349 JSLSCAD - Conduct Critical Design Review (CDR) and evaluate issues through EDT.
- 4264 JSLSCAD - Conduct engineering test to include environmental extremes, shock and vibration, EMI, EMP, reliability growth, and Agent testing and continue test methodology development.
- 2052 JSLSCAD - Purchase long lead items for 47 Production Qualification Testing/Initial Operational Test & Evaluation (PQT/IOT&E) test articles.
- 799 JSLSCAD - Joint Service review and preparation of all program documentation to include technical manuals, logistics support analysis, training materials and plans, support of simulation and modeling.
- 1100 JSLSCAD - Integration for test platforms.
- 2828 JSLNBCRS - Start integration of High-Mobility Multi-Purpose Wheeled Vehicle (HMMWV) variant.
- 2789 JSLNBCRS - Complete Developmental Test (DT) I and Operational Test (OT) I.
- 908 JSLNBCRS - Complete Technical Data Package (TDP).
- 3627 JWARN - Conduct DT/OT.
- 4675 JWARN - Conduct Block II development and integration.
- 5740 NBCRS Blk II - Prepare for and award the Engineering, Design & Test (EDT) contract and complete concept design and trade off studies.
- 902 SBIR/STTR.

Total 58733

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- 1238 JCAD - Complete EMD program planning and execution of project management functions. Prepare for and develop MS III program documentation and coordinate program with Joint Service Integrated Product Team (IPT) representatives.
- 3265 JCAD - Complete hardware and software test units development.
- 2796 JCAD - Complete development efforts of the prototype detectors.
- 4676 JCAD - Complete developmental, preliminary qualification tests and field tests; initiate operational test & evaluation.
- 731 JCAD - Complete Systems Integration on the final developmental units to be delivered.
- 1015 JSLSCAD - Continue integration for test platform.
- 3000 JSLSCAD - EDT test review and modify design based on EDT test review.
- 4000 JSLSCAD - Fabricate 47 Pre Production Qualification Testing/Initial Operational Test & Evaluation (PPQT/IOT&E) test articles.
- 6636 JSLSCAD - Conduct PPQT and IOT&E which includes environmental extremes, shock and vibration, EMI, EMP, agent, and shipboard, helicopter, airplane and ground vehicle field testing.
- 799 JSLSCAD - Joint Service preparation and review of all program documentation to include updating all plans to prepare for the Milestone III in FY02.
- 2000 JSLNBCRS - Complete technical data package and requisite acquisition documentation for Milestone (MS) III.
- 5853 JSLNBCRS - Complete Operational Testing (OT).
- 5276 JWARN - Continue Phase II integration of NBC legacy and future detector systems, develop NBC warning and reporting modules and battlespace management modules in the Joint Services C4I systems.
- 2000 JWARN - Start DT/OT of Phase II C4I software modules and interfaces for legacy and future detector systems.
- 6367 NCBRS Blk II - Fabricate four prototype systems.
- 3100 NBCRS Blk II - Complete engineering and logistics documentation.
- 1537 NBCRS Blk II - Conduct system test and evaluation.

Total 54289

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BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CA5

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
B96801 RADIAC - POCKET AN/UDR - 13	3241	2875	3079	4082	7816	198	0	0	21291
G47101 JOINT WARNING & REPORTING NETWORK (JWARN)	10107	8939	9035	11660	10602	12200	12260	16000	Cont
JF0100 JOINT CHEM AGENT DETECTOR (JCAD)	0	0	0	27186	27941	25850	25977	26000	Cont
JX0002 CA SYSTEM FIELDING SUPPORT/SPARES	1060	1099	0	0	0	0	0	0	2159
M98801 AUTO CHEMICAL AGENT ALARM (ACADA), M22	29437	36923	49356	496	99	0	0	0	116311
MA0601 RECON SYSTEM, FOX NBC (NBCRS) MODS	25873	24716	31552	6316	5526	34283	35406	35000	Cont
MC0100 JT SVC LTWT NBC RECON SYS (JSLNBCRS)	0	0	60702	97614	66953	60520	69609	71835	Cont
N00041 SHIPBOARD DETECTOR MODIFICATIONS	8078	11421	7406	9195	8592	5741	1512	0	51945
S02201 IMPROVED CHEMICAL AGENT MONITOR (ICAM)	9403	12685	12762	262	99	0	0	0	35211
S10801 JS LTWT STANDOFF CW AGT DETECTOR (JSLSCAD)	0	0	0	3134	9000	19147	28858	40000	Cont

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CA5
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C. Acquisition Strategy:	
ACADA	Non Developmental Item (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, contractor testing, integration by host platforms, contract fabrication of production units.
JCAD	Phase I contract development and fabrication of six Engineering Developmental Test (EDT) prototypes, contractor risk reduction, and government testing. Phase II includes contract development and fabrication of 168 pre-production units, contractor and government testing.
JSLSCAD	Contract development, in-house/contract testing, in-house/contract platform integration, contract fabrication of production units.
JSLNBCRS	Development and fabrication of prototypes. Execute option for contract platform integration.
JWARN	Contract development and integration of software, start Phase II of the JWARN program. Contract development and fabrication of test prototypes; contractor/in-house testing; contract fabrication of production units.
NBCRS Block II	The Block II mod is an integration effort of new Army materiel to improve the Fox NBCRS using contractor and depot experts.
Project CA5	Page 18 of 47 Pages
Exhibit R-2 (PE 0604384BP)	

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CA5
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D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
ACADA																																
Surface Sampler Development	X	X	X	X																												
CBMS																																
BLK II - Critical Design Review	X																															
BLK II - Engr Tests	X	X	X	X	X	X	X	X																								
JCAD																																
EMD Phase 1	X	X	X																													
EMD Phase II			X																													
Govt Prelim Qual Test/ Development Test							X	X	X	X																						
Govt OT Test							X	X	X	X	X																					
Milestone III decision											X		X	X																		
User Need Date															X																	
JSLSCAD																																
Fabricate EDT Units			X	X	X	X																										
Critical Design Review					X																											
PPQT/IOT&E									X	X	X		X	X																		
JS Milestone III IPR															X																	
JSLTNBCRS																																
System Design Review		X																														
Preliminary Design Review - HMMWV			X																													
Critical Design Review - HMMWV				X																												
Operational Testing							X	X	X	X																						

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DATE **FEBRUARY 2000**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

PROJECT
CA5

D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSLTNBCRS (Cont)																												
MS III											X																	
IOC															X													
JWARN																												
Phase II DT/OT													X	X														
Milestone III															X													
IOC															X													
NBCRSBLK2																												
Block II R&D contract award						X																						
Purchase GFE and do digital integration							X	X	X	X																		
Fabricate Engineering Prototypes										X	X	X																
DT/OT											X		X	X														
Block II Type Classification																	X											
Block II Modification Contract Award																		X										
Block II First Article																							X					
Block II New Material Release																											X	
Block II First Unit Equipped																									X	X		

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****CA5****E. Project Cost Breakdown:**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Contractor Engineering Support	11643	7452	8107
Contractor Hardware Development	3724	14004	11601
Contractor ILS Support	202	203	501
Contractor Software Development	3339	4241	1939
Development Test and Evaluation	8201	11575	7066
Government Engineering Support	8205	8808	3502
Government Hardware Development	300	2489	2200
Government ILS Support	1000	520	570
Government Software Development	100	600	300
Operational Test and Evaluation	0	2850	13266
Program Management/Management Support	3326	3051	2581
SBIR/STTR	0	902	0
Technical data/documentation	3853	2038	2656
Total	43893	58733	54289

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CO5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
CO5 COLLECTIVE PROTECTION (EMD)	1190	5734	7802	7742	7657	4541	5190	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project CO5 COLLECTIVE PROTECTION (EMD): This project provides Engineering and Manufacturing Development (EMD) of Joint Service Nuclear, Biological & Chemical (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.

Systems funded under this project are: (1) Shipboard Collective Protection Equipment (SCPE); (2) Joint Collective Protection Equipment (JCPE); and (3) Joint Transportable Collective Protection System (JTCOPS).

SCPE will provide a contaminant-free environment within specified zone boundaries of high priority ships. Equipment under development within SCPE is critical to the viability of shipboard collective protection systems due to improved effectiveness and greatly reduced logistics costs.

JCPE will provide needed improvements and cost saving standardization to currently fielded systems. JCPE will use the latest technologies to improve filtration, shelter materials, and environmental controls to provide affordable, lightweight, easy-to-operate and maintain equipment.

JTCOPS will be a lightweight, modular, self-supporting collective protection shelter system that will provide relief from psychological and physiological stresses during sustained operations in a contaminated environment. JTCOPS will be used as stand-alone billeting, medical, and operational facilities, or within fixed facilities to take advantage of existing structures. JTCOPS will be equipped with environmental control, NBC filters and blowers, and power generation systems.

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

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****CO5****FY 1999 Accomplishments:**

- 470 SCPE - Continued long-term shipboard testing of new longer-life laminated High Efficiency Particulate Absorbing (HEPA) filters, pre-filters and Limited Protection (LP) HEPA filter.
- 370 SCPE - Completed fan rotor specification package to improve fan efficiency. Began testing prototype Collective Protection System (CPS) fans.
- 350 SCPE - Updated CPS technical manuals, Technical Data Package (TDP) documentation. Documented pre-filters, LP HEPA filters, LP pre-filters, and HEPA filters. Prepared test reports and acquisition/logistics documentation.

Total 1190

FY 2000 Planned Program:

- 291 JCPE - Perform program planning and project management. Develop program documentation and coordinate program with Joint Service Integrated Product Team (IPT) representatives.
- 1700 JCPE - Perform tradeoff analysis to improve the M48A1 and M56 carbon filters. Perform tradeoff analysis to improve motorblowers on Modular Collective Protection Equipment (MCPE) and M20A1 Simplified Collective Protection Equipment (SCPE). Begin redesign of the M49 Fixed Installation Filter (FIF) to reduce production costs. Begin development of improved 200 Cubic Feet per Minute (CFM) Particulate filter to extend filter life. Develop and test Acceptance Tester for Recirculation Filter Unit (RFU) used on MCPE and Chemically Protected Deployable Medical Shelter System.
- 384 JCPE - Begin development of lightweight Environmental Control Unit (ECU) for transportable collective protection systems. Complete performance testing of ECU to improve the performance of the Portable Collective Protection System (PCPS).
- 1200 JTCOPS - Conduct program management functions, obtain engineering support, prepare program documentation for Milestone I/II, and fund participation of Joint Integrated Product Team (JIPT) representatives.
- 1364 JTCOPS - Award two development contracts for system design and fabrication of one prototype from each contract for Engineering Development Testing.
- 712 SCPE - Continue development and testing of the pre-filters and long-life HEPA filters in order to establish a statistically significant database for assessing the long term performance of these improvements. Complete land-based testing and begin shipboard testing of CPS fan rotors. Prepare and update documentation (test reports, technical manuals and TDP).
- 83 SBIR/STTR.

Total 5734

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CO5
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FY 2001 Planned Program:

- 384 JCPE - Perform program planning and project management. Prepare for and develop program documentation and coordinate program with Joint Service Integrated Product Team (IPT) representatives.
- 1500 JCPE - Begin development of improved carbon filters to extend service life and reduce production costs. Complete development of and test improved 200 CFM and FIF filters.
- 670 JCPE - Begin development and test of improved motorblowers to improve efficiency, reliability, size, and weight. Continue development and testing of lightweight ECU for transportable collective protection systems.
- 1500 JTCOPS - Conduct program management functions, obtain engineering support, prepare program documentation, and fund participation of Joint Integrated Product Team (JIPT) representatives.
- 3039 JTCOPS - Complete the fabrication of one prototype from each contract for Engineering Development Test.
- 709 SCPE - Continue testing of CPS fan rotors on designated ships. Continue long-term testing of shipboard filter improvements. Prepare and update documentation (test reports, Tech Manuals and TDP).

Total 7802

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
JCP001 COLLECTIVELY PROTECTED DEPLOYABLE MEDICAL SYSTEM	0	2746	5964	1987	0	0	0	0	10697
JF0102 TRANSPORTABLE COLLECTIVE PROT SYS	3852	6527	0	0	0	0	0	0	10379
JN0013 NAVY INDIVIDUAL PROTECTIVE GEAR	575	3388	5456	2313	3181	0	0	0	14913
JN0014 COLLECTIVE PROT SYS AMPHIB BACKFIT	1000	12058	17693	17722	17323	19416	18899	11400	Cont
JN0017 JOINT COLLECTIVE PROT SYSTEMS & IMPROVEMENTS	0	1193	1052	680	684	2725	2748	8600	Cont
R12301 CB PROTECTIVE SHELTER (CBPS)	16311	13910	11470	16394	16409	20500	20564	23645	Cont

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****CO5****C. Acquisition Strategy:**

SCPE	In-house/contract design and fabrication of prototype components with in-house testing. Equipment will be procured as part of new ship construction using Ship Conversion Navy (SCN) funds.
JCPE	This program will utilize the modification clause under DoD 5000 to provide solutions to current deficiencies in fielded collective protection equipment. The various efforts under JCPE will use market analysis and tradeoff studies to determine the optimum configuration for any modifications or improvements. All modified components will be contractor fabricated and in-house tested to ensure performance compatibility. Performance and/or procurement specifications will be updated to ensure that modifications are included in future acquisitions. Modified components will be integrated into existing systems via field modification or replacement spares.
JTCOPS	Two competitive contracts will be awarded for the design and prototype fabrication phase, with options for Low Rate Initial Production (LRIP) and production. Following Engineering Development Testing (EDT) of one prototype from each contract, one contractor will be selected to proceed to the LRIP phase to produce systems for Production Qualification Testing (PQT) and Operational Testing (OT). Following MS III, the production option of the contract will be exercised.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CO5
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D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JCPE																												
Tradeoff Analysis Improved Carbon Filter					X	X	X	X																				
Performance Testing of ECU for PCPS					X	X	X																					
Develop Improved 200 cfm Filters					X	X	X	X	X	X	X	X																
Fixed Installation Filter (FIF) Redesign					X	X	X	X	X	X	X	X																
Develop & Test RFU Acceptance Tester					X	X	X	X																				
Survey/Tradeoff Analysis of Motorblowers					X	X	X	X																				
Develop & Test Improved Carbon Filter									X	X	X	X	X	X	X													
Develop & Test Lightweight ECU						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
Develop & Test Motorblowers									X	X	X	X	X	X	X	X	X	X	X	X								
Develop Residual Life Indicator																	X	X	X	X	X	X	X	X	X	X	X	X
Develop Confined Space Bio-filtration																					X	X	X	X	X	X	X	X
JTCOPS																												
Milestone I/II						X																						
Design and Fab of test prototypes							X	X	X	X	X	X	X	X	X													
Engineering Development Test (EDT)													X	X														
Low Rate Initial Production (LRIP)													X	X			X	X	X									
Production Qualification Test (PQT)																		X	X		X	X						
Operational Test (OT)																					X	X						
Milestone III																								X				
SCPE																												
Develop CPS Fan Rotor Specification	X	X	X	X																								

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BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

PROJECT
CO5

D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SCPE (Cont)																												
Fan Testing & Evaluation (land-based)	X	X	X	X	X	X	X																					
Long-term Shipboard Testing of Filters	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												
Update Documentation (Tech Manuals, TDP)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												
Fan Testing & Evaluation (shipboard)							X		X	X	X	X	X	X	X	X												
Transition to JCPE																	X	X	X	X								

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****CO5****E. Project Cost Breakdown:**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Contractor Engineering Support	0	300	400
Contractor Hardware Development	0	2093	3889
Development Test and Evaluation	370	0	0
Government Engineering Support	0	520	530
Government Hardware Development	200	1662	1840
Operational Test and Evaluation	100	0	0
Program Management/Management Support	170	791	884
SBIR/STTR	0	83	0
Technical data/documentation	350	285	259
Total	1190	5734	7802

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CP5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
CP5 COUNTERPROLIFERATION SUPPORT (EMD)	0	5589	0	0	0	0	0	0	5589

A. Mission Description and Budget Item Justification:

Project CP5 COUNTERPROLIFERATION SUPPORT (EMD): The Counterproliferation Support Program was funded in FY00 to complete the development of the Long Range Biological Stand-off Detection System (LR-BSDS) for Initial Operational Test & Evaluation (IOT&E) and to support type classification of the LR-BSDS prior to production.

FY 1999 Accomplishments: None

FY 2000 Planned Program:

- 2200 LR-BSDS - Complete Fabrication of Systems 3 & 4.
- 3009 LR-BSDS - Conduct Developmental Tests and IOT&E Tests.
- 299 LR-BSDS - Conduct Milestone (MS) III In-progress Review (IPR).
- 81 SBIR/STTR.

Total 5589

FY 2001 Planned Program: No planned program

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

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BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
CP5

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
CP3 COUNTERPROLIFERATION SUPPORT (Adv Tech Dev)	7098	10434	10213	11416	7321	7663	13345	29183	Cont
CP4 COUNTERPROLIFERATION SUPPORT (DEMVAL)	41461	14614	14147	13539	18180	18103	13187	0	133231
JPO220 LONG RANGE BIO STANDOFF DET SYS (LRBSDS)	0	1907	11733	11799	0	0	0	0	25439
JPO230 PORTAL SHIELD EQUIPMENT	14564	3877	24746	3868	0	0	0	0	47055

C. Acquisition Strategy:

LR-BSDS Fabricate LR-BSDS using a competitive prime systems integration contract.

D Schedule Profile:

	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LRBSDS																												
LR-BSDS (CP5) Fabrication					X	X	X																					
LR-BSDS Technical Operational Testing							X																					
Milestone III IPR								X																				

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT CP5
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E. Project Cost Breakdown:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Contractor Hardware Development	0	2200	0
Development Test and Evaluation	0	1010	0
Operational Test and Evaluation	0	1999	0
Program Management/Management Support	0	299	0
SBIR/STTR	0	81	0
Total	0	5589	0

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT DE5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DE5 DECONTAMINATION SYSTEMS (EMD)	1355	3764	3611	7279	15393	11825	11475	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project DE5 DECONTAMINATION SYSTEMS (EMD): This project funds Engineering and Manufacturing Development (EMD) of decontamination equipment for the Joint Service Fixed Site Decontamination (JSFXD) Program aimed at developing a family of decontaminants and family of applicators. Block I will field decontaminants that will be used with integral or existing applicators. Block II will field any additional applicators required to provide the full fixed site decontamination capability (excluding Block III). Block III will provide decontaminants and applicators for skin/casualties with open wounds. The program will provide soldiers, sailors, marines, and airmen the equipment necessary to fully decontaminate their vital areas to sustain critical cargo flow into theater.

FY 1999 Accomplishments:

- 923 JSFXD - Perform program planning and execution of project management functions. Prepare for and develop MS I program documentation and coordinate program with Joint Service Integrated Product Team (IPT) representatives.
- 432 JSFXD - Initialized characterization of mature technologies for COT/GOTS down selection for development.

Total 1355

FY 2000 Planned Program:

- 1200 JSFXD - Prepare Engineering Change Proposals (ECPs) for DT/OT.
- 830 JSFXD - Prepare procurement package for family of decontaminants and award contract for Block I.
- 1679 JSFXD - Conduct Developmental Test/Operational Testing (DT/OT) on family of decontaminants.
- 55 SBIR/STTR.

Total 3764

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

DATE **FEBRUARY 2000**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) **PROJECT**
DE5

FY 2001 Planned Program:

- 1844 JSFXD - Prepare Logistics Support Packages and complete Milestone (MS) III documentation for Block I.
- 1767 JSFXD - Conduct Developmental Test/Operational Testing (DT/OT) on decontamination applicators.

Total 3611

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
G47001 MODULAR DECON SYSTEM	5950	7562	9430	9771	9532	95	0	0	42340
JN0010 JOINT SERVICE FIXED SITE DECON (JSFXD)	0	0	0	1516	1998	7505	6615	0	17634
JN0018 SORBENT DECON	0	1493	2765	4779	4799	0	0	0	13836
M67401 M17 LTWT DECON SYSTEM (LDS)	4815	4638	0	0	0	0	0	0	9453

C. Acquisition Strategy: JSFXD In-house/contractor design, development and fabrication of engineering models for test.

D Schedule Profile:

	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSFXD																												
Block II MS I								X																				
Block II Prototype Testing									X	X	X																	
Block II MS II											X																	
Block II MS III															X													
Block III MS I/II											X																	
Block III Milestone III																							X					

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-3 Exhibit)

DATE **FEBRUARY 2000**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
DE5

E. Project Cost Breakdown:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Contractor ILS Support	0	0	200
Development Test and Evaluation	0	1680	600
Government ILS Support	0	0	400
Operational Test and Evaluation	0	0	1167
Program Management/Management Support	923	807	200
SBIR/STTR	0	55	0
Technical data/documentation	432	1222	1044
Total	1355	3764	3611

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT IP5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
IP5 INDIVIDUAL PROTECTION (EMD)	7485	10053	3819	20009	19902	21785	0	0	83053

A. Mission Description and Budget Item Justification:

Project IP5 INDIVIDUAL PROTECTION (EMD): This project funds Engineering & Manufacturing Development (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 Nuclear, Biological, & Chemical (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) Initiate Joint Service Aviation Mask (JSAM), which will replace multiple Service-specific aviator chemical protective masks; (3) Start of the JSLIST P3I program and development of JSLIST Glove and; (4) Initiate Joint Protective Aircrew Ensemble (JPACE) program to standardize aircrew ensembles and reduce user fatigue.

FY 1999 Accomplishments:

- 777 AERP - Began aircraft modification design for B-2 and provided in-house program support.
- 5748 JSLIST P3I - Completed materiel screening, test analysis and candidate selection. Conducted field testing to address requirements for all four Services and Special Operations Forces.
- 960 JSLIST P3I - Procured prototypes for field evaluation.

Total 7485

FY 2000 Planned Program:

- 104 AERP - Complete B-2 aircraft modification design and in-house program support.
- 1439 JPACE - Identify and document performance specifications for system, materials, and components leveraging other complimentary programs such as JSLIST P3I.
- 989 JPACE - Develop and fabricate 25 initial prototype ensembles for Developmental Testing (DT). Prototype ensembles will consist of various sizes.
- 52 JSAM - Conduct source selection for development contract, prepare for, and conduct Milestone decision.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****IP5****FY 2000 Planned Program (Cont):**

- 4544 JSAM - Prepare program management documents for competitive acquisition and coordinate with Joint Service IPT. Initiate contract for research, development and procurement of a Joint Service Aircrew Mask.
- 300 JSLIST GLOVE - Procure prototype candidates for testing.
- 850 JSLIST GLOVE - Conduct laboratory chemical agent tests.
- 850 JSLIST GLOVE - Conduct user wear test and operational assessment.
- 450 JSLIST GLOVE - Prepare technical data input for materials and patterns production specifications.
- 329 JSLIST GLOVE - Continue In-house program management and support.
- 146 SBIR/STTR.

Total 10053

FY 2001 Planned Program:

- 108 AERP - Aircraft modification design and in-house program support.
- 500 JPACE - Complete initial prototype development and fabrication for Developmental Testing (DT).
- 2911 JPACE - Developmental Testing: Conduct simulant, human factor, compatibility, environmental, and live agent testing of initial prototypes. Various sizes of prototypes will be tested.
- 300 JPACE - Manufacture 100 improved prototypes for Operational Testing (OT).

Total 3819

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BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
JA0002 JT SVC AVIATION MASK (JSAM)	0	0	0	0	0	7154	14833	11000	Cont
JA0003 JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)	0	0	0	0	0	0	15822	18953	Cont
JN0011 AERP AIRCRAFT MODS	4059	1880	887	1254	948	0	0	0	9028
JN0013 NAVY INDIVIDUAL PROTECTIVE GEAR	575	3388	5456	2313	3181	0	0	0	14913
JN0015 JOINT PROTECTIVE AIRCREW ENSEMBLE	0	0	0	0	21473	21909	21568	0	64950
M95801 PROTECTION ASSESSMENT TEST SYSTEM (PATS) M41	5300	5285	0	0	0	0	0	0	10585
M99501 MASK, AIRCRAFT M45	2179	0	373	174	0	0	0	0	2726
M99601 MASK, CHEM-BIOLOGICAL PROTECTIVE FIELD: M40/M40A1	15819	11194	1506	142	0	0	0	0	28661
MA0400 PROTECTIVE CLOTHING	80345	95055	96475	89493	86844	87319	87967	0	623498
N00020 CB RESPIRATORY SYSTEM - AIRCREW	7286	7338	4028	0	0	0	0	0	18652

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT IP5
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C. Acquisition Strategy:	
AERP	Contract development and fabrication of prototype test hardware.
JSAM	The draft Acquisition Strategy outlines the strategy for a combined full-scale development (Program Definition and Risk Reduction and Engineering and Manufacturing Development). The contract for development is based on a joint service systems requirement document with special emphasis on meeting an average unit production price. The strategy also provides for contractor commitment to a production price commitment curve for production.
JPACE	Conduct Commerce Business Daily (CBD) material search for advanced material technologies addressing aviation material performance requirements from JPACE JORD. Leverage JSLIST P3I advanced material testing and technologies to maximum extent possible. Competitive contract to develop materials/components and manufacture prototypes for developmental and operational testing.
JSLIST P3I	This program employs a pre-planned product improvement strategy as an extension of JSLIST Program. Specifically, the JSLIST P3I will invite contractors to submit tested protective materials for evaluation in the quest for the next generation of advanced chemical protective clothing.
JSLIST GLOVE	Conduct development and operational assessment of candidate chemical protective materials to satisfy the Services and SOCOM urgent requirement for an improved chemical protective glove.
Project IP5	
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Exhibit R-2 (PE 0604384BP)	

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DATE **FEBRUARY 2000**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)

PROJECT
IP5

D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AERPMODS																												
Modify AC-130	X	X	X	X																								
Modify RC-135	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
Modify B-1B	X	X	X	X																								
JPACE																												
Identify Requirements/Specifications					X	X																						
Develop Prototypes for DT						X	X	X	X																			
Conduct Developmental Testing									X	X	X	X																
Conduct Operational Testing													X	X	X													
Milestone III																	X											
Award Production Contract																		X										
JSAM																												
RFP Development					X	X																						
Source Selection							X	X																				
PDRR Phase							X		X	X	X	X	X	X	X													
Milestone II															X													
EMD Phase													X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Milestone III																											X	
JSGPM																												
Proposals Received				X																								
PROT CLTH																												
JSLIST P3I DT	X																											

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DATE **FEBRUARY 2000**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
IP5

D <u>Schedule Profile:</u>	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PROT CLTH (Cont)																												
DT/OT	X	X	X																									
Milestone IIIA							X																					
JSLIST Glove OT							X																					
JSLIST Glove MS IIIA									X																			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-3 Exhibit)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Dev**0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)****IP5****E. Project Cost Breakdown:**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Contractor Engineering Support	0	593	0
Contractor Hardware Development	660	2183	800
Contractor ILS Support	0	367	150
Development Test and Evaluation	0	272	1561
Government Engineering Support	777	3346	858
Government ILS Support	0	367	75
Operational Test and Evaluation	5448	800	0
Program Management/Management Support	600	1256	75
SBIR/STTR	0	146	0
Technical data/documentation	0	723	300
Total	7485	10053	3819

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2000
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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT MB5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
MB5 MEDICAL BIOLOGICAL DEFENSE (EMD)	14635	18927	24198	57206	68991	42357	33619	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project MB5 MEDICAL BIOLOGICAL DEFENSE (EMD): This project funds the engineering and manufacturing development (EMD) phase (acquisition Phase II) 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. Phase II efforts for medical biological defense product development involve production scale-up studies, consistency manufacturing, and expanded human safety studies. Results from these efforts and those conducted during the Program Definition and Risk Reduction (PDRR) phase will be used to submit a biologic license application to the Food and Drug Administration (FDA) for product licensure. Phase II efforts are expected to be accomplished in three to six plus years. Upon FDA licensure the product will transition to full-scale licensed production. Products to be developed under this program include: recombinant botulinum next generation anthrax, plague, Q fever, ricin, smallpox, tularemia, and Venezuelan Eastern Encephalitis (VEE), and combined VEE/Eastern Equine Encephalitis/Western Equine Encephalitis (VEE/EEE/WEE) vaccines.

FY 1999 Accomplishments:

- 8000 Conducted Phase II effort for Tularemia (redirected to Phase I for FY00) and Q fever vaccines.
- 1778 Continued clinical trials to complete data collection/analysis to submit license applications for the FDA for Botulism Pentavalent Toxoid vaccine.
- 2179 Continued Phase II effort to reduce the immunization schedule with the licensed Anthrax vaccine.
- 2500 Supports the next generation vaccine program, which is determined to be the most effective and efficient path toward a next generation anthrax vaccine in terms of cost, schedule and performance.
- 178 Support the special immunization program to protect at-risk personnel from exposure to potential BW agents in the laboratory and in the field, and maintain capability to continue EMD for de-speciated Botulinum Antiserum.

Total 14635

FY 2000 Planned Program:

- 14873 Continue phase II efforts for Q fever vaccine and Botulinum Pentavalent Toxoid.

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT MB5
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FY 2000 Planned Program (Cont):

- 3780 Commence evaluation effort for reducing the Anthrax immunization schedule.
- 274 SBIR/STTR.

Total 18927

FY 2001 Planned Program:

- 17851 Continue Phase II effort for Q fever vaccine and Botulinum Pentavalent Toxoid.
- 3683 Initiate Phase II effort for Smallpox vaccine.
- 2664 Complete Anthrax immunization reduction effort and submit application for re-licensure.

Total 24198

B Other Program Funding Summary:

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Compl</u>	<u>Total Cost</u>
JX0005 DOD BIOLOGICAL VACCINE PROCUREMENT	14818	48634	49795	40430	45649	60834	64031	58266	Cont

C. Acquisition Strategy: Prime systems contract for advanced development, licensure, production, and storage of biological defense vaccines.

D Schedule Profile:

	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
VACCINES																												
JVAP prime contract	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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DATE **FEBRUARY 2000**

BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT MB5
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E. Project Cost Breakdown:	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Consistency Lot Production (vaccines)	1754	2315	3165
Contractor Engineering Support	1169	1545	2110
Development Test and Evaluation	8184	10927	14622
Program Management/Management Support	2944	3091	3246
SBIR/STTR	0	274	0
Technical data/documentation	584	775	1055
Total	14635	18927	24198

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT MC5
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COST (In Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
MC5 MEDICAL CHEMICAL DEFENSE (EMD)	1677	746	1091	1463	1549	1565	1612	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project MC5 MEDICAL CHEMICAL DEFENSE (EMD): 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 (EMD) phases of the acquisition strategy for pretreatment therapeutic drugs, diagnostic equipment, and other life support equipment for protection against and management of chemical warfare agents. Project funds research and development of safety studies, manufacturing scale up, process validation, drug interaction, performance test and submission of FDA drug licensure application(s).

FY 1999 Accomplishments:

- 1123 Initiated a multi-year stability testing study and responded to regulatory requirements for Multichambered Autoinjector (MA).
- 13 Completed Convulsant Antidote for Nerve Agents (CANA) long-term stability testing.
- 225 Completed absorption and sweat studies in humans for the Topical Skin Protectant (TSP).
- 159 Continued shelf-life stability testing and completed and submitted New Drug Application to the Food and Drug Administration (FDA) for the TSP.
- 40 Conducted a Milestone II in-progress review for the multichambered autoinjector.
- 117 Submitted New Drug Application to the FDA for the multichambered autoinjector.

Total 1677

FY 2000 Planned Program:

- 54 Continue a multi-year stability study and conduct a Milestone III in-progress review on multichambered autoinjector.
- 197 Continue shelf-life stability testing of TSP.
- 434 Initiate surrogate validation study of Pyridostigmine Bromide.
- 50 Initiate and complete a user and durability study for the TSP.

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BUDGET ACTIVITY
5 - Engineering and Manufacturing Dev

PE NUMBER AND TITLE
0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD) PROJECT
MC5

FY 2000 Planned Program (Cont):

- 11 SBIR/STTR.

Total 746

FY 2001 Planned Program:

- 243 Initiate population safety study of cyanide pretreatment.
- 356 Initiate manufacturing scale-up and process validation of cyanide pretreatment.
- 295 Initiate drug interaction studies of cyanide pretreatment.
- 197 Complete validation studies and submit licensure documentation for Pyridostigmine Bromide.

Total 1091

B. Other Program Funding Summary: N/A

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

D Schedule Profile:

	FY 1999				FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MEDCHEM																												
Cyanide Pretreatment - MS II													X															
Cyanide Pretreatment - MS III																								X				

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Dev	PE NUMBER AND TITLE 0604384BP CHEMICAL/BIOLOGICAL DEFENSE (EMD)	PROJECT MC5
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E. Project Cost Breakdown:	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Operational Test and Evaluation	1145	88	131
Program Management/Management Support	311	550	820
SBIR/STTR	0	11	0
Technical data/documentation	221	97	140
Total	1677	746	1091