

UNCLASSIFIED

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology
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COST (<i>In Thousands</i>)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	50532	99528	57906	57474	61923	65267	67121	Continuing	Continuing
DE25 Manufacturing Technology (MANTECH)	36552	48642	29345	29315	32240	35157	36585	Continuing	Continuing
DE27 Reliability, Maintainability and Supportability (RM&S)	9247	15636	18623	18070	19441	19661	19874	Continuing	Continuing
DE31 National Defense Center for Environmental Excellence (NDCEE)	4733	4895	0	0	0	0	0	0	9685
DE32 Commercial Operations and Support Savings Initiative (COSSI)	0	30355	9938	10089	10242	10449	10662	Continuing	Continuing

A. Mission Description and Justification: This program element comprises four projects: Manufacturing Technology (MANTECH); Reliability, Maintainability and Supportability (RM&S); the National Defense Center for Environmental Excellence (NDCEE); and Commercial Operations and Support Savings Initiative (COSSI). The goal of the Army MANTECH program is to provide essential manufacturing technologies that will enable affordable production and sustainment of future weapon systems. Objectives include development of advanced manufacturing processes, equipment and systems; enhancement in quality while achieving reduction in cost of Army materiel; and transferring improved manufacturing technologies to the industrial base. The MANTECH program is especially important in the current environment because of the large decline in weapon system production investments. Projects selected to be funded under this program have the potential for high payoff across the spectrum of Army weapon systems as well as significant impact on national manufacturing issues and the U.S. industrial base. The RM&S program funds projects that reduce operations and support costs through reliability, maintainability, and/or supportability improvements to fielded weapons systems or major end items. RM&S was initially funded in fiscal year 1997 under the Other Procurement Army 3 - Depot Maintenance and Other End Items. Funding was eliminated by Congress in fiscal year 1998 because projects appeared to be research and development rather than depot maintenance. For fiscal year 1999 and out-years, funding is transferred to PE 0708045A DE27. The NDCEE is a Congressionally directed project which has the mission to demonstrate and export new environmentally-acceptable technology to the industrial base; train the industrial base on the use of the new technology; perform research and development, where necessary, to mature a new technology prior to demonstrating and exporting the new technology to the industrial base; and assist DoD in technology transfer. The Center's goal is to resolve the environmental technology and management requirements of the DoD community and commercial industrial base. NDCEE will transfer to BA4 PE 0603779A starting in FY01. COSSI is funded under this program element (PE 0708045A) beginning in FY 2000. The mission of the COSSI program is to reduce operations and support costs by developing, testing, and implementing a method to insert commercial items into fielded military systems on a routine and expedited basis.

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B. Program Change Summary	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 2000/2001</u> PB)	52501	66167	66306
Appropriated Value	52861	100667	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-360		
b. SBIR / STTR	-1324		
c. Omnibus or Other Above Threshold Reductions		-401	
d. Below Threshold Reprogramming	-435		
e. Rescissions	-210	-738	
Adjustments to Budget Years Since <u>FY 2000/2001</u> PB			-8400
Current Budget Submit (<u>FY 2001</u> PB)	50532	99528	57906
<p>Change Summary Explanation: Funding – FY 2001: Decrease due to transfer (-4927) of Project DE31 to BA 4 PE 0603779A per Congressional direction; remaining funding (-3141) reprogrammed to support other higher priority requirements after inflation adjustments (-332).</p>			

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BUDGET ACTIVITY 7 - Operational System Development				PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology				PROJECT DE25		
COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost	
DE25 Manufacturing Technology (MANTECH)	36552	48642	29345	29315	32240	35157	36585	Continuing	Continuing	
<p>A. <u>Mission Description and Justification:</u> The goal of the Army Manufacturing Technology (MANTECH) program is to provide essential manufacturing technologies that will enable the affordable production and sustainment of future weapon systems. Objectives include development of advanced manufacturing processes, equipment and systems; enhancement in quality while achieving reduction in cost of Army materiel; and transferring improved manufacturing technologies to the industrial base. The MANTECH program is especially important in the current environment because of the large decline in weapon system production investments since most manufacturing technology was formerly accomplished within individual production programs. Projects selected to be funded under this program have the potential for high payoff across the spectrum of Army weapon systems as well as significant impact on national manufacturing issues and the U.S. industrial base. Other factors considered for project selection include cost share with both industry and the program managers as well as return on investment. Major programs are identified as Manufacturing Technology Objectives (MTOs).</p> <p>FY 1999 Accomplishments:</p> <ul style="list-style-type: none"> • 1530 Air Defense - Developed new manufacturing processes and work cells for the manufacturing of Patriot PAC3 traveling wave tubes; developed methods for the automated tuning of filters within the master frequency generator for the Patriot PAC3 system. • 17461 Ammunition - Demonstrated technology to minimize seasonal variations of the solvent and thermal content of the propellant blocks, providing for more uniform products, greater yields and less rework; as part of Totally Integrated Munitions Enterprise, addressed issues in controllers, system architecture, electronics, composites energetics, Objective Individual Combat Weapon (OICW) Tungsten Warhead, M829E3 processes, combustible cartridges and XM982 rotating band processing for accelerated munitions MANTECH insertion. • 4232 Aviation - Developed and demonstrated the technical feasibility and economic benefits of a robotic automated deburring system which is currently being applied to production of the Comanche and continued projects to reduce inspection and finishing costs of gears and related complex precision metal components at the Instrumented Factory for Gears; demonstrated a statistical process control expert system for shop-floor management at Corpus Christi Army Depot. • 561 Command and Control - Demonstrated the thin film ferroelectric properties required for extremely high frequency comm-on-the-move applications. • 204 Combat Service Support - Developed assembly process for reduced manufacturing costs of ceramic plates used in next generation of body armor which PM soldier type-classified, thereby guaranteeing implementation. 										
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<p>FY 1999 Accomplishments (continued):</p> <ul style="list-style-type: none"> • 6116 Fire Support - Demonstrated a titanium gun mount and cradle for the Crusader vehicle to include weldments, automated/laser welding, low cost castings and forgings, and battle damage repair; demonstrated computer aided design and computer aided engineering tools for millimeter wave transceivers by building demonstration hardware for BAT P31, and fabricated, integrated, assembled, and tested five Longbow cost reduction program transceivers on the flexible work cell pilot production line; demonstrated 5X reduction in multichip module substrate and assembly cost through participation in Georgia Tech Packaging Research Center; developed and established industry, academia and government partnerships for the development of advance manufacturing processes of printed circuit boards and initiated tasks to develop next generation electrical test system, high density photolithography system, low cost high frequency card materials, and low cost substrates for direct chip attachment. • 3161 Intelligence and Electronic Warfare - For the Cooled and Uncooled Staring Sensors MTO, developed manufacturing process improvements of ferroelectric material deposition of uncooled focal plane arrays used in weapon sights and staring sensors, demonstrated improved yield, reduce pixel size, and vacuum packaging of these focal plane arrays; competitively selected the contractor team for the development of coating materials and processes for low cost, high reliability Plastic Encapsulated Microcircuits MTO and initiated efforts in material selection, process development, and metrics baseline; demonstrated advanced finishing processes for optics components; developed digital data extraction technology and an automated reverse engineering fixture for remanufacturing capability of printed wiring boards; assessed printed wiring board technologies at Tobyhanna Army Depot and developed a demonstration of a rapid response manufacturing system for small quantity production of a wide variety of boards. • 3058 Maneuver - Demonstrated models for optimal fabrication, process control and resin flow simulation accuracy with applications to Crusader and Comanche structures as part of the MTO for Knowledge and Process Tools for manufacturing of affordable composite structures. • 229 Nuclear, Biological, Chemical - Completed process optimization and demonstrated manufacturing capability for decontamination enzymes. <p>Total 36552</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 20894 Ammunition - Develop architecture for totally integrated munitions enterprise systems to include product data management, resource planning systems, change control systems and logistics systems; address munitions manufacturing technology to include electronics, composites energetics, M829E3 processes, combustible cartridges, and explosively formed penetrator warheads. • 6074 Aviation - Develop technology and demonstration equipment for increasing manufacturing yield of filter materials used in advanced threat/countermeasures/common missile warning systems; demonstrate Instrumented Factory for Gears for Comanche, Apache, and Blackhawk to include automated robotic deburring, face hobbing gears, and near-net shape gears; create and institutionalize a depot life cycle repair environment for rotary wing aircraft sustainment to reduce repair cycle time and costs. • 531 Command and Control - Demonstrate prototype large bulk ceramics and supporting components of X-band phase shifters for the manufacture of electronic scanning antennas to reduce size of radar by a factor of 5 with a 50% weight reduction. 		
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<p>FY 2000 Planned Program (continued):</p> <ul style="list-style-type: none"> • 2100 Combat Service Support - Complete cost reduction process enhancements for the manufacturing of ceramic plates used in next generation body armor; demonstrate reduced costs through a sustainment center targeted at supportability issues within weapons systems to reduce repair and remanufacturing requirements. • 5706 Fire Support - Demonstrate modeling process for increased performance and decreased cost of weapon system gun barrels to meet a Tantalum Sputtering MTO with the goal to increase barrel life by 600%; develop, through an MTO, improvements in the warhead and fuze to reduce the cost of the Objective Individual Combat Weapon (OICW) and Objective Crew-Served Weapon (OCSW); develop coating process that will be used during manufacturing of military application integrated circuits subjected to long term unpowered storage environments common to missiles, and increasing the manufacturing yield by 5% in support of this MTO for plastic and encapsulated microcircuits. • 6922 Intelligence and Electronic Warfare - Develop the manufacturing technologies required to meet the MTO for Cooled and Uncooled Infrared Staring Sensors with improvements in processes for 480x640 mid-wave and long-wave infrared focal plane arrays that will reduce size, weight and costs to manufacture; develop manufacturing processes for electro-optical materials; develop and demonstrate an automated reverse engineering system that will non-destructively extract information necessary to remanufacture obsolete printed wiring assemblies for mobile subscriber equipment, AH-64 Apache, Stinger Missile, Guardrail and ground communication systems; demonstrate rapid response system for the reverse engineering of printed wiring assemblies at Tobyhanna Army Depot. • 3226 Maneuver - Automate pre-form technologies for large, light-weight composite structures for new tactical vehicles, determine process capabilities through simulation of Comanche, and develop non-proprietary cost models and process models for thin section resin transfer moldings to reduce manufacturing costs by 30% for the MTO focusing on knowledge and process tools for manufacturing affordable composite structures. • 1944 Science and Technology - Develop and demonstrate a natural gas engine drive air compressor for military use. • 1245 Funds reprogrammed for SBIR/STTR programs in accordance with the Small Business Innovation Research Reauthorization Act of 1992. <p>Total 48642</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 1337 Aviation - Demonstrate 30% to 60% component cost reduction of thin wall castings for auxiliary power units and propulsion systems; demonstrate reduced manufacturing cost of sensor element material used in advanced threat/countermeasures/common missile warning systems. • 2473 Command and Control - Fabricate test phase shifters for electronic scanning antennas and demonstrate 20X reduction in power requirements for phase shifters; demonstrate active matrix electro-luminescent display manufacturing and process improvements and cost reductions early in the fielding cycle; demonstrate low-cost, high resolution active matrix liquid crystal display with reduced manufacturing cost through improved material alignment and processing steps. • 388 Combat Service Support - Interface with tentage and machine manufacturers for seam-sealing technology to reduce manufacturing costs and reduce seam leakage of tents. 		
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<p>FY 2001 Planned Program (continued):</p> <ul style="list-style-type: none"> • 14593 Fire Support - Demonstrate increased performance and decreased cost of weapon system gun barrels with specific subtasks to include the manufacture and installation of sputtering targets and development of manufacturing processes for large caliber gun barrels in support of the MTO in tantalum sputtering; insert special coated integrated circuits into selected military systems for demonstration and validation in support of the MTO in plastic encapsulated microcircuits to demonstrate a 78% improvement in resistance to internal corrosion and improve fabrication and packaging yields by 5%; develop manufacturing processes for inertial measurement units utilizing micro-electro-mechanical systems and model process flow of the assembly process for this MTO; conduct bore mapping and controlled process technologies for cannon tube restraightening to improve hit probability and reduce cannon tube straightening time for this MTO; demonstrate affordable advanced tungsten warhead and steel warhead designs through an MTO for the OICW and OCWS; utilize commercial digital signal processors and alternative design guidance and control modules to reduce new upgrade procurement costs by 25% for Army TACMS 2000 and Patriot PAC3 guidance and control modules. • 7325 Intelligence and Electronic Warfare - Fabricate and integrate 480x640 mid-wave infrared and long-wave infrared focal plane array and dewar to achieve the MTO focused on cooled and uncooled infrared staring sensors; demonstrate an Advanced Asphere Optic MTO for the applications to reduce weight and cost of the optical subsystem; demonstrate improved manufacturing processing for short-wave infra-red gated camera tube used for target detection. • 3229 Maneuver - Implement investment strategy for risk reduction, knowledge base development, and tooling for the MTO in knowledge and process tools for manufacturing affordable composite structures. <p>Total 29345</p>		
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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology	PROJECT DE27
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COST <i>(In Thousands)</i>	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE27 Reliability, Maintainability and Supportability (RM&S)	9247	15636	18623	18070	19441	19661	19874	Continuing	Continuing

A. Mission Description and Justification: The Reliability, Maintainability and Supportability (RM&S) program supports innovative, state-of-the-art projects to reduce Operations and Support (O&S) costs by replacing or improving components of fielded weapon systems with more reliable, maintainable and/or supportable items. The RM&S program is limited to improvements that reduce the cost of ownership for fielded systems and equipment. RM&S funds may not be used to modify a weapon system currently in development, until the weapon system has satisfied all supportability requirements defined in the Operational Requirements Document (ORD) or system specification. The RM&S program uses Research, Development, Test and Evaluation (RDT&E) funding, which allows the pursuit of complex technology insertion projects.

FY 1999 Accomplishments:

- 9247 Aviation - Completed software development and testing, system verification and acceptance testing of a prototype universal computer controlled static balance fixture that can balance any DoD main rotor blade; replaced the Hunter System Unmanned Aerial Vehicle Short Range (UAV-SR) wooden propeller with a composite propeller that has a life expectancy ten times greater than the wooden propeller and will lower the annual consumption rate of propellers from 169 to 17; developed a preventive and predictive maintenance expert system for real time monitoring and tracking of sources of machine deterioration for Corpus Christi Army Depot's (CCAD's) whirl tower, autoclave, and engine and transmission test cells; released funds and awarded contract to design a new CH-47 Chinook helicopter rotor hub.
- Total 9247

FY 2000 Planned Program:

- 8177 Aviation - Perform analytical design, prepare modification drawings, and procure or develop smart orifices for a high performance scalable landing gear shock strut that is less susceptible to damage; complete and implement a preventive and predictive maintenance expert system for real time monitoring and tracking of sources of machine deterioration for CCAD's automatic test equipment; design a new CH-47 rotor hub to eliminate wet bearings and replace the bearings with elastomeric bearings which require no additional lubrication; establish an aggressive fleet maintenance management capability composed of process, policy, and hardware improvements significantly reduce support costs and improve operational readiness for the CH-47 fleet.

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<p>FY 2000 Planned Program (continued):</p> <ul style="list-style-type: none"> • 5601 Combat Service Support - Establish, correlate and validate data on accelerated, short term, high temperature storage of packaged ration products (Meals, Ready-to-Eat (MREs)), acquire and prepare product for storage, conduct lab microbiological evaluation, perform sensory evaluation, review prior data, and determine data correlation and protocols; redesign the current commercially based rechargeable lithium battery technology into a format that fully meets the technical and operational requirements of the military, and is technically superior and more cost effective than the silver zinc battery currently used for the Improved Target Acquisition System (ITAS) and the small cell lithium ion battery technologies currently available for use with the Land Warrior system. • 1065 Maneuver - Demonstrate system parameters that meet requirements to automate balancing of turbine engine components that will reduce cycle time by 80% over manual balancing; demonstrate a mobile seven axis machining system to improve the repair and overhaul capabilities of Anniston Army Depot (ANAD), to include designing and developing the machining system, designing the base, and optimizing the system to meet ANAD mobile machining requirements; develop a low cost corrosion mitigating technique for components such as frame rails found on tactical wheeled vehicles that have corrosion problems resulting in costly premature failures. • 372 Nuclear, Biological, Chemical - Replace and test the testing agent for the Joint Lightweight Integrated Suit Technology (JLIST) from a live chemical agent to a simulant to yield a much more reliable, quicker and more economic means for the maintenance and evaluation of chemical overgarments. • 421 Funds reprogrammed for SBIR/STTR Programs in accordance with the Small Business Innovation Research Reauthorization Act of 1992. <p>Total 15636</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 555 Ammunition - Fabricate and test the less expensive .50 caliber training cartridge for the long range sniper rifle and transition to procurement. • 9743 Aviation - Fabricate prototype hardware, install smart orifices, and conduct design support tests for the high performance scalable landing gear shock strut for the Apache; develop and demonstrate process changes and model process flow enhancements through the Rotary Wing Aircraft Sustainment Project (RWASP); complete development and prototyping and prepare for test and evaluation of the new CH-47 rotor hub that will have 75% fewer parts and 70% fewer special tools required to maintain the system; integrate and test directional/vertical gyroscope system and complete acquisition requirements package; qualify universal common automatic recovery system and implement system on Hunter system to reduce repair requirements. • 648 Command and Control - Re-establish a production capability for new AN/PRC-112 radios, enabling the production of new modules to be used as spares and repair parts at the depot level repair facilities, so that AN/PRC-112 radios already deployed can continue to be supported. • 478 Combat Service Support - Complete correlation and validation of data on accelerated, short term, high temperature storage of packaged ration products (Meals, Ready-to-Eat (MREs)), complete product tests and shelf stability evaluations, complete technical data and provide to vendors, and transition to the Defense Logistics Agency (DLA) for procurement; optimize the MRE's packaging providing a significant reduction in the amount of materials that are required to package the MRE, thus lowering production costs and sustainment costs associated with shipping, handling, storage and disposal, and simplifying the MRE entree heating process as a side benefit. 		
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FY 2001 Planned Program (continued):		
•	297	Fire Support - Validate radial forging procedures for gun barrel performs and demonstrate extended wear of clad M240 gun barrels.
•	3809	Intelligence and Electronic Warfare - Demonstrate reduced maintenance and supportability costs by upgrading the Improved Bradley Acquisition System - Missile Control Subsystem (IBAS MCS) hardware design; replace the TROJAN SPIRIT II's old electrospac antenna control unit with the new proven commercial fully integrated PC-based antenna controlled unit, harvesting commercial technology advancements to reduce the system maintenance costs while improving overall system reliability and overall maintainability; rewire and test upgraded Sentinel signal data processor upgrades and transition to the Sentinel processor family.
•	879	Maneuver - Conduct fatigue testing, metallurgical evaluation, and final demonstration for an automated system to simultaneously balance and laser machine components; demonstrate a low cost corrosion mitigating technique for epoxy-coated High Mobility Multipurpose Wheeled Vehicle (HMMWV) frame rails to prevent costly premature failures through treatment of test vehicles, testing treated vehicles on the Army test center accelerated corrosion / durability test track, preparing final report, and training personnel for transition to field units and treatment implementation.
•	1954	Mobility - Demonstrate inspection equipment and techniques capable of producing new track vehicle rubber formulations to increase the life of rubber track components to 5000 miles by validating accelerated aging tests and life-service predictive models and finalizing production and field evaluation methods.
•	260	Nuclear, Biological, Chemical - Implement the replacement testing agent for the Joint Lightweight Integrated Suit Technology (JLIST) from a live chemical agent to a simulant to yield a much more reliable, quicker and more economic means for the maintenance and evaluation of chemical overgarments through vapor testing at high relative humidity, completing technical data, and transitioning to DLA for procurement.
Total	18623	
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BUDGET ACTIVITY 7 - Operational System Development			PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology				PROJECT DE31				
COST (<i>In Thousands</i>)			FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE31 National Defense Center for Environmental Excellence (NDCEE)			4733	4895	0	0	0	0	0	0	9685
<p>A. <u>Mission Description and Justification:</u> This Congressionally mandated project is managed by the Army on behalf of the Office of the Deputy Under Secretary of Defense for Environmental Security (DUSD-ES). NDCEE program was transferred to BA 4 PE 0603779A per Congressional Direction for FY01 and beyond. The mission of the NDCEE is four-fold: (1) Demonstrate and export new environmentally-acceptable technology to the industrial base; (2) train the industrial base on the use of the new technology; (3) perform research and development, where necessary, to mature a new technology prior to demonstrating and exporting the new technology to the industrial base and (4) assist DoD in technology transfer. The NDCEE, which is located in Johnstown, Pennsylvania, has the goal of resolving the environmental technology and management requirements of the DoD community and commercial industrial base. The primary in-house development agency is the U.S. Army Materiel Command's Armament Research, Development, and Engineering Center, Picatinny Arsenal, NJ.</p> <p>The NDCEE has positioned itself as a critical resource for the Deputy Under Secretary of Defense for Environmental Security for environmental management and technology validation and integration. Major programs supported by the Center include the Joint Group on Acquisition Pollution Prevention, Toxics Reduction Investment & Management (TRIM), environmental cost accounting standards development supporting the DoD sustainment community and the DoD fuel cell program.</p> <p>FY 1999 Accomplishments:</p> <ul style="list-style-type: none"> • 4733 - Assisted the needs of Army/DoD pollution prevention and the Joint Logistic Commanders in use of Joint Group for Pollution Prevention (JG-PP) methodology to aid the acquisition and sustainment communities (original equipment manufacturers and depots). <ul style="list-style-type: none"> - Maintained Environmental Technology Facility and demonstrated environmentally acceptable technologies of DoD components and conducted technology transfer activities (requirements determination, technology selection, equipment selection, installation de-bugging, training) for Army and DoD facilities. Feasibility studies conducted on Army/DoD components to validate environmentally acceptable processes. - Supported pollution prevention efforts in acquisition through development of joint test protocols, multi-service needs identification, regulatory analysis and prediction, formal environmental cost analyses, risk assessments, life cycle environmental assessments and incorporation of environmental management standards and principles. Standardized Cost Analysis (Environmental Cost Analysis Methodology) and Risk (Industrial Risk Health Assessment) tools developed and verified for DoD use. <p>Total 4733</p>											
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FY 2000 Planned Program:		
<ul style="list-style-type: none">• 4764 - Support the needs of Army/DoD pollution prevention.<ul style="list-style-type: none">- Maintain the Environmental Technology Facility.- Support Pollution Prevention efforts in acquisition.- Support Army/DoD initiatives for environmental management systems.- Increase emphasis and market penetration in energy conservation and management focusing on fuel cell applications.- Expand capabilities in corrosion protection through surface modification technologies in support of the services and DoD.• 131 Funds reprogrammed for SBIR/STTR Programs in accordance with the Small Business Innovation Research Reauthorization Act of 1992.		
Total	4895	
FY 2001 Planned Program: NDCEE program transferred to BA 4 PE 0603779A per Congressional Direction.		
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				Manufacturing Technology						
<i>COST (In Thousands)</i>	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost	
DE32 Commercial Operations and Support Savings Initiative (COSSI)	0	30355	9938	10089	10242	10449	10662	Continuing	Continuing	
<p><u>Mission Description and Justification:</u> The mission of Commercial Operations and Support Savings Initiative (COSSI) is to develop and test a method for reducing Army Operations and Support (O&S) costs by routinely inserting commercial items into fielded military systems. The insertion of commercial items is expected to reduce O&S costs by reducing the costs of parts and maintenance, reducing the need for specialized equipment, increasing reliability, and increasing the efficiency of subsystems. Selected proposals will develop, manufacture, and deliver prototype "kits" to the military for installation into fielded Army systems. COSSI is a two-stage process. In Stage I of each selected project, COSSI and the chosen proposer will share the costs of developing and testing the kit, with the proposer contributing at least 25% of the estimated costs of Stage I. For FY01 Solicitation proposer must cost share, but the 25% minimum has been waived. If Stage I is successful, Stage II will be initiated. In Stage II, the military customer may then purchase reasonable production quantities of the kit. Army further requires Stage II funding identification prior to approval of Stage I. COSSI was funded in DoD PE 0603805E through FY1998, transferred to Army PE 0604824A in FY1999, and was transferred to this PE in FY2000. FY00 Project DE32 (COSSI) funds have been realigned to fund MANTECH projects in the amount of \$11059, and Reliability, Maintainability, and Supportability (RM&S) projects in the amount of \$16137, due to insufficient response to the FY00 COSSI solicitation. FY 2001 funding will be for new Stage I COSSI projects. The FY2001 COSSI CBD announcement was released in January 2000, and proposals are due in April 2000. General topic areas include AH64 primary hydraulic manifold, utility man drive shaft; Bradley Sentinel system communications equipment, electronics, man-machine interface, power supplies, embedded removable data logger/storage device and generator; Bradley Hunter system automated maintenance and preflight, enhance mission planner, heavy fuel engine, generator/alternator; Abrams program power train, suspension system and fire control/armament.</p> <p>FY 1999 Accomplishments: Program funded in Army PE 0604824A.</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 1042 Intelligence and Electronic Warfare - Insert a video/imagery hypercompression transceiver and a relay module to improve generations three and four of the Guardrail Common Sensor Replacement Receivers (GCSRR) by replacing obsolete VHF receiver equipment with a package based on commercially available receiver technology. This replacement will provide significant cost savings and improve system readiness for the weapon system. • 1300 Maneuver - Apply a patented, low cost, commercial metal injection molding into first and second stage compressor blades for the AGT1500 gas turbine engine on the US Army M1 Abrams Tank. This will enable the use of commercial practices and technologies to develop a lower cost compressor blade and vane manufacturing process to lower O&S costs. 										
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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 2000
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology	PROJECT DE32
<p>FY 2000 Planned Program (continued):</p> <p>The following tasks will be transitioned to Project DE25, Manufacturing Technology (MANTECH) for funding in FY 2001 and beyond:</p> <ul style="list-style-type: none"> • 583 Aviation - Develop thin wall casting manufacturing technique for demonstration on Apache 36-155 auxiliary power unit. • 1928 Command and Control - Scale-up manufacturing capabilities and develop manufacturing improvements for active matrix electro-luminescent displays; improve production yield of active matrix liquid crystal displays by reducing defects during manufacturing. • 350 Combat Service Support - Develop and demonstrate seam-sealing technology to reduce a two-step manufacturing process into a one-step process that will reduce labor costs and prevent likelihood of leakage in tents. • 5520 Fire Support - Develop affordable inertial guidance units for air-to-ground missile systems using micro-electro-mechanical systems for this MTO; demonstrate uniform cannon tube reshaping system through an MTO to reduce cannon tube straightening time and improve target hit probability; demonstrate manufacturing technologies for improved digital signal processing systems for guidance and control packages used in fire support. • 2678 Intelligence and Electronic Warfare - Continue optics manufacturing development for weapons systems affordability; develop manufacturing technologies to demonstrate an affordable short-wave infra-red gated camera tube devoted to target detection. <p>The following tasks will be transitioned to Project DE27 Reliability, Maintainability and Supportability (RM&S) for funding in FY 2001 and beyond:</p> <ul style="list-style-type: none"> • 589 Ammunition - Develop a less expensive .50 caliber cartridge for the long range sniper rifle for use by the Army Sniper School and other units assigned snipers when conducting training. • 5786 Aviation - Baseline a process to establish and institutionalize a depot life cycle repair environment for combat equipment through technology upgrades within the framework of establishing cost effective methods and procedures for efficient workload routing, planning and scheduling, material resource planning, and supply chain management through the Rotary Wing Aircraft Sustainment Project (RWASP); replace current mechanical gyros used in cargo and utility helicopters with strapdown fiber optic attitude heading reference system utilizing direction/vertical gyroscopes; integrate a universal common automatic recovery system into the Hunter system to reduce attrition of air vehicles and reduce level of repair required after crashes. • 2097 Command and Control – Reverse engineer the obsolete parts for AN/PRC-112 radios, ensuring that the basic, proven radio can continue to serve as the backbone of the search and rescue system. • 244 Combat Service Support - Modify the Meal, Ready-to-Eat (MRE) packaging and assembly process to reduce the Army’s procurement, operations and support costs. • 1462 Fire Support - Develop an interface device that will provide digital linkage from the fire control panel tactical proficiency trainer to the single-channel ground and airborne radio system, which will enhance the training value of the trainer by allowing it to fully emulate the Multiple Launch Rocket System (MLRS) launcher fire control panel; fabricate and test clad gun barrels for M240 system and test cladding procedure to double the barrel life; develop and test, and provide a fielding strategy for an improved system to contain tritium gas and tritiated water from damaged radioluminescent light sources. 		
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<p>FY 2000 Planned Program (continued):</p> <ul style="list-style-type: none"> • 3892 Intelligence and Electronic Warfare - Develop and test a common upgrade to the existing Improved Target Acquisition System - Fire Control Subsystem (ITAS FCS) hardware design by leveraging the latest computer hardware and software technological developments, thereby eliminating unacceptably high production, maintenance and supportability costs; replace key SATCOM components of the TROJAN SPIRIT II to increase the efficiency of existing satellite bandwidth utilization and prepare for the migration to the emerging Warfighter Information Network (WIN); develop for retrofit upgraded signal data processor cards for Sentinel system utilizing commercial grade parts. • 2067 Mobility - Conduct service life assessments of extended range track systems, establish new rubber track component performance baselines, optimize performance of new rubber compounds, and identify wear/failure mechanisms in candidate materials to extend the life of rubber track components for ground vehicles. • 817 Funds reprogrammed for SBIR/STTR Programs in accordance with the Small Business Innovation Research Reauthorization Act of 1992. <p>Total 30355</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 9938 Develop, manufacture and deliver cost savings initiatives in the area of product re-engineering, information technology, training, automation, and rapid prototyping for spares. <p>Total 9938</p>		
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