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

DATE: June 2001

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603231F Crew Systems and Personnel Protection Technology

	COST ($ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	31,474	17,319	32,356	34,775	35,625	34,995	34,082	34,803	Continuing	TBD
2830	Crewstations, Life Support, and Escape	20,670	5,787	6,508	7,519	8,057	8,746	8,929	9,118	Continuing	TBD
3257	Helmet-Mounted Sensory Technologies	10,804	11,532	8,627	8,907	9,848	10,489	9,061	9,254	Continuing	TBD
4923	Logistics Readiness and Sustainment	0	0	10,425	10,799	11,903	9,823	10,030	10,241	Continuing	TBD
4924	Distributed Mission Training Technology	0	0	6,796	7,550	5,817	5,937	6,062	6,190	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

Note: In FY 2002, all activity previously reported in PE 0603106F will be reported in Project 4923 and all activity previously reported in PE 0603227F will be reported in Project 4924. FY 2003-FY 2007 budget numbers do not reflect the DoD strategy review results.

(U) A. Mission Description

This program develops and demonstrates technologies to enhance human performance and effectiveness and enable the aerospace force. State-of-the-art advances are made to train personnel, protect and sustain warfighters, and improve human interfaces with weapon systems. The Crewstations, Life Support, and Escape project develops and demonstrates aircrew and information operations technologies that will protect and sustain the force in operational environments. The Helmet-Mounted Sensory Technologies project develops and demonstrates advanced operator interface technologies for multi-functional helmet-mounted displays, night vision devices, and laser eye protection. The Logistics Readiness and Sustainment project develops and demonstrates technologies that will protect the force, enhance logistics, and improve the design, deployability, performance, and support of current and future weapon systems. The Distributed Mission Training Technology project develops and demonstrates advanced training, simulation, and mission rehearsal technologies. In FY 2001, Congress added $5.0 million for Helmet-Mounted Display Technology.

(U) B. Budget Activity Justification

This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies to protect and enhance the performance of Air Force personnel in operational environments.

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(U) C. Program Change Summary ($ in Thousands)

		FY 2000	FY 2001	FY 2002	Total Cost
(U)	Previous President's Budget (FY 2001 PBR)	30,953	12,479	13,157	TBD
(U)	Appropriated Value	31,341	17,479		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-11			
	b. Small Business Innovative Research	-739			
	c. Omnibus or Other Above Threshold Reprogram				
	d. Below Threshold Reprogram	1,213			
	e. Rescissions	-330	-160		
(U)	Adjustments to Budget Years Since FY 2001 PBR			19,199	
(U)	Current Budget Submit/FY 2002 PBR	31,474	17,319	32,356	TBD

(U) Significant Program Changes:

The large increase in FY 2002 is because all activities previously reported in PE 0603106F will be reported in Project 4923 and all activity previously reported in PE 0603227F will be reported in Project 4924.

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

DATE: June 2001

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603231F Crew Systems and Personnel Protection Technology

PROJECT: 2830

COST ($ in Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
2830	Crewstations, Life Support, and Escape	20,670	5,787	6,508	7,519	8,057	8,746	8,929	9,118	Continuing	TBD

(U) A. Mission Description

This project provides technology to improve human combat performance and aviation safety through effective crewstation integration, improved life support and protection, increased safety during emergency escape, and better information delivery and presentation. Crewstations represent the fundamental interface between the warfighter and equipment across the gamut of aerospace operations. To cope with the recognized data overload in command centers, as well as individual weapon platforms, this project develops technologies for quantifying human-system requirements, designing effective information interfaces, and evaluating crew performance in selected operational environments. This project develops bioaccoustic technologies for the protection of human hearing and enhanced force security. Escape system technologies improve the crewmembers' physical safety during the emergency escape and recovery from high performance aircraft.

(U) FY 2000 ($ in Thousands)

(U) $1,818 Developed and demonstrated human modeling technologies and simulation tools to justify crew performance requirements, reduce the cost and time for system developers to isolate and analyze critical operator tactics in simulated operational exercises, and support clear accountability in design. Began to integrate simulation software combining a human operator model with a representative weapon system simulation. Demonstrated the ability to quantify crew system requirements for a tactical attack mission by comparing measured man-in-the-loop performance data with model projections.

(U) $1,131 Developed and demonstrated subsystems to protect the aircrew member during emergency ejection in current and future high performance fighter aircraft. Initiated effort to improve head and neck protection by demonstrating a modification to the current inventory HGU-55/P helmet and/or visor to be safely retained up to 600 knots equivalent airspeed (KEAS) and demonstrate the effectiveness of the design in ejection seat tests.

(U) $5,620 Developed and demonstrated subsystems to reduce the science and technology risks associated with adapting the Russian K-36D-3.5A lightweight ejection seat for potential use in future high performance fighter aircraft. Completed redesign of energetics and electronics using U.S. sources. Initiated Phase II fighter aircraft integration risk reduction study.

(U) $11,617 Developed a set of common ejection seat characteristics and qualification criteria consistent with joint Air Force/Navy requirements. Initiated a program to lead to the development of fully qualified ejection seats that can compete for installation into fighter aircraft and other current/future aircraft.

(U) $484 Developed and demonstrated advanced, user-tailored information management and portrayal technologies that enhance battlespace situational awareness for global-level and MAJCOM-level information operation centers to reduce decision-making bottlenecks. Performed task analysis of

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE June 2001	
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603231F Crew Systems and Personnel Protection Technology	PROJECT 2830

(U) A. Mission Description Continued

(U) FY 2000 ($ in Thousands) Continued

information operations center and developed measures of performance and effectiveness. Began to develop visualizations promoting battlespace situational awareness.

(U) $20,670 Total

(U) FY 2001 ($ in Thousands)

(U) $1,940 Develop and demonstrate human modeling technologies and simulation tools to verify crew performance requirements, reduce the cost and time for system developers to isolate and analyze critical operator tactics in simulated operational exercises, and support clear accountability in design. Complete development of simulation software and demonstrate integration with human operator models using the High-Level Architecture. Complete a functional specification for using the modeling technology in a simulation-based testbed that supports establishing objective, performance-based crew system requirements.

(U) $3,104 Develop and demonstrate subsystems to protect the aircrew member during combat and emergency operations in current and future aircraft. Demonstrate life support technologies to address specific deficiencies observed in recent combat operations. Decrease risk of major injuries and fatalities for crewmembers, regardless of gender, ejecting at higher airspeeds while wearing Helmet-Mounted Devices (HMD) by developing head, neck, and eye protection for HMD technology during high-speed escape to 600 Knots Equivalent Air Speed threshold.

(U) $743 Develop and demonstrate advanced, user-tailored information management and portrayal technologies that enhance battlespace situational awareness for global-level and MAJCOM-level information operation centers to reduce decision-making bottlenecks. Continue to develop user-tailored visualizations promoting battlespace situational awareness. Demonstrate the capability for effective, time-critical information exchange operations between MAJCOM Network Operations and Security Centers.

(U) $5,787 Total

(U) FY 2002 ($ in Thousands)

(U) $259 Develop and demonstrate human modeling technologies and simulation tools to verify crew performance requirements, reduce the cost and time for system developers to isolate and analyze critical operator tactics in simulated operational exercises, and support clear accountability in design. Complete feasibility demonstration for integrating human modeling technology in a simulation-based testbed to establish performance-based crew system requirements. Develop plan to extend human modeling and simulation technologies to make effective trade-off assessments of crew system concepts to quantify impact on performance, mission effectiveness, and affordability.

(U) $3,500 Develop and demonstrate aircrew escape subsystems to protect the aircrew member during emergency ejection in current and future high-performance fighter aircraft. Develop head/neck protection systems that will provide a decrease in head and neck injuries for crewmembers

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(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

wearing Helmet-Mounted Devices during high-speed emergency ejections. Conduct windblast testing to verify head, neck, and eye protection are provided to 600 Knots Equivalent Air Speed.

(U) $1,000 Develop and demonstrate user-tailored information management and portrayal technologies that enhance battlespace situational awareness for global-level and MAJCOM-level information operation centers to reduce decision-making bottlenecks. Continue to develop user-tailored visualizations promoting battlespace situational awareness. Develop and demonstrate tools to improve information operations planning, execution, and combat assessment within the information warfare flights of the numbered air forces. Perform cross-cultural analysis as a first step in developing a tool to support adversarial decision-making. Demonstrate the effectiveness of combat assessment tools in joint or Air Force specific exercises.

(U) $749 Develop high performance bioacoustic hearing protection technologies to achieve 40-45 dB noise attenuation for personnel working in and around aircraft. Demonstrate improved noise attenuation performance metrics in laboratory and field environments. Integrate deep insert earplug technology to achieve 35-40 dB field attenuation.

(U) $1,000 Develop and demonstrate technologies to enhance security force situational awareness and threat response time using acoustic sensors. Demonstrate that using an eight microphone array can increase signal to noise ratio for a given look angle, provide three-dimensional (3-D) sound localization, and provide a limited remote detection capability for security forces. Develop and evaluate acoustic algorithms for locating, tracking, and detecting threats. Begin to develop an information management concept for deployed security forces to improve situational awareness by using intelligent algorithms, 3-D audio, and audio symbology to code the detected threats and assist in threat intervention.

(U) $6,508 Total

(U) B. Project Change Summary

Not Applicable.

(U) C. Other Program Funding Summary ($ in Thousands)

(U) Related Activities:

(U) PE 0602202F, Human Effectiveness Applied Research.

(U) PE 0604703F, Aeromedical/Casualty Care Systems Development.

(U) PE 0604706F, Life Support Systems.

(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.

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BUDGET ACTIVITY: 03 - Advanced Technology Development	PE NUMBER AND TITLE: 0603231F Crew Systems and Personnel Protection Technology / PROJECT: 2830

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.

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

DATE: June 2001

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603231F Crew Systems and Personnel Protection Technology

PROJECT: 3257

COST ($ in Thousands)		FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
3257	Helmet-Mounted Sensory Technologies	10,804	11,532	8,627	8,907	9,848	10,489	9,061	9,254	Continuing	TBD

(U) A. Mission Description

This project develops and demonstrates advanced technologies for multi-functional helmet-mounted displays (HMD), night vision devices, and laser eye protection (LEP). Helmet-mounted tracker and display (HMT/D) technologies development will enable pilots to detect, identify, target, and launch weapons faster and more accurately. Development of improved aircrew night vision goggles (NVG) technologies will enhance aerial combat capabilities at night. This project will also develop operator interface technologies to provide protection against laser threats and hazards, and will improve pilot situational awareness and mission effectiveness.

(U) FY 2000 ($ in Thousands)

(U) $5,667 Developed and demonstrated advanced HMT/D and subsystem technologies to improve mission effectiveness and pilot situational awareness during day and night missions in all-weather conditions. These technologies help pilots to detect, identify, target, and launch weapons faster and more accurately. Integrate and demonstrate HMT/D with LEP visors and spectacles. Continued to develop and demonstrate Fighter Data Link symbology on HMT/D, and pre-planned product improvement technologies for Joint Helmet Mounted Cueing System. Continued to develop and demonstrate a high-luminance, high-resolution, low-voltage Active Matrix Organic Light Emitting Diode image source, color symbology, and an inertial head-mounted tracker.

(U) $3,880 Developed and demonstrated technologies for improved aircrew night vision goggles to increase mission effectiveness and enhance air operations by allowing the pilot to perform daytime tactics at night. Continued to develop miniature image sources and smaller format filmless image intensifier tubes to afford aircrew members a wider field-of-view, improved low-light level resolution, and reduced halo. Continued to evaluate the operational utility of panoramic night vision goggles (PNVGs) with symbology overlay. Demonstrated insertion of imagery into the PNVG in the laboratory.

(U) $1,257 Developed and demonstrated technologies that counter the laser threat, and permit the deployment and use of high-energy laser weapons. Evaluated the biological effects of laser weapons and high-energy laser systems. Completed human factors evaluation of dielectric stack and dye/dielectric stack technologies for laser eye protection against infrared and selected visible laser wavelengths. Continued developing automated laser eye protection device evaluation system for economically validating reproducibility of manufacturing processes. Initiated development of Laser Range Safety Tool for missile Test Range to support flight test of Airborne Laser and other high-energy laser systems.

(U) $10,804 Total

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BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603231F Crew Systems and Personnel Protection Technology
	PROJECT 3257

(U) A. Mission Description Continued

(U) FY 2001 ($ in Thousands)

(U)	$8,055	Develop and demonstrate advanced helmet-mounted tracker and display (HMT/D) and subsystem technologies to improve mission effectiveness and pilot situational awareness during day and night missions in all-weather conditions. Develop and demonstrate the utility of color symbology on HMT/D. Integrate and demonstrate a miniature flat display to replace cathode ray tubes in HMT/Ds. Integrate a HMT/D into the air-to-ground strike mission. Continue to develop and demonstrate a high-luminance, high-resolution, low-voltage Active Matrix Organic Light Emitting Diode image source and an inertial head-mounted tracker.
(U)	$2,163	Develop and demonstrate technologies for improved aircrew night vision goggles to increase mission effectiveness and enhance air operations by allowing the pilot to perform daytime tactics at night. Continue to develop miniature image sources and smaller format filmless image intensifier tubes to provide aircrew members a wider field-of-view, improved low-light level resolution, and reduced halo. Integrate and evaluate laser eye protection technologies with panoramic night vision goggles (PNVG). Integrate imagery insertion on PNVG for flight test.
(U)	$1,314	Develop and demonstrate technologies that counter the laser threat, and permit the deployment and use of high-energy laser weapons. Continue to evaluate the biological effects of laser weapons and high-energy laser systems. Initiate aircrew evaluation of dye and dielectric stack technologies for infrared and visible laser eye protection. Conduct optical and performance evaluations, and begin aircrew evaluations of airborne laser, and vision corrective laser eye protection (LEP) spectacles. Deliver Laser Range Safety Tool to missile test ranges to support flight testing of Airborne Laser and other high-energy laser systems.
(U)	$11,532	Total

(U) FY 2002 ($ in Thousands)

(U)	$3,630	Develop and demonstrate advanced HMT/D and subsystem technologies to improve mission effectiveness and pilot situational awareness during day and night missions in all-weather conditions. Demonstrate advanced symbology and video insertion on HMT/D for air-to-ground strike missions. Demonstrate inertial head tracker on HMT/D for air-to-ground strike missions.
(U)	$2,125	Develop and demonstrate technologies for improved aircrew night vision goggles to increase mission effectiveness and enhance air operations by allowing the pilot to perform daytime tactics at night. Demonstrate miniature image sources and smaller format filmless image intensifier tubes to provide aircrew members a wider field-of-view, improved low-light level resolution, and reduced halo effects. Demonstrate Integrated Panoramic Night Vision Goggles (IPNVG) technologies integrated with laser eye protection technologies. Continue flight evaluation of IPNVG and demonstrate imagery insertion in flight.
(U)	$2,872	Develop and demonstrate technologies that counter the multiple wavelength and agile laser threat and permit safe testing, deployment, and use of high-energy laser weapons. Continue evaluation of the biological effects of non-lethal laser weapons and high-energy laser systems. Finish

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(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

aircrew evaluation of dye/dielectric stack combination laser eye protection (LEP). Complete performance evaluation of vision-corrective prescription capability and airborne laser eye protection of dielectric stack-based LEP, and begin aircrew evaluations of these devices. Demonstrate next generation rugate technology for visible wavelength protection. Continue assessment of laser glare effects on visual performance of human subjects wearing reflective LEP compared to combined dye/dielectric stack technologies.

(U) $8,627 Total

(U) B. Project Change Summary

Not Applicable.

(U) C. Other Program Funding Summary ($ in Thousands)

(U) Related Activities:
(U) PE 0602202F, Human Effectiveness Applied Research.
(U) PE 0602102F, Materials.
(U) PE 0603112F, Advanced Materials for Weapon Systems.
(U) PE 0603319F, Airborne Laser.
(U) PE 0604706F, Life Support Systems.
(U) PE 0604201F, Common Avionics Planning/Development.
(U) PE 0207130F, F-15 Squadrons.
(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.

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DATE: June 2001

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603231F Crew Systems and Personnel Protection Technology

PROJECT: 4923

COST ($ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4923 Logistics Readiness and Sustainment	0	0	10,425	10,799	11,903	9,823	10,030	10,241	Continuing	TBD

Note: Prior to FY 2002, efforts in this project were previously accomplished in PE 0603106F, Project 2745.

(U) A. Mission Description

This project develops and demonstrates technologies that will enhance logistics, and improve the design, deployability, performance, and support of current and future weapon systems. This includes technology development to model and simulate intelligent behavior; improve the accuracy of logistics process modeling; create intelligent software agents to perfect human and logistics representation in large-scale military simulations; and create more effective logistics information systems. This project also develops and demonstrates technologies to incorporate human operator, maintenance, and support considerations into the weapon systems design process, and to make related data electronically available throughout weapon system life cycles. The resulting efforts will reduce deployment airlift and footprint requirements, improve the logistics information system, and improve the command, control, and decision making in world wide logistics management.

(U) FY 2000 ($ in Thousands)

(U) $0 FY 2000 activity reported in PE 0603106F, Project 2745.

(U) $0 Total

(U) FY 2001 ($ in Thousands)

(U) $0 FY 2001 activity reported in PE 0603106F, Project 2745.

(U) $0 Total

(U) FY 2002 ($ in Thousands)

(U) $1,838 Develop and demonstrate technologies that will enhance and streamline aircraft maintenance processes to improve the Air Force's ability to meet Air Expeditionary Force requirements by providing faster and more accurate methods of diagnosing and predicting component failures. Continue development of diagnostics capability to provide technicians with more effective tools for isolating faults on the software intensive, reconfigurable systems found on modern aircraft and advanced aircraft systems currently in development. Begin development of a prognostics capability to accurately predict when a component will fail so that parts can be replaced before failure.

(U) $4,340 Develop and demonstrate intelligent software agents and realistic human behavior models. These software agents and models will add realism and fidelity to large-scale synthetic environments and war games, and improve the user interaction with logistics information systems. Develop intelligent agents that extend the role players' ability to monitor events and execute missions, and better represent logistics functions in synthetic

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03 - Advanced Technology Development	0603231F Crew Systems and Personnel Protection Technology	4923

(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

exercises. Develop software agents that anticipate problems and offer decision options to command center personnel during mobility operations.

(U) $4,247 Develop and demonstrate logistics technologies for improved deployment operations, supportability, and planning. These technologies will enhance deployments and mobility operations. Continue to develop technology to provide wing commanders and senior logisticians with advanced logistics information and management capabilities, including rapid access to real-time resources status information, proactive problem identification, decision support aids, and process tracking. Focus will be on the information feeds required to support the wing commander and senior logisticians in effectively assessing the wing logistics support status.

(U) $10,425 Total

(U) B. Project Change Summary

Not Applicable.

(U) C. Other Program Funding Summary ($ in Thousands)

(U) Related Activities:
(U) PE 0207219F, Advanced Tactical Fighter.
(U) PE 0602201F, Aerospace Flight Dynamics.
(U) PE 0602202F, Human Effectiveness Applied Research.
(U) PE 0603721N, Integrated Diagnostic System.
(U) PE 0604708F, Generic Integrated Maintenance Diagnostics Systems.
(U) PE 0604740F, Computer Resource Management Technology.
(U) PE 0605801A, Pollution Prevention Research and Development.
(U) PE 0708011F, Manufacturing Technology.
(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.

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PE NUMBER AND TITLE: 0603231F Crew Systems and Personnel Protection Technology

PROJECT: 4924

COST ($ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
4924 Distributed Mission Training Technology	0	0	6,796	7,550	5,817	5,937	6,062	6,190	Continuing	TBD

Note: Prior to FY 2002, efforts in this project were previously accomplished in PE 0603227F, Project 2743.

(U) A. Mission Description

This project develops and demonstrates advanced training, simulation , and mission rehearsal technologies that will improve warfighter capabilities and mission readiness by enhancing operator and team performance skills. This effort includes the development of technologies that enable integration of computer models, live weapon systems, and weapon system simulators to portray the global battlespace, including all-weather, day/night flight operations, command and control, force protection, and space operations. This project develops and demonstrates advanced training and simulation technologies that will improve warfighter readiness by enhancing mission training and mission rehearsal capabilities Development and effective use of this global battlespace requires advances in training systems, interconnection, information, visual, and representation technologies. The resulting mission training and rehearsal capabilities will enhance the mission essential competencies of the combat and combat support individuals and teams that comprise the aerospace force.

(U) FY 2000 ($ in Thousands)
(U) $0 FY 2000 activity reported in PE 0603227F, Project 2743.
(U) $0 Total

(U) FY 2001 ($ in Thousands)
(U) $0 FY 2001 activity reported in PE 0603227F, Project 2743.
(U) $0 Total

(U) FY 2002 ($ in Thousands)
(U) $1,829 Advance warfighter training capabilities by developing and demonstrating representational technologies and training techniques for integrated aerospace operations training which includes training for aerospace, command and control force protection warfighters. Techniques will increase fidelity of mission training and rehearsal systems, reduce the learning time for new operators, sustain critical mission competencies, and ensure that deployed personnel have the knowledge and skills to accomplish their mission. Demonstrate training benefits of distributed mission training technology for fighter aircraft individual flying skills, fighter weapons school, and aircrew training program. Complete development of a tactical decision trainer for force protectors. Begin development of data capturing tools for crew and team performance assessment in both simulator and field environments. Design and develop technologies for realistic databases and electronic combat simulators.

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(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

(U)	$2,002	Develop and demonstrate the application of information and communications technologies for realistic mission training and mission rehearsal in a distributed simulation environment. These technologies will increase readiness training by enabling more realistic employment of weapon systems within a horizontally and vertically integrated system of sensors, command and control, and weapons platforms. Design a communication bridge to enable virtual simulators, operating at different security levels, to interact with one another in a real-time simulation environment. Develop and demonstrate enhancements to the High-Level Architecture that will enable more rapid development of simulator federations and enhanced simulator performance. Develop a testbed for command and control training research with links to existing command and control centers. Evaluate techniques for integrating operational command and control systems into the distributed mission training environment.
(U)	$1,600	Demonstrate advances in simulator visual system technologies through the development of high fidelity image generation, display, and databases. Advanced visual systems will provide operators greater visual definition to identify other aircraft, ground vehicles, roads, and bridges at realistic tactical ranges or to properly assess their aspect angle, increasing mission rehearsal capability for the warfighter. Continue development of a PC-based high resolution real-time image generator. Continue development of an ultra-high resolution laser projector for distributed mission training simulators.
(U)	$1,365	Develop and demonstrate technologies for high fidelity Night Vision Goggle (NVG) simulation to support and increase mission training, preview, and rehearsal capabilities. This development will reduce the cost of initial NVG qualification, allow for effective advanced night operation mission pretraining prior to in-aircraft training, and increase combat training realism by adding simulated weather, seasonal, and environmental changes. Test the use of an automated material classification toolset for rapid build of multi-spectral databases. This toolset may increase the capability to rapidly respond to world changes with realistic visualization of the new or changing operating areas. Evaluate effectiveness of on-line NVG and laser courseware, and assess impact of these technologies on mission effectiveness and risk management.
(U)	$6,796	Total

(U) B. Project Change Summary

Not Applicable.

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(U) C. Other Program Funding Summary ($ in Thousands)

(U) Related Activities:

(U) PE 0602202F, Human Effectiveness Applied Research.

(U) PE 0604227F, Distributed Mission Training.

(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.