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

DATE: February 2003

BUDGET ACTIVITY: 02 - Applied Research

PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies

	COST ($ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	97,543	76,347	65,662	77,571	106,600	114,444	108,071	110,383	Continuing	TBD
2401	Structures	32,007	24,995	28,925	34,734	44,465	47,415	42,596	43,511	Continuing	TBD
2403	Flight Controls and Pilot-Vehicle Interface	34,398	25,618	14,418	17,097	31,093	34,344	29,548	30,147	Continuing	TBD
2404	Aeromechanics and Integration	29,959	25,734	22,319	25,740	31,042	32,685	35,927	36,725	Continuing	TBD
4397	Air Base Technology	1,179	0	0	0	0	0	0	0	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	Continuing	TBD

Note: In FY 2002, selected efforts from Project 2401 have transferred into Projects 2403 and 2404 within this PE. In FY 2002, Project 4397 efforts transferred to PE 0602102F, Project 4915. In FY 2003, only the space-unique efforts in Project 2403 transferred to PE 0602500F, Project 5030, in conjunction with the Space Commission recommendation to consolidate all space unique activities.

(U) A. Mission Description

This program investigates, develops, and analyzes aerospace vehicle technologies in the three primary areas of structures, controls, and aeromechanics. First, advanced structures concepts are explored and developed to exploit new materials, fabrication processes, and design techniques. Second, flight control technologies are developed and simulated for both manned and unmanned aerospace vehicles. Third, the aeromechanics of advanced aerodynamic vehicle configurations are developed and analyzed through simulations, experiments, and multidisciplinary analysis. Resulting technologies reduce life cycle costs and improve the performance of existing and future manned and unmanned aerospace vehicles. Note: In FY 2003, Congress added $1.2 million for intelligent flight control simulation research laboratory.

(U) B. Budget Activity Justification

This program is in Budget Activity 2, Applied Research, since it develops and determines the technical feasibility and military utility of evolutionary and revolutionary aerospace vehicle technologies.

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

		FY 2002	FY 2003	FY 2004	Total Cost
(U)	Previous President's Budget	98,785	78,789	108,212	
(U)	Appropriated Value	99,415	79,989		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-630	-3,150		
	b. Small Business Innovative Research	-1,868			
	c. Omnibus or Other Above Threshold Reprogram		-492		
	d. Below Threshold Reprogram	1,100			
	e. Rescissions	-474			
(U)	Adjustments to Budget Years Since FY 2003 PBR			-42,550	
(U)	Current Budget Submit/FY 2004 PBR	97,543	76,347	65,662	TBD

(U) Significant Program Changes:

Changes to this program since the previous President's Budget are due to increased funding for technologies with higher Air Force priorities.

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

DATE: February 2003

BUDGET ACTIVITY: 02 - Applied Research

PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies

PROJECT: 2401

COST ($ in Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
2401	Structures	32,007	24,995	28,925	34,734	44,465	47,415	42,596	43,511	Continuing	TBD

(U) A. Mission Description

This project develops advanced structures concepts to exploit new materials and fabrication processes and investigates new structural concepts and design techniques. Resulting technologies strengthen and extend the life of current and future manned and unmanned aerospace vehicle structures. Payoffs to the warfighter include reduced weight and cost, as well as improved operability and maintainability of aerospace vehicles.

(U) FY 2002 ($ in Thousands)

(U) $0 Accomplishments/Planned Program

(U) $2,859 Developed economic service life analysis for current and future aircraft, enhancing capability, component replacement, and technology direction. Continued development of unitized structural concepts and multidisciplinary optimization methodologies that enhance affordability and decrease vulnerability for current and future aerospace vehicles. Incorporated newly developed analysis tools into life prediction and failure analysis software.

(U) $5,080 Developed analytical certification methodologies for the incorporation of advanced methods, concepts, and manufacturing technologies into legacy aircraft components and future airframe designs. Improved the air-worthiness certification process for aircraft subjected to dynamic aeroelastic loads with high fidelity models.

(U) $6,941 Continued development of structural concepts, design, and analysis methods that enable the integration of structure with other airframe functions to reduce cost and increase the survivability of future systems. Concepts include adaptive structures for varying moldline, subsystems hardware, and antennae contained within the loadbearing structure.

(U) $17,127 Developed technologies that incorporate advanced materials as well as passive and active cooling to withstand extreme flight environments. Technologies will improve durability of existing and future aerospace vehicle structures resulting in reduced cost and increased life. Concepts included advanced, durable, all-weather thermal protection systems, attachment techniques, vehicle health monitoring and health management, integrated thermal protection systems, hot primary structures, hybrid structures, unitized structures, joining concepts, and cryogenic and non-cryogenic tank structures.

(U) $32,007 Total

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BUDGET ACTIVITY: 02 - Applied Research	PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies
PROJECT: 2401	

(U) A. Mission Description Continued

(U) FY 2003 ($ in Thousands)

(U)	$0	Accomplishments/Planned Program
(U)	$7,605	Develop economic service life analysis for current and future aircraft, enhancing capability, component replacement, and technology direction. Continue development of unitized structural concepts and multidisciplinary optimization methodologies that enhance affordability and decrease vulnerability for current and future aerospace vehicles. Incorporate newly developed analysis tools into life prediction and failure analysis software.
(U)	$4,020	Develop analytical certification methodologies for the incorporation of advanced methods, concepts, and manufacturing technologies into legacy aircraft components and future vehicle designs. Improve the air-worthiness certification process for aircraft subjected to dynamic aeroelastic loads with high fidelity models.
(U)	$1,842	Continue development of structural concepts, design, and analysis methods that enable the integration of structure with other airframe functions to reduce cost and increase survivability of future systems. Concepts include adaptive structures for varying moldlines, subsystems hardware, and antennae contained within loadbearing structures.
(U)	$11,528	Develop technologies that incorporate advanced materials as well as passive and active cooling to withstand extreme flight environments. Technologies will improve durability of existing and future aerospace vehicle structures resulting in reduced cost and increased life. Concepts include advanced, durable, all-weather primary structures, hybrid structures, unitized structures, joining concepts, and cryogenic/non-cryogenic tank structures.
(U)	$24,995	Total

(U) FY 2004 ($ in Thousands)

(U)	$0	Accomplishments/Planned Program
(U)	$7,187	Develop economic service life analysis and structural design tools for current and future air vehicles, enhancing capabilities, component replacement, and technology direction. Continue development of unitized structural concepts and multidisciplinary optimization methodologies that enhance affordability and decrease vulnerability for current and future air vehicles. Continue to incorporate newly developed analysis tools into life prediction and failure analysis. Complete reliability-based design tools for advanced air vehicle components and concepts.
(U)	$7,780	Continue to develop analytical certification methodologies for the incorporation of advanced methods, concepts, diagnostic techniques, and manufacturing technologies into legacy aircraft components and future vehicle designs. Improve the air-worthiness certification process for air vehicles subject to dynamic loads and with high fidelity models. Complete the initial development of analytical certification concepts for the insertion of structural components.
(U)	$5,742	Continue to develop concepts, design, and analysis methods and components that enable the integration of structures with other airframe

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003
BUDGET ACTIVITY: 02 - Applied Research	PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies / PROJECT: 2401

(U) A. Mission Description Continued

(U) FY 2004 ($ in Thousands) Continued

functions to reduce cost and weight, as well as to increase the survivability of future systems. Continue the development of concepts that include adaptive structures, subsystem hardware, and antenna integration into load-bearing structures to create multifunction or ultra-lightweight concepts.

(U) $8,216 Develop technologies that will incorporate advanced materials and design concepts for the creation of an integrated air vehicle structure that can withstand extreme flight environments. Technologies will improve durability of existing and future air vehicle structures resulting in reduced cost and increased life. Complete the development of assessment methodologies for air vehicle assessment.

(U) $28,925 Total

(U) B. Project Change Summary

Not Applicable.

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

(U) Related Activities:
(U) PE 0602102F, Materials.
(U) PE 0603112F, Advanced Materials for Weapon Systems.
(U) PE 0603211F, Aerospace Technology Dev/Demo.
(U) PE 0603333F, Unmanned Air Vehicle Dev/Demo.
(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.

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

DATE: February 2003

BUDGET ACTIVITY: 02 - Applied Research

PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies

PROJECT: 2403

COST ($ in Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
2403	Flight Controls and Pilot-Vehicle Interface	34,398	25,618	14,418	17,097	31,093	34,344	29,548	30,147	Continuing	TBD

Note: Beginning in FY 2002, selected efforts from Project 2401 have been moved into Projects 2403 and 2404. In FY 2003, the space unique tasks in Project 2403 will be transferred to PE 0602500F, Project 5030, in conjunction with the Space Commission recommendation to consolidate all space unique activities.

(U) A. Mission Description

This project develops technology to enable maximum affordable capability from manned and unmanned aerospace vehicles. Advanced flight control technologies are developed for maximum vehicle performance throughout the flight envelope and simulated in virtual environments. Resulting technologies contribute significantly towards the development of reliable autonomous unmanned air vehicles, space access systems with aircraft-like operations, and extended-life legacy aircraft. Payoffs to the warfighter include enhanced mission effectiveness, optimized flight safety, increased survivability, improved maintenance, and decreased size, weight, and cost. Leverages a network of synthetic environments for evaluation of advanced concepts.

(U) FY 2002 ($ in Thousands)

(U) $0 Accomplishments/Planned Program

(U) $3,982 Developed and assessed advanced control mechanization technologies to provide highly reliable operation for manned and unmanned systems at significantly reduced size, weight, and cost. Completed laboratory demonstrations of a fiber optic-based vehicle management system and optical air data system components. Developed validation and verification techniques for complex, adaptive, and autonomous control software. Assessed control mechanization technologies for extending the effective life of legacy aircraft.

(U) $8,400 Developed and assessed control automation techniques and algorithms to enable the safe and interoperable application for formations of manned and unmanned vehicle systems. Concepts will also provide mission responsiveness and adaptability for improved operational effectiveness of manned and unmanned systems. Continued development and test of intelligent-agent software providing package-level coordination and health monitoring and management for aerospace vehicles. Continued the simulation analysis of automated aerial refueling system technologies. Completed analysis and specification of an on-board sensor suite for safe operation of unmanned vehicles in proximity of other manned and unmanned air vehicles.

(U) $6,657 Developed new flight control design methods and criteria that provide air combat advantages by increasing performance and decreasing vulnerability and cost. Continued development of a new intelligent/learning reconfigurable controller to enable continued air vehicle operation in the event of damage or failure. Integrated with on-line route planner and systems diagnostics for unmanned vehicle fault tolerant, autonomous operations. Developed integrated adaptive guidance and control systems for high-and ultra-high-speed aerospace vehicles.

(U) $6,199 Developed advanced flight control technology to enable aircraft-like operations for affordable on-demand military access to space. Continued

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE: February 2003
BUDGET ACTIVITY: 02 - Applied Research	PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies / PROJECT: 2403

(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

development and analysis of affordable, lightweight vehicle/health monitoring and management systems, integrated with critical guidance and navigation algorithms for high and ultra-high-speed aerospace vehicles. Developed parameters for health monitoring and management data collection, and developed prognostic algorithms.

(U) $8,417 Assessed the value of air vehicle technologies to future aerospace systems through the development and utilization of in-house tools, systems, and processes for simulation-based research and development. Continued development of virtual simulations for unmanned air vehicles used in validating autonomous control algorithms for mixed manned and unmanned air vehicle operations. Enhanced simulation and analysis capabilities to project life cycle cost impacts. Developed the capability to virtually simulate mission utility of next generation aerospace vehicles for long-range strike.

(U) $743 Initiated Congressionally-directed effort for advanced comprehensive engineering simulator.

(U) $34,398 Total

(U) FY 2003 ($ in Thousands)

(U) $0 Accomplishments/Planned Program

(U) $1,910 Develop and assess advanced control mechanization to provide highly reliable operation for manned and unmanned systems at significantly reduced size, weight, and cost. Demonstrate validation and verification techniques for complex, adaptive, and autonomous control software. Assess mirco-effector technologies for lightweight, long endurance air vehicle applications. Develop real-time fault compensation using an integrated prognostic health management system.

(U) $11,781 Develop and assess novel control automation techniques and algorithms to enable the safe and interoperable application of unmanned vehicle systems. Concepts will also provide mission responsiveness and adaptability for improved operational effectiveness of manned and unmanned systems as well as mixed air vehicle operations. Conduct feasibility assessments of an automated refueling systems concept. Develop reliability and performance analysis of self-organizing, distributed control of multi-unmanned vehicle packages.

(U) $2,531 Develop improved flight control design methods and criteria that provide air combat advantage by increasing performance and decreasing vulnerability and cost. Complete development of adaptive guidance and control architectures for high-speed vehicles. Develop a cooperative control theory to optimize multi-ship trajectories.

(U) $8,209 Assess the value of air vehicle technologies to future aerospace systems, through the development and utilization of in-house tools, systems, and processes for simulation-based research and development. Complete the development of virtual simulation for unmanned air vehicles used in validating autonomous control algorithms for mixed manned and unmanned air vehicle operations. Continue to enhance simulation and analysis capabilities through the incorporation of cost models to determine the affordability of new technologies. Continue development of capability to

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE: February 2003
BUDGET ACTIVITY: 02 - Applied Research	PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies
PROJECT: 2403	

(U) A. Mission Description Continued

(U) FY 2003 ($ in Thousands) Continued

virtually simulate future strike aircraft.

(U) $1,187 Initiated Congressionally-directed effort for intelligent flight control simulation research laboratory.

(U) $25,618 Total

(U) FY 2004 ($ in Thousands)

(U) $0 Accomplishments/Planned Program

(U) $5,735 Develop and assess advanced control mechanization to provide highly reliable operations for manned and unmanned air vehicles at significantly reduced size, weight, and cost. Continue to develop demonstrations of validation and verification techniques for complex, adaptive, and autonomous control software. Define the sensing requirements for unmanned systems situational awareness in air operations.

(U) $4,661 Continue to develop and assess novel control automation techniques and algorithms to enable the safe and interoperable application of manned and unmanned air vehicle systems. Concepts will also provide mission responsiveness and adaptability for improved operational effectiveness for manned and unmanned air vehicles as well as mixed air vehicle operations. Investigate feasibility of biology inspired control techniques to simplify unmanned air vehicle system autonomy implementations. Continue to enhance reliability and performance analysis of self-organizing, distributed control of multi-unmanned air vehicles. Develop intelligent situational awareness algorithms to implement autonomous airspace operations control for unmanned air vehicle systems.

(U) $4,022 Continue to assess the value of air vehicle technologies to future air and space systems, through the development and utilization of in-house tools, systems, and processes for simulation-based research and development. Conduct simulation assessments of advanced unmanned air vehicle concepts. Continue to enhance simulation and analysis capabilities through incorporation of cost models to determine the affordability of new technologies.

(U) $14,418 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 0602204F, Aerospace Sensors.

(U) PE 0603211F, Aerospace Technology Dev/Demo.

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BUDGET ACTIVITY: 02 - Applied Research	PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies
PROJECT: 2403	

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

(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.

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

DATE: February 2003

BUDGET ACTIVITY: 02 - Applied Research

PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies

PROJECT: 2404

COST ($ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
2404 Aeromechanics and Integration	29,959	25,734	22,319	25,740	31,042	32,685	35,927	36,725	Continuing	TBD

Note: Beginning in FY 2002, selected efforts from Project 2401 have moved into Projects 2403 and 2404.

(U) A. Mission Description

This project develops aerodynamic configurations of a broad range of revolutionary, affordable air vehicles. It matures and applies modeling and numerical simulation methods for fast and affordable aerodynamics prediction, and integrates and demonstrates multidisciplinary advances in airframe-propulsion, airframe-weapon, and air vehicle control integration. Technologies developed will greatly enhance warfighter capability in aircraft, missiles, and high-speed aerospace vehicles. The payoffs from these technology programs include lower vehicle costs (both production, and operations and support costs), increased payload and range capability, and improved supportability, safety, and survivability of aerospace vehicles.

(U) FY 2002 ($ in Thousands)

(U) $0 Accomplishments/Planned Program

(U) $10,975 Developed and assessed aeronautical technologies that enable a broad use of unmanned air vehicles in future missions to reduce life cycle cost and decrease human risk. Completed development of tools and techniques for predicting and optimizing aerodynamic performance and survivability of long duration unmanned air vehicles. Continued preliminary development of conformal inlet designs that improve airflow to engines while providing low signature for increased survivability. Continued development of signature compatible, high lift wings for long duration surveillance missions.

(U) $4,042 Developed design tools that permit quicker and more affordable certification of aerodynamic enhancements to extend the operational life of the current fleet. Continued development of analysis tools to accelerate the aerodynamic integration of new and existing weapons with current aircraft to enhance their warfighting ability. Continued to enhance computer design and analysis code that reduces the need for expensive flight-testing.

(U) $10,045 Developed and assessed aerospace technologies that enable ultra-high-speed flight and low-cost access to orbit to permit global reach. Continued comparative analyses of aerospace vehicle configurations for next generation long-range strike to project global power from the continental United States bases. Explored integrated airframe concepts for high-speed aerospace vehicles. Continued investigation into techniques to generate and control a plasma flow field over high-speed vehicles to significantly reduce drag. Developed computational, multidisciplinary, experimental, and analytical tools to simulate and control the flow fields around advanced concepts for ultra-high-speed aerospace vehicles in extreme flight environments. Continued development of complex configurations that mitigate the extreme thermal environment under which high-speed aerospace vehicles operate. Developed techniques to carry and deploy weapons from high-speed aerospace vehicles.

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BUDGET ACTIVITY: 02 - Applied Research	PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies	PROJECT: 2404

(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands) Continued

(U)	$4,897	Developed and evaluated critical aeronautical technologies that enable directed energy weapons to be carried on future air vehicles to improve combat effectiveness. Completed analyses of integration of directed energy weapons on the total air vehicle system identifying impacts to the flight control system, secondary power subsystem, and aerodynamic configuration. Completed development of tools that establish the military impact of directed energy weapons when installed on viable air platforms on future engagements. Developed aircraft techniques to enhance energy beam transmission through the complex, turbulent aerodynamic environment surrounding aircraft, enabling the use of directed energy weapons from high-speed, maneuvering aircraft.
(U)	$29,959	Total

(U) FY 2003 ($ in Thousands)

(U)	$0	Accomplishments/Planned Program
(U)	$5,451	Develop and assess aeronautical technologies that enable the broad use of unmanned air vehicles in future missions to reduce life cycle costs and decrease human risk. Continue preliminary development of conformal inlet designs that improve airflow to engines while providing low signature for increased survivability. Continue development of signature compatible, high lift wings for long duration surveillance missions.
(U)	$5,625	Develop design tools that permit quicker and more affordable certification of aerodynamic enhancements to extend the operational life of the current fleet. Continue development of analysis tools to accelerate the aerodynamic integration of new and existing weapons with the current aircraft to enhance their warfighting ability.
(U)	$13,218	Develop and assess aerospace technologies that enable high-speed flight to permit global reach. Develop experimental capability to generate and control plasma flows. Develop analytic methods for modeling the plasma flow field over high-speed vehicles to significantly reduce drag. Continue development of complex configurations that mitigate the extreme thermal environment under which high-speed aerospace vehicles operate. Continue development of techniques to carry and deploy weapons from aerospace vehicles operating at high speeds and high temperatures.
(U)	$1,440	Develop and evaluate critical aeronautical technologies that enable directed energy weapons to be carried on future air vehicles to improve combat effectiveness. Continue development of aircraft techniques to enhance energy beam transmissions through the complex, turbulent aerodynamic environment surrounding aircraft, enabling the use of directed energy weapons from high-speed, maneuvering aircraft.
(U)	$25,734	Total

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PROJECT: 2404	

(U) A. Mission Description Continued

(U) FY 2004 ($ in Thousands)

(U)	$0	Accomplishments/Planned Program
(U)	$4,168	Develop and assess aeronautical technologies that enable the broad use of unmanned air vehicles in future missions, including offensive missions, to reduce life cycle costs and decrease human risk. Complete development of signature compatible, high lift wings for long duration surveillance missions. Complete development of technology to improve engine nozzle design for increased survivability. Continue to perform mission assessment and develop low-cost unmanned air vehicle concepts to perform tactical surveillance. Apply flow control techniques to complex air vehicle designs to achieve reduced drag and improve performance.
(U)	$2,528	Develop design tools that permit quicker and more affordable certification of aerodynamic enhancements to extend the operational life of the current fleet of manned air vehicles. Continue enhancement of computer design and analysis code that reduces the need for expensive flight-testing, including completion of a robust unstructured mesh generation and adaption framework.
(U)	$5,658	Develop and assess aeronautical technologies that enable revolutionary re-fueling and transport aircraft designs for rapid global mobility. Develop technologies that enable multiple roles and missions for support aircraft. Complete innovative designs for re-fueling and transport aircraft to improve range and payload capacity. Complete investigation of an aerodynamic flow field behind refueling aircraft to improve modeling and simulation.
(U)	$9,965	Continue to develop and evaluate critical aeronautical technologies that enable directed energy weapons to be carried on future air vehicles to improve combat effectiveness. Complete development of air vehicle techniques to enhance energy beam transmissions through the complex, turbulent aerodynamic environment surrounding high-speed, maneuvering aircraft. Continue analysis of tactical utility of a high energy laser on fighter aircraft. Perform flight test measurements of the actual aero-optics effects encountered when employing a laser weapon on a fighter aircraft. Perform evaluation and demonstration of scalable technologies leading towards a high-energy laser weapon.
(U)	$22,319	Total

(U) B. Project Change Summary

Not Applicable.

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

(U) Related Activities:

(U) PE 0603211F, Aerospace Technology Dev/Demo.

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

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PROJECT: 2404	

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.

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

DATE: February 2003

BUDGET ACTIVITY: 02 - Applied Research

PE NUMBER AND TITLE: 0602201F Aerospace Vehicle Technologies

PROJECT: 4397

COST ($ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
4397 Air Base Technology	1,179	0	0	0	0	0	0	0	Continuing	TBD

In FY 2002, efforts were transferred to PE 0602102F, Project 4915.

(U) A. Mission Description

Prior to FY 2003, this project developed air base technologies for fixed and bare base operations, including airfield pavements, energy systems, air base survivability, air base recovery, protective shelter systems, airfield fire protection, and crash rescue.

(U) FY 2002 ($ in Thousands)
(U) $0 Accomplishments/Planned Program
(U) $1,179 Continued Congressionally-directed effort for weapon systems logistics, deployed base systems technology, and force protection.
(U) $1,179 Total

(U) FY 2003 ($ in Thousands)
(U) $0 Accomplishment/Planned Program
(U) $0 No Activity
(U) $0 Total

(U) FY 2004 ($ in Thousands)
(U) $0 Accomplishments/Planned Program
(U) $0 No Activity
(U) $0 Total

(U) B. Project Change Summary

Not Applicable.

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

(U) Related Activities:
(U) PE 0603211F, Aerospace Technology Dev/Demo.
(U) This project was coordinated through the Reliance process to harmonize efforts and eliminate duplication.

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(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.