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

DATE: June 2001

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603253F Advanced Sensor Integration

	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	10,069	5,301	0	0	0	0	0	0	Continuing	TBD
2735	Avionics Integration Technology	6,840	1,974	0	0	0	0	0	0	Continuing	TBD
666A	Sensor Fusion & Integration Tech	3,229	3,327	0	0	0	0	0	0	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

Note: In FY 2001, most of the work performed in this PE, Project 2735, was moved into PE 0603726F, Project 4850. In FY 2002, the remainder of the work in this PE, Project 2735, transfers to PE 0603203F, Project 665A. In FY 2001, some work in this PE, Project 666A, transferred to PE 0603726F, Project 4850. In FY 2002, the remainder of the work in this PE, Projects 2735 and 666A, transfers to PE 0603203F, Project 665A. FY 2003 - FY 2007 budget numbers do not reflect the DOD Strategy Review results.

(U) A. Mission Description

This program develops and demonstrates advanced radio frequency sensors and integration techniques for intelligence, surveillance, and reconnaissance functions. Specifically, this program develops and improves: digital receiver components for air moving target indication and advanced unmanned aerial vehicle applications; advanced Global Positioning System receivers and anti-jam techniques for aerospace platforms; aircraft communications, navigation, and identification technologies; technologies for low-probability-of-detection communication between aircraft to improve aircrew situational awareness; and collaborative engineering environments to evaluate methods for integrating on-board and off-board sensor data.

(U) B. Budget Activity Justification

This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for existing system upgrades and/or new sensor and electronic combat system developments that have military utility and address warfighter needs.

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

		FY 2000	FY 2001	FY 2002	Total Cost
(U)	Previous President's Budget (FY 2001 PBR)	9,327	5,350	5,084	
(U)	Appropriated Value	9,443	5,350		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-3			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE June 2001
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603253F Advanced Sensor Integration

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

		FY 2000	FY 2001	FY 2002	Total Cost
	b. Small Business Innovative Research	-223			
	c. Omnibus or Other Above Threshold Reprogram	-711			
	d. Below Threshold Reprogram	1,662			
	e. Rescissions	-99	-49		
(U)	Adjustments to Budget Years Since FY 2001 PBR			-5,084	
(U)	Current Budget Submit/FY 2002 PBR	10,069	5,301	0	TBD

(U) Significant Program Changes:

Changes to this program since the previous President's Budget reflect the transfer of work to align projects with the Air Force Research Laboratory organization.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE: June 2001
BUDGET ACTIVITY: 03 - Advanced Technology Development	PE NUMBER AND TITLE: 0603253F Advanced Sensor Integration — PROJECT: 2735

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
2735 Avionics Integration Technology	6,840	1,974	0	0	0	0	0	0	Continuing	TBD

Note: In FY 2001, most of the work performed in this project moved to PE 0603726F, Project 4850. In FY 2002, the remainder of this effort transfers to PE 0603203F, Project 665A.

(U) A. Mission Description

This project develops and demonstrates advanced radio frequency (RF) sensors for integrated intelligence, surveillance, and reconnaissance (ISR) functions on aerospace platforms. These advanced technologies will enable sensors to gather and process information from air- and space-based assets, integrate on-board and off-board sensor data, and perform sensor management functions.

(U) FY 2000 ($ in Thousands)

(U) $2,036 Developed and demonstrated advanced modular, sharable RF sensor technologies for aerospace sensor suites performing ISR applications. Designed a dual-use modular, digital RF receiver. Conducted trade studies for air moving target indication.

(U) $2,600 Developed technologies for collecting and integrating on- and off-board sensors over multiple platforms in a collaborative engineering environment, reducing cost and risk of advanced technology demonstration. Evaluated on-board and off-board sensors and multiple platforms in a collaborative engineering environment. (In FY 2001, this work transferred to PE 0603726F, Project 4850.)

(U) $804 Developed and demonstrated technologies to support maximum use of existing avionics software together with new software in real-time environments. Transitioned these technologies to fighter and transport aircraft. (In FY 2001, this work transferred to PE 0603726F, Project 4850.)

(U) $1,400 Developed and demonstrated advanced architecture concepts to support seamless information flow and fusion for application in space and unmanned aerial vehicles (UAVs). Developed UAV architecture concepts applicable to multiple UAV applications. Developed an Assured Space Access Architecture (ASAA) for the space maneuver vehicle as well as the command and control information infrastructure needed for ASAA. (In FY 2001, this work transferred to PE 0603726F, Project 4850.)

(U) $6,840 Total

(U) FY 2001 ($ in Thousands)

(U) $1,974 Develop and demonstrate advanced modular, sharable digital RF sensor technologies for aerospace sensor suites performing ISR applications. Fabricate and test dual-use, modular, digital RF receiver components for multimode radar operation. (In FY 2002, this work transfers to PE 0603203F, Project 665A.)

(U) $1,974 Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE June 2001
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603253F Advanced Sensor Integration	PROJECT 2735

(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands)

(U)	$0	Effort transfers to PE 0603203F, Project 665A.
(U)	$0	Total

(U) B. Project Change Summary

Not Applicable.

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

(U) Related Activities:
(U) PE 0603204F, Aerospace Sensors.
(U) PE 0603203F, Advanced Aerospace Sensors.
(U) PE 0603270F, Electronic Combat 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.

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

DATE: June 2001

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603253F Advanced Sensor Integration

PROJECT: 666A

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
666A	Sensor Fusion & Integration Tech	3,229	3,327	0	0	0	0	0	0	Continuing	TBD

Note: In FY 2001, some work in this project transferred to PE 0603726F, Project 4850. In FY 2002, the remainder of this effort transfers to PE 0603203F, Project 665A.

(U) A. Mission Description

This project develops and demonstrates advanced reference and information transmission technologies required for precise navigation and targeting and reliable information links for future Air Force information architectures. Specifically, this project develops the advanced techniques for exploiting and protecting the capabilities of the Global Positioning System (GPS) to provide highly accurate reference data for precision targeting and location of enemy air defense radars. In addition, this project develops high-speed, jam-resistant, low-probability-of-detection information transmission technologies and techniques to improve overall aircrew situational awareness, reduce electromagnetic signatures of navigation and communication systems, and increase aircraft survivability. The focus is on transitioning transceivers, inertial components, and navigation system technology into air vehicles. Technologies demonstrated under this project are needed for real-time information-in-the-cockpit, stealth operations, precision targeting and strike, timely bomb damage assessment, force multiplication through multiplatform shared resources, and supportable weapon systems.

(U) FY 2000 ($ in Thousands)

(U) $2,429 Developed reference and receiver technologies to maximize GPS jam resistance, positional accuracy, and exploitation techniques to improve offensive and defensive combat capabilities. Developed integration methods, receiver processor technology, and direct acquisition techniques. Evaluated GPS modernization candidate military signals for exploitable vulnerabilities.

(U) $800 Developed and evaluated multi-user, medium to high capacity airborne platform information transfer technology to provide jam-resistant, lower probability-of-detection exchange of information between aircraft and cooperating space, airborne, and surface communication assets. Fabricated a space-based air traffic communications and positioning brassboard. (In FY 2001, this work transferred to PE 0603726F, Project 4850.)

(U) $3,229 Total

(U) FY 2001 ($ in Thousands)

(U) $3,327 Develop technologies to maximize GPS jam resistance, positional accuracy, and exploitation techniques to improve offensive and defensive combat capabilities. Refine GPS receiver processing technology and direct signal acquisition techniques. Continue evaluation of GPS modernization candidate military signals for exploitable vulnerabilities. (In FY 2002, this effort transfers to PE 0603203F, Project 665A.)

(U) $3,327 Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE June 2001
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603253F Advanced Sensor Integration
PROJECT 666A	

(U) A. Mission Description Continued

(U) FY 2002 ($ in Thousands)

(U)	$0	Effort transfers to PE 0603203F, Project 665A.
(U)	$0	Total

(U) B. Project Change Summary

Not Applicable.

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

(U) Related Activities:
(U) PE 0602204F, Aerospace Sensors.
(U) PE 0602782A, Command, Control, Communications Technology.
(U) PE 0602232N, Navy C3 Technology.
(U) PE 0603203F, Advanced Aerospace Sensors.
(U) PE 0603270F, Electronic Combat 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.