PE NUMBER: 0303140F

PE TITLE: Information Systems Security Program

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program

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	21,675	24,325	37,667	87,831	117,756	225,098	383,740	267,090	Continuing	TBD
4579 Information Warfare	5,704	11,457	2,826	5,031	5,746	6,127	6,199	5,058	Continuing	TBD
4861 Cryptologic 2000	0	0	4,180	3,284	3,311	3,540	3,599	3,629	Continuing	TBD
4871 Information Operations Technology	1,477	2,965	758	502	815	991	9,022	9,337	Continuing	TBD
5100 Cryptographic Modernization	0	0	23,533	72,461	102,792	207,797	357,983	241,867	Continuing	TBD
7820 Computer Security RDT&E: Firestarter	14,494	9,903	6,370	6,553	5,092	6,643	6,937	7,199	0	0
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

(U)   **A. Mission Description**

This program provides the capability to protect and defend USAF Command, Control, Communications, Computers, and Intelligence, Surveillance, and Reconnaissance (C4ISR) and Weapon Systems from Information Warfare (IW) attacks; and to recover from those attacks. Primarily, the project does research and development of information protection tools and transitions them to operational systems. The 33140 Program Element consists of five complimentary BPACS. The Information Warfare BPAC provides the acquisition community and operational warfighters the ability to manage their own risks relative to mission, task, threat, and vulnerability information; and to mitigate IW risks based on rank-ordered countermeasure recommendations. The Info Ops (IO) Technology BPAC concentrates on transitioning state-of-the-art IO capabilities to the warfighter through demonstrations of those technologies and rapid prototyping of warfighter tools. It also funds the IW MIssion Area Team (MAT), the Information Warfare Solution Analysis Intergrated Product Team (IPT) (previously known as the IW Technology PLanning IPT [IW TPIPT]), and the Panther Den program office. Two development efforts are in the Cryptologic area. One effort will allow the AF to migrate from the current legacy manual system of generation, distribution, accounting, and material management of AF cryptographic keying materials to the new Electronic Key Management System being acquired by NSA. The second cryptologic effort will be part of a larger AF Crypto Modernization Program to upgrade algorithms, microchips, and hardware. The computer security project directs the R&D of information protection technology and tools to defend C4ISR systems, with emphasis on computer and network systems security, damage assessment and recovery, and multi-level systems security. It provides access control, integrity, assured services and meets warfighter's requirements.

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BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program

(U) **B. Budget Activity Justification**

This program is in budget activity 7, Operational System Development, because it addresses the development and transition of information security, protection and defensive capabilities and technologies.

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

		FY 2002	FY 2003	FY 2004	Total Cost
(U)	Previous President's Budget	20,053	9,353	9,460	TBD
(U)	Appropriated Value	20,536	24,753		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-483	-166		
	b. Small Business Innovative Research	-561			
	c. Omnibus or Other Above Threshold Reprogram				
	d. Below Threshold Reprogram	2,289			
	e. Rescissions	-106	-262		
(U)	Adjustments to Budget Years Since FY 2003 PBR			28,207	
(U)	Current Budget Submit/FY 2004 PBR	21,675	24,325	37,667	TBD

(U) Significant Program Changes:

FY03: Congressional $3.8M for continued management of the Cyber Lighthouse Security Technology Program; $3.5M add for management of the Center for Information Assurance (IA) Security; $1.0M add for Enabling Technologies; $5.1M add for continued management of the WISE; and $2.0M for the IO Technology Database Project.

FY04: Cryptographic Modernization, established for a DoD downward-directed program to replace upgrade, and modernize its aging cryptographic algorithms, chips, and crypto devices.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4579

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
4579 Information Warfare	5,704	11,457	2,826	5,031	5,746	6,127	6,199	5,058	Continuing	TBD

(U)   A. Mission Description

Builds information warfare solutions for AF Command and Control (C2), Intelligence, Surveillance, and Reconnaissance (ISR) systems. The project provides the acquisition community and operational warfighters the ability to manage the IW risks to their missions and operational tasks based on asset threat and vulnerability information. Provides decision-makers with countermeasure recommendations, rank-ordered based on operational utility and relative cost. Looking across all assessments conducted on AF systems, the project also provides the USAF a unique system-of-systems perspective for managing shared IW risks.

IW Solutions Analysis Integrated Product Team (IW SA IPT) supports modernization planning for IW Mission Area and Solutions Analysis Processes. Continuously identifies and evaluates commercial and Government inventory of available products that can be used to meet IW mission deficiencies. Information Warfare Architectures provide architectural solutions that result in systems designed with IW fundamentals. Provides Government laboratories and private industry guidance on new technologies needed for the next 10 to 25 years.

Demonstrate and migrate Attack Tree Methodology to AF networks to provide improved situational awareness during cyber attacks. The first phase of this project is to incorporate the knowledge of AF networks and national level cyber vulnerabilities databases and perform an Attack Tree analysis of the networks. The analysis will provide AF network administrators attack paths into their networks. The second phase of this project is to monitor real time cyber attack information and provide intelligent assessments of the type of the cyber attack and end goals for the cyber attack.

 Common Access Card (CAC) concept exploration and prototyping of wireless technologies: Studies, analysis, and prototype development related to integrating the DOD CAC and emerging wireless infrastructure technologies in support of information assurance. Reports and prototypes developed will be used for risk reduction and technology migration. Technologies to be studied will include wireless infrastructure components such as Blackberry, Bluetooth and wireless local area networks.

(Technical work done under Cyberlighthouse. Received JEFX02 money for demonstrations.) Continue Integrated SATCOM Interference Detection and Response (ISIDR) concept exploration, prototyping, and demonstration. During JEFX02, ISIDR successfully demonstrated that this technology can quickly identify when unprotected C4ISR SATCOM jamming occurs and characterize the jamming signal. Due to this success, further investigations and demonstrations will be conducted with inputs from JEFX02 participants. Results from this investigation will provide the warfighter with C4ISR situational awareness of SATCOM jamming. Investigate unprotected C4ISR SATCOM jammer excision technology leading to prototype demonstration. This technology is being investigated in concert with the SATCOM

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4579

(U) **A. Mission Description Continued**

interference detection and characterization. Successful demonstration of this technology and subsequent developments could provide the warfighter unfettered C4ISR unprotected SATCOM during real world operations.

Cyber Lighthouse: Lighthouse (a Congressional Plus-up) is a cyber security research and development program managed by the Air Forces HQ Electronic Systems Center (ESC). The work under Lighthouse is performed by three Federally Funded Research and Development Centers - MITRE (Mass.), Carnegie Mellon University's Software Engineering Institute (PA), and MIT/Lincoln Lab (Mass.). The program identifies information assurance (IA) gaps in systems, develops and validates new technological countermeasures, and seeks to rapidly transition these solutions to operational users. It is designed to address those research needs that are not currently being addressed by other sources. In some cases, it simply involves investigating the feasibility of a cyber technology. In others, the effort will actually include the development and prototype of a system that will resolve a known vulnerability.

The Cyber Lighthouse effort has included such initiatives as the Integrated Satellite Communications Interference Detection and Response System (ISIDR), which was successfully tested in cooperation with Spiral 3 of the Joint Expeditionary Force Experiment (JEFX 02). The ISIDR prototype demonstrated the ability to rapidly detect and characterize interference on unprotected SATCOM links. These links are used to provide network connectivity (SIPRNET, NIPRNET, and JWICS), Intel Surveillance and Reconnaissance (ISR) connectivity (Predator, Global Hawk and U-2), and Beyond Line of Sight air picture connectivity to Air Operations Centers (AOCs). On a separate Lighthouse effort, research is being performed to aid in identifing a solution for a demonstrated Global Positioning System timing vulnerability. Under a new FY 03 Lighthouse effort, an Automated Incident Reporting System referred to as AirCERT is to be developed.   AirCERT will be designed to collect, exchange, and analyze security event data from across large distributed networks to create a better view of the cyber threats facing a given organization and the Internet as a whole. There are currently more than eight separate cyber security research initiatives currently under way under the Cyber Lighthouse Program

(U) FY 2002 ($ in Thousands)

(U)	$0	Accomplishment/Planned Program
(U)	$2,500	Managed Cyber Lighthouse Security Technology Development Program (Congressional Add)
(U)	$1,000	Managed Enabling technologies for Info Assurance (IA) (Congressional Add)
(U)	$798	Continued exportable VA/RM process and toolset development -- Phase 2, Develop next generation VA/RM prototype
(U)	$300	Continued exportable VA/RM process and toolset development -- Phase 3, Start performing VA/RM assessments
(U)	$120	Continued to establish and support existing infrastructure: Intelligence support, metrics/architectures
(U)	$531	Continued IW SA IPT activities, analyses, database support
(U)	$131	Continued to integrate cross-program assessments and solution development
(U)	$324	Initiated/completed development of TVC database
(U)	$5,704	Total

	RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4579

(U) **A. Mission Description Continued**

(U) FY 2003 ($ in Thousands)

(U)	$0	Accomplishment/Planned Program
(U)	$3,800	Manage Cyber Lighthouse Security Technology Development Program (Congressional Add)
(U)	$1,000	Manage Enabling technologies for Info Assurance (IA) (Congressional Add)
(U)	$3,500	Manage the Center for Information Assurance (IA) Security (Congressional Add)
(U)	$440	Continue exportable VA/RM process and toolset development -- Phase 2, Develop next generation VA/RM prototype; and Phase 3, Start performing VA/RM assessments
(U)	$205	Continue to establish and support existing infrastructure: Intelligence support, metrics/architectures
(U)	$400	Continue IW SA IPT activities, analyses, database support
(U)	$400	Continue to integrate cross-program assessments and solution development
(U)	$856	Initiate Common Access Card (CAC) concept exploration and prototyping of wireless technologies (transferred this year from PE 303112F, Air Force Communications)
(U)	$856	Migrate Attack Tree Methodology for eMASS (transferred this year from this PE, BPAC 7820, Computer Security RDT&E: Firestarter)(eMASS previously known as DITSCAP)
(U)	$11,457	Total

(U) FY 2004 ($ in Thousands)

(U)	$0	Accomplishment/Planned Program
(U)	$856	Continue exportable VA/RM process and toolset development -- Phase 2, Develop next generation VA/RM prototype; and Phase 3, Start performing VA/RM assessments
(U)	$806	Continue to establish and support existing infrastructure: Intelligence support, metrics/architectures
(U)	$91	Continue IW SA IPT activities, analyses, database support
(U)	$293	Continue to integrate cross-program assessments and solution development
(U)	$780	Continue Common Access Card (CAC) concept exploration and prototyping of wireless technologies (transferred this year from PE 303112F, Air Force Communications)
(U)	$2,826	Total

(U) **B. Project Change Summary**

In FY02, $585K was added in error to BPAC 674871. The $585K was spread across all of the projects.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4579

(U) C. Other Program Funding Summary ($ 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
(U) AF RDT&E										
(U) Other APPN none										

(U) D. Acquisition Strategy

All major contracts within this Program Element are awarded after full and open competition.

(U) E. Schedule Profile

	FY 2002				FY 2003				FY 2004			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Manage Cyber Lighthouse Program (Congressional Add)	*				*			X				
(U) Manage Enabling technologies for IA (Congressional Add)	*				*			X				
(U) Manage the Center for IA Security (Congressional Add)						*		X				
(U) Continue exportable VA/RM process & toolset development -- Phases 2&3												
(U) Continue to integrate cross program assessments & solution devel												
(U) Continue IW SA IPT activities, analysis, database support												
(U) Initiate/Continue CAC concept explor & prototype wireless						X						
(U) Initiate/Complete Migration & Deploy Attack Tree Method for eMASS						X		X				
(U) Initiated/Completed development of TVC database		*			*							

* Denotes Completed Events
X Denotes Planned Events

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4579

(U) A. Project Cost Breakdown ($ in Thousands)

	FY 2002	FY 2003	FY 2004
(U) Software development	2,648	9,774	1,457
(U) Systems engineering support	2,736	1,088	931
(U) Program management support	320	595	438
(U) Total	5,704	11,457	2,826

(U) B. Budget Acquisition History and Planning Information ($ in Thousands)

(U) Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Product Development Organizations										
MITRE	FFRDC	On-going			0	2,536	910	717	Continuing	TBD
MIT/Lincoln Labs	FFRDC	On-going			0	817	617	617	Continuing	TBD
Carnegie-Mellon Software Engineering Institute (SEI)	ID/IQ	On-going				792	3,222	517	Continuing	TBD
Support and Management Organizations										
MITRE	FFRDC	On-going			0	1,047	4,324	547	Continuing	TBD
MIT/Lincoln Labs	FFRDC	On-going				512	1,218	314	Continuing	TBD
Carnegie-Mellon Software Engineering Institute (SEI)	ID/IQ	On-going			0	0	1,166	114	Continuing	TBD
Test and Evaluation Organizations										

Subtotals	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Subtotal Product Development	0	4,145	4,749	1,851	TBD	TBD
Subtotal Support and Management	0	1,559	6,708	975	TBD	TBD
Subtotal Test and Evaluation						
Total Project	0	5,704	11,457	2,826	TBD	TBD

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE **February 2003**
BUDGET ACTIVITY **07 - Operational System Development**	PE NUMBER AND TITLE **0303140F Information Systems Security Program**	PROJECT **4861**

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
4861 Cryptologic 2000	0	0	4,180	3,284	3,311	3,540	3,599	3,629	Continuing	TBD

NOTES: Prior to FY04 this project was in PE 33401, Communication Systems Security Program. The project number and title were identical to those used here.

(U)   A. Mission Description

The Cryptologic 2000 Project consists of multiple developments supporting the Air Force Electronic Key Management Systems (AFEKMS). AFEKMS, in concert with NSA EKMS, provides a secure and flexible capability for the electronic generation, distribution, accounting, and management of key material, voice callwords, and communications security (COMSEC) publications for AF C4I and weapon systems. AFEKMS replaces the existing physical distribution and management system providing cryptographic keying material for USAF Information Assurance. Information Assurance emphasizes access control, multi-level secure databases, trusted computing and information integrity. AFEKMS is a three-tier system structure in a hierarchical arrangement. This tiered structure provides 'wholesale' to 'retail' to 'consumer' capability to distribute, manage and account for COMSEC keying material. Tier 1 installations comprise the 'wholesale' capability. Tier 2 installations comprise the distribution network and Tier 3 comprises the 'retail locations' where keying material leaves the AFEKMS and enters the End Item COMSEC Equipment (EICE).

Acquisition includes Commercial Off-The-Shelf (COTS) computers and software, contractor-developed application software, and Government Furnished Equipment (GFE) and software such as NSA's Local COMSEC Management Software (LCMS).   The USAF-developed application software is necessary to provide a common framework for specific functions of unique key management systems such as the F-22, Advanced EHF COMSEC/TRANSEC System (ACTS), Joint Strike Fighter (JSF), and other current and future programs. Further, unique key fill requirements of EICE for AF applications such as ARC-210, Fighter Data Link, Airborne Integrated Terminal Group and Multi-Band Multi-Mode Radio, and other current and future programs are also supported by AFEKMS developments. The UASs developed by the AFEKMS SPO improve the LCMS user interface, integrate multiple independent UASs into a single commonly supported package, and moderate unique UASs running on the same platform when integration is not possible. They also allow automation of manual operator processes in order to save manpower, reduce required training, and improve mission effectiveness.

Overall AFEKMS will improve protection of National Security-related information by enhancing confidentiality, integrity, and non-repudiation substantially over legacy key management systems. AFEKMS will greatly accelerate availability of key through electronic transmission vice shipping of materials, and will enhance mission responsiveness and flexibility. While much of the current AFEKMS level-of-effort is directed at enhancing current and developing systems, the ultimate aim is to provide a migration path to future functionality planned under NSA's Key Management Infrastructure (KMI) initiative. Such KMI functionality is expected to emerge about 2007.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003	
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4861

(U)   **A. Mission Description Continued**

(U)   FY 2002 ($ in Thousands)
(U) $0   Accomplishment/Planned Program
(U) $0   Total

(U)   FY 2003 ($ in Thousands)
(U) $0   Accomplishment/Planned Program
(U) $0   Total

(U)   FY 2004 ($ in Thousands)
(U) $0   Accomplishment/Planned Program
(U) $1,159   Continue program office contract support of User Application Software (UAS) including architectural planning and migration to the Key
                                       Management Infrastructure
(U) $3,021   Continue End User Application Software Development: Common USA, Local Management Device (LMD/Data Management Device (DMD),
                                       KOV-21 (for F-22), and computer-based training
(U) $4,180   Total

(U)   **B. Project Change Summary**

(U)   **C. Other Program Funding Summary ($ 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
(U) AF RDT&E										
(U) Other APPN None										

(U)   **D. Acquisition Strategy**
All major contracts within this Program Element are awarded after full and open competition.

(U)   **E. Schedule Profile**

	FY 2002	FY 2003	FY 2004

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE **February 2003**

BUDGET ACTIVITY **07 - Operational System Development**	PE NUMBER AND TITLE **0303140F Information Systems Security Program**	PROJECT **4861**

(U)   E. Schedule Profile Continued

	FY 2002				FY 2003				FY 2004		
1	2	3	4	1	2	3	4	1	2	3	4

(U)   Cont. End User Appl. SW devel., Common UAS, LMD/DMD,
KOV-21 integ, etc

(U)   Continue Program office contract support of the EKMS UAS for KMI

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4861

(U)   A. Project Cost Breakdown ($ in Thousands)

	FY 2002	FY 2003	FY 2004
(U) Cont. End User Appl. SW devel., Common UAS, LMD/DMD, KOV-21 integ, etc	0	0	3,021
(U) Continue Program office contract support of the EKMS UAS for KMI	0	0	1,159
(U) Total	0	0	4,180

(U)   B. Budget Acquisition History and Planning Information ($ in Thousands)

(U)   Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Product Development Organizations										
SAIC	BPA	May 98	N/A	N/A	0	0	0	1,077	Continuing	TBD
Mitre	FFRDC	Nov 00	N/A	N/A	0	0	0	2,938	Continuing	TBD
Windmill Int'l, Inc.	BPA	Nov 02	N/A	N/A	0	0		165	Continuing	TBD
Support and Management Organizations										
N/A										
Test and Evaluation Organizations										
N/A										

(U)   Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Product Development Property										
Support and Management Property										
N/A										
Test and Evaluation Property										
N/A										

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4861

Subtotals	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
N/A						
Subtotal Product Development	0	0	0	4,180	TBD	TBD
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	0	0	0	4,180	TBD	TBD
N/A						

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE February 2003
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4871

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
4871 Information Operations Technology	1,477	2,965	758	502	815	991	9,022	9,337	Continuing	TBD

(U)   A. Mission Description

(U) This program expedites Information Operations (IO) Technology transition from laboratory, industry, and academia to operational use via studies, rapid prototyping, and demonstrations.

(U) The program office investigates and selects the highest potential IO technologies to meet specific shortfalls and deficiencies documented by major commands (MAJCOMS), unified commands, and IO agencies in Mission Area Plans (MAPs) and Mission Need Statements (MNSs). IO areas considered include: Psychological Operations (PSYOP), Electronic Warfare, Military Deception, Physical Attack, Information Attack, Information Assurance, Operational Security (OPSEC), Counterintelligence, Counter PSYOP, Electronic Protection, and Counterdeception.

(U) The program office works directly with labs, industry, users and battle labs to set priorities and find synergistic combinations of new technology, doctrine and training. Program efforts will be prioritized and guided by the Information Warfare (IW) Technical Planning Integrated Planning Team (TPIPT) in support of the Air Force IW MAP and the DoD IO Master Plan.

(U) Planned areas of study prototyping, and/or demonstration include techniquest and technologies for defending systems against sophisticated Information Warfare (IW) and computer network attacks, exploiting Integrated Air Defense Systems (IADS), Command and Control systems, and applying advanced IO applications in emerging physics, communications, directed energy, electronic sensors, and intelligence.

(U) This program also funds the Panther Den program office at Hanscom AFB, MA. The Panther Den program office provides technical, program management, and security support to the programs funded by this PE, as well as PD-classified projects funded via other PEs.

(U) Specific program content is classified. Current and historical project information is available in the Panther Den (PD) Special Access Program (SAP) Report.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY **07 - Operational System Development**	PE NUMBER AND TITLE **0303140F Information Systems Security Program**	PROJECT **4871**

(U)   **A. Mission Description Continued**

(U)   FY 2002 ($ in Thousands)
(U) $1,477   The IO Technology program supported the IW TIPIT and the IW MAT though studies, rapid prototyping, and demonstrations of state-of-the-art IO technologies to meet the warfighters' IO requirements
(U) $1,477   Total

(U)   FY 2003 ($ in Thousands)
(U) $2,965   The IO Technology program will support the IW TIPIT and the IW MAT though studies, rapid prototyping, and demonstrations of state-of-the-art IO technologies to meet the warfighters' IO requirements
(U) $2,965   Total

(U)   FY 2004 ($ in Thousands)
(U) $758   The IO Technology program will support the IW TIPIT and the IW MAT though studies, rapid prototyping, and demonstrations of state-of-the-art IO technologies to meet the warfighters' IO requirements
(U) $758   Total

(U)   **B. Project Change Summary**

(U)   **C. Other Program Funding Summary ($ 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
(U) AF RDT&E										0
(U) Other APPN										0

PE 0303140F studies will leverage current DoD lab efforts. Studies will be deconflicted with and will complement PE 0208021F, Information Warfare Support. Some aspects of this program will be protected under the PANTHER DEN Special Access Program. Data available upon request.

(U)   **D. Acquisition Strategy**
All major contracts within this Program Element are awarded after full and open competition unless other than full and open is justified to the Designated Acquisition Commander (DAC).

(U)   **E. Schedule Profile**

	FY 2002	FY 2003	FY 2004

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4871

(U) **E. Schedule Profile Continued**

		FY 2002				FY 2003				FY 2004			
		1	2	3	4	1	2	3	4	1	2	3	4
(U)	IO Technology Study/Prototype/ bi-annual Demos		*		*		X		X		X		X

X - Denotes planned event

* - Denotes completed event

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 2003
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 4871

(U) A. Project Cost Breakdown ($ in Thousands)

	FY 2002	FY 2003	FY 2004
(U) IO Technology Study/Prototype/Demo	1,477	2,965	758
(U) Total	1,477	2,965	758

(U) B. Budget Acquisition History and Planning Information ($ in Thousands)

(U) Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Product Development Organizations										
LCM	CPFF	Nov 02				1,040	2,481	412	Continuing	TBD
BAE	A&AS(ITSP)	Aug 02				168	192	124	Continuing	TBD
Mitre	FFRDC	Nov 02				269	292	222	Continuing	TBD
Support and Management Organizations										
Test and Evaluation Organizations										

Subtotals					Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Subtotal Product Development						1,477	2,965	758	TBD	TBD
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project						1,477	2,965	758	TBD	TBD

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)								DATE February 2003		
BUDGET ACTIVITY 07 - Operational System Development				PE NUMBER AND TITLE 0303140F Information Systems Security Program					PROJECT 5100	

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
5100 Cryptographic Modernization	0	0	23,533	72,461	102,792	207,797	357,983	241,867	Continuing	TBD

(U)   A. Mission Description

The AF Cryptographic Modernization (CM) Program's goal is to modernize the cryptographic inventory to support transforming AF operations necessary to secure the Global Information Grid. Algorithms are expiring, aging equipment is becoming logistically unsupportable, and many assets are not compatible with key management systems. At the same time, we need cryptography with new capabilities able to support transforming AF operations. The program has three primary objectives: 1) complete box-for-box replacement for identified near-term needs; 2) begin modernizing the remaining inventory via incremental capabilities enhancements; and 3) complete transformation will result in an inventory that is modular and scalable; will enable network-centric operations; and result in cryptographic operations that are transparent to the operator. Near-term funding supports primarily replacement efforts. As we move later in the FYDP, modernization/transformation activities take precedence.

Replacement Efforts: Five replacement efforts are currently identified: KG-3X and KI-22 support the Nuclear Command and Control (NC2) mission; CTIC/CDH is an integrated circuit cryptographic engine used primarily for data links; Interrogator Friend-or-Foe (IFF) Mode 5 is an upgrade that improves secure airborne/air traffic situation awareness; and the CI-13 upgrade improves remote re-keying of cryptographic end units.

Modernization Efforts: Initially, modernization efforts will focus on analyzing the current operational inventory for capability gaps, redundancies and best practices. This is accomplished by a large-scale user operational requirements gathering effort. The analysis will identify modernization opportunities that will provide a common solution for multiple crypto end items. They will begin to incrementally incorporate new and emerging technologies (programmability, modularity, scalability, etc.), be network-friendly, and operate with modern key management systems.

Transformation Efforts: Persistent application of cryptographic modernization principles to end unit development will result in an inventory that robustly secures and enables network-centric warfare; is re-configurable; interoperates with Joint and Coalition partners; and whose operation is transparent to the user.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 5100

(U)   A. Mission Description Continued

(U)   FY 2002 ($ in Thousands)
(U) $0   Accomplishments/Planned Programs
(U) $0   No Activity
(U) $0   Total

(U)   FY 2003 ($ in Thousands)
(U) $0   Accomplishments/Planned Programs
(U) $0   No Activity
(U) $0   Total

(U)   FY 2004 ($ in Thousands)
(U) $0   Accomplishments/Planned Programs
(U) $3,027   KI-22 Crypto Mod analysis for development of replacement
(U) $8,526   KG-3X Crypto Mod analysis for development of replacement
(U) $5,127   IFF Crypto Mod analysis for development of replacement
(U) $4,526   CTIC/CDH Crypto Mod analysis for development of replacement
(U) $2,327   CI-13 Crypto Mod analysis for development of replacement
(U) $23,533   Total

(U)   B. Project Change Summary

(U)   C. Other Program Funding Summary ($ 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
(U) AF RDT&E										
(U) Other APPN				25,000	27,200	29,300	30,600	11,500	Continuing	TBD

(U)   D. Acquisition Strategy
All major contracts within this Program Element are awarded after full and open competition.

(U)   E. Schedule Profile

	FY 2002	FY 2003	FY 2004

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 5100

(U)   **E. Schedule Profile Continued**

	FY 2002				FY 2003				FY 2004			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Initiate KI-22 Crypto Mod analysis for development of replacement										X		
(U) Initiate KG-3X Crypto Mod analysis for development of replacement										X		
(U) Initiate IFF Crypto Mod analysis for development of replacement													X
(U) Initiate CTIC-CDH Crypto Mod analysis for development of replacement										X		
(U) Initiate CI-13 Crypto Mod analysis for development of replacement													X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 2003
BUDGET ACTIVITY **07 - Operational System Development**	PE NUMBER AND TITLE **0303140F Information Systems Security Program** PROJECT **5100**

(U) A. Project Cost Breakdown ($ in Thousands)

		FY 2002	FY 2003	FY 2004
(U)	KI-22 Crypto Mod analysis for development of replacement			3,027
(U)	KG-3X Crypto Mod analysis for development of replacement			8,526
(U)	IFF Crypto Mod analysis for development of replacement			5,127
(U)	CTIC-CDH Crypto Mod analysis for development of replacement			4,526
(U)	CI-13 Crypto Mod analysis for development of replacement			2,327
(U)	Total			23,533

(U) B. Budget Acquisition History and Planning Information ($ in Thousands)

(U) Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Product Development Organizations										
OO-ALC/LM (KI-22)	TBD	TBD						3,027	Continuing	TBD
ESC/NDM (KG-3X)	TBD	TBD						8,526	Continuing	TBD
CPSG (CTIC-CDH)	TBD	TBD						5,127	Continuing	TBD
TBD (IFF)	TBD	TBD						4,526	Continuing	TBD
TBD (CI-13)	TBD	TBD						2,327	Continuing	TBD
Support and Management Organizations										
Test and Evaluation Organizations										

Subtotals	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Subtotal Product Development				23,533	TBD	TBD
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project				23,533	TBD	TBD

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE **February 2003**

BUDGET ACTIVITY **07 - Operational System Development**	PE NUMBER AND TITLE **0303140F Information Systems Security Program**	PROJECT **7820**

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
7820 Computer Security RDT&E: Firestarter	14,494	9,903	6,370	6,553	5,092	6,643	6,937	7,199	0	0

(U)   A. Mission Description

This program directs the Research & Development (R&D) of Information Protect technology/tools to provide the capability to defend USAF Command, Control, Communications, Computer, and Intelligence (C4I) Systems from Information Warfare (IW) Cyber attacks; and to ensure recovery from attacks. As the USAF single manager for Information Protect (R&D), this program directs C4I system Information Protect R&D with emphasis on information/computer/network security, damage assessment and recovery, and dynamic security policy enforcement. The asymmetrical threat of cyber terrorism against our Homeland and deployed networks, has the potential to affect the commander's ability to fight and win because of his dependence upon the availability, timeliness, and integrity of information on our network centric C4I systems. The requirement for global presence and global power has demanded increasing reliance on the advanced information systems and coalition connectivity. The susceptibilities inherent in such reliance on the advanced information systems and coalition connectivity has heightened the awareness that the National Information Infrastructure (NII), the Defense Information Infrastructure (DII), and the Global Information Grid (GIG) must be protected against attack in order to provide the Commander with Global Information Exchange (GIE).

Emphasis is therefore placed on R&D areas that provide deterrence of attack through cyberspace surveillance, tactical indications & warning (I&W), intrusion detection,correlation of attack indicators, decision support, recovery, and active response. Since adversaries may gain access to critical AF information systems through a variety of means, this technology will provide the capability of collecting, integrating, and displaying threat, vulnerability, and system data indicating an attack is about to take place and/or is taking place. Current Air Force systems such as the Combat Information Transport Systems (CITS), Theater Deployed Communications (TDC), and Theater Battle Management Core Systems (TBMCS) leverage the technology from this project to meet their information protect needs/requirements. Additionally, this project utilizes information assurance technology investments by DARPA as a jump-start for providing a solution to Air Force requirements and cooperates with DISA and other Services/Agencies to ensure coalition GIE information protect requirements are being met.

This program is in budget activity 7, Operational System Development, because it addresses the development and transition of information security, protection and defensive capabilities and technologies.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003	
BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 7820

(U) **A. Mission Description Continued**

(U) <u>FY 2002 ($ in Thousands)</u>

(U)	$0	Accomplishment/Planned Program
(U)	$881	Continued development of technology for self-healing network systems (to include automated system recovery)
(U)	$573	Continued development of information attack correlation methodologies
(U)	$741	Continued development of methodologies for commercial software evaluation and steganography detection
(U)	$924	Continued development of secure agent frameworks for Enterprise Defense to support protection of the warfighter C4ISR systems
(U)	$371	Completed effort to transition secure wrapper technologies into Air Force systems
(U)	$471	Continued effort to transition DARPA information assurance (IA) technology into AF Information Protection, Detection, & Response architecture
(U)	$462	Continued effort to develop metrics for reliable information assurance (IA) measurement and testing
(U)	$9,418	Continued development of secure interoperable distributed agent computing
(U)	$245	Began effort to evaluate biometric systems in conjunction with wired and wireless IA network applications
(U)	$408	Began development of cyber forensic tools and methodologies
(U)	$14,494	Total

(U) <u>FY 2003 ($ in Thousands)</u>

(U)	$0	Accomplishment/Planned Program
(U)	$492	Continue development of technology for self-healing network systems (to include automated system recovery)
(U)	$583	Continue development of information attack correlation methodologies
(U)	$278	Continue development of methodologies for commercial software evaluation and steganography detection
(U)	$906	Continue development of secure agent frameworks for Enterprise Defense to support protection of the warfighter C4ISR systems
(U)	$453	Continue effort to transition DARPA information assurance (IA) technology into AF Information Protection, Detection, & Response architecture
(U)	$516	Continue effort to develop metrics for reliable information assurance (IA) measurement and testing
(U)	$5,497	Continue development of secure interoperable distributed agent computing
(U)	$164	Continue effort to evaluate biometric systems in conjunction with wired and wireless IA network applications
(U)	$438	Continue development of cyber forensic tools and methodologies
(U)	$28	Begin effort to provide active response and dynamic policy enforcement to computer/network attack
(U)	$548	Begin effort to provide dynamic, cost effective, risk mitigation information assurance techniques for wireless terminals and networks
(U)	$9,903	Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
07 - Operational System Development	0303140F Information Systems Security Program	7820

(U) **A. Mission Description Continued**

(U) FY 2004 ($ in Thousands)
(U) $0 — Accomplishment/Planned Program
(U) $328 — Continue development of technology for self-healing network systems (to include automated system recovery)
(U) $615 — Continue development of information attack correlation methodologies
(U) $323 — Continue development of methodologies for commercial software evaluation and steganography detection
(U) $934 — Continue development of secure agent frameworks for Enterprise Defense to support protection of the warfighter C4ISR systems
(U) $484 — Continue effort to transition DARPA information assurance (IA) technology into AF Information Protection, Detection, & Response architecture
(U) $226 — Continue effort to develop metrics for reliable information assurance (IA) measurement and testing
(U) $716 — Continue development of secure interoperable distributed agent computing
(U) $234 — Continue effort to evaluate biometric systems in conjunction with wired and wireless IA network applications
(U) $466 — Continue development of cyber forensic tools and methodologies
(U) $464 — Continue effort to provide active response and dynamic policy enforcement to computer/network attack
(U) $446 — Continue effort to provide dynamic, cost effective, risk mitigation information assurance techniques for wireless terminals and networks
(U) $428 — Begin effort to provide IA/Cyber modeling and simulation for mission impact assessment and dynamic planning
(U) $462 — Begin effort to provide secure coalition IA data management, collaboration, and visualization
(U) $244 — Begin effort to provide IP Telephony (Voice Over IP) security tools
(U) $6,370 — Total

(U) **B. Project Change Summary**

(U) **C. Other Program Funding Summary ($ 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
(U) AF RDT&E	5,048									5,048
(U) Other APPN										
APPN 3600/PE 33112F/										
PE Title AF Communca-tions/BPAC 674884/										
Title PKI										

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 7820

(U) D. Acquisition Strategy

All major contracts within this Program Element are awarded after full and open competition.

(U) E. Schedule Profile

	FY 2002				FY 2003				FY 2004			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Requirements Review Boards		*				X				X		
(U) Completed Transition secure wrapper tech development to AF systems				*								
(U) Continue development of self healing network systems			*				X				X	
(U) Continue DARPA information assurance transition			*				X				X	
(U) Continue development of technology for tracing intrusions			*				X				X	
(U) Continue information attack correlation technology development			*				X				X	
(U) Cont. develop&demo extensible prototype framework Enterprise Defense		*		*		X		X		X		X
(U) Continue to develop metrics for reliable IA measurement & testing		*				X				X		
(U) Continue to develop automated info damage assessment and recovery	*				*				X			
(U) Continue to evaluate biometric systems		*		*			X				X	
(U) Continue to develop cyber forensic tools & methodologies		*					X				X	
(U) Cont. secure interoperable distrib agent computing (Cong. add FY02/03)				*								
(U) Begin/cont. risk mitigation IA tech for wireless terminals & networks						X						
(U) Begin/cont. active response & dynamic policy enforce. for ntwk. attack						X						
(U) Begin IA/Cyber modeling & simulation										X		
(U) Begin secure coalition IA data mgmt, collaboration, & visualization										X		
(U) Begin IP Telephony (Voice Over IP) security tools										X		

KEY: * Denotes Completed Events;
        X Denotes Planned Events.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 2003

BUDGET ACTIVITY 07 - Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT 7820

(U)   **A. Project Cost Breakdown ($ in Thousands)**

	FY 2002	FY 2003	FY 2004
(U) DARPA technology insertion/transition	471	453	484
(U) Secure distributed computing/collaborative planning	9,418	5,497	716
(U) Self-healing network system (to include automated system recovery)	881	492	328
(U) Wrappers to secure commercial-off-the-shelf (COTS)	371	0	0
(U) Methodologies for commercial software evaluation and steganography detection	741	278	323
(U) Information attack data correlation	573	583	615
(U) Extensible framework for Enterprise Defense	924	906	934
(U) Reliable information assurance measurement & testing	462	516	226
(U) Active response & cyber forensic tools	408	438	466
(U) Biometric systems (wired & wireless networks)	245	164	234
(U) Active response/dynamic policy enforcements to attacks	0	28	464
(U) Computer time risk mitigation in wired and wireless networks	0	548	446
(U) IA/Cyber modeling and simulation	0	0	428
(U) IP Telephony (Voice Over IP) vulnerability protection	0	0	244
(U) Secure coalition IA data management, collaboration, and visualization	0	0	462
(U) Total	14,494	9,903	6,370

(U)   **B. Budget Acquisition History and Planning Information ($ in Thousands)**

(U)   **Performing Organizations:**

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Product Development Organizations										
FFRDC (MITRE)	MIPR	On-Going	N/A	N/A	652	4,303	1,108	1,550	Continuing	TBD
Multiple Contractors	CPFF	On-Going	N/A	N/A	2,277	6,605	8,404	3,988	Continuing	TBD
Universities	CPFF	On-Going	N/A	N/A	368	3,586	391	832	Continuing	TBD
Support and Management Organizations										

UNCLASSIFIED

	DATE
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	**February 2003**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
07 - Operational System Development	**0303140F Information Systems Security Program**	**7820**

(U) **Performing Organizations Continued:**

Test and Evaluation Organizations

Subtotals	Total Prior to FY 2002	Budget FY 2002	Budget FY 2003	Budget FY 2004	Budget to Complete	Total Program
Subtotal Product Development	3,297	14,494	9,903	6,370	TBD	TBD
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	3,297	14,494	9,903	6,370	TBD	TBD

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