

UNCLASSIFIED

PE NUMBER: 0303140F

PE TITLE: Information Systems Security Program

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2004
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program
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Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	21.659	47.718	79.625	109.735	216.535	367.352	253.088	Continuing	TBD
4579 Information Warfare	11.051	5.877	0.000	0.000	0.000	0.000	0.000	0.000	37.808
4861 Cryptologic 2000	0.000	9.708	2.813	3.302	3.533	3.597	3.637	Continuing	TBD
4871 Information Operations Technology	1.055	0.745	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5100 Cryptographic Modernization	0.000	23.128	72.269	102.350	207.369	357.820	242.243	Continuing	TBD
7820 Computer Security RDT&E: Firestarter	9.553	8.260	4.543	4.083	5.633	5.935	7.208	Continuing	TBD

In FY 2005, Project 0674579, Information Warfare, was terminated. In FY 2005, Project 674871, Information Operations Technology , efforts were transferred to PE 0305887, Intelligence Support to Information Warfare, Project 670374, Information Warfare Support. This was done in order to move the only offensive Project out of a defensive PE; and to move it under the management of the AF HQ DCS for Operations (HAF/XOIW).

(U) A. Mission Description and Budget Item Justification

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.

Through FY04 the Information Warfare Project provided 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. It was terminated during the FY 2005 AF POM Process as an offset to increase funding of a higher priority program.

The Info Ops (IO) Technology Project 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 Integrated Product Team (IPT) (previously known as the IW Technology Planning IPT [IW TPIPT]), and the Panther Den program office. This project transfers to another PE in FY 2005.

The Cryptologic 2000 Project's efforts 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 DoD Electronic Key Management System being acquired by NSA.

The AF Crypto Modernization Program is part of a Joint Program lead by NSA to modernize and transform the Type 1 Cryptographic Inventory throughout DoD. Not only will algorithms be upgraded, but reprogrammable chips will be used in the Crypto Devices. Thus, the next generation of algorithm upgrades will cost only the reprogramming of those chips. The total inventory will be greatly reduced by doing a box-for-a family of systems/functions; and the logistics requirements will be greatly simplified and reduced. The total inventory and logistics requirements are also reduced by going to multi-purpose, "purple" solution crypto devices instead of the Service

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unique inventory we now have.

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 secure distributed computing capabilities. It provides access control, integrity, assured services and meets warfighter's requirements.

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) **B. Program Change Summary (\$ in Millions)**

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Previous President's Budget	9.353	37.667	87.813
(U) Current PBR/President's Budget	21.659	47.718	79.625
(U) Total Adjustments	12.306	10.051	
(U) Congressional Program Reductions	0.000		
Congressional Rescissions	-0.428	-0.649	
Congressional Increases	15.400	10.700	
Reprogrammings	-2.041		
SBIR/STTR Transfer	-0.625		

(U) **Significant Program Changes:**

FY04 Congressional Adds: \$1.0M for continued management of the Cyber Lighthouse Security Technology Program; \$2.1M for continued management of the Center for Information Assurance (IA); \$2.0M for continued management of the WISE; \$4.6M for the Enterprise Data Warehouse; and \$1.0M for information security support of Northcom.

FY 2005: Project 0674579, Information Warfare, was terminated.

FY 2005: Project 674871, Information Operations Technology , efforts were transferred to PE 0305887, Intelligence Support to Information Warfare, Project 670374, Information Warfare Support.

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Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4579 Information Warfare	11.051	5.877	0.000	0.000	0.000	0.000	0.000	0.000	37.808
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

In FY 2005, Project 067459, Information Warfare was terminated.

(U) **A. Mission Description and Budget Item Justification**

Built information warfare (IW) solutions for AF Command and Control (C2), Intelligence, Surveillance, and Reconnaissance (ISR) systems. The project provided 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. Provided 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 provided the USAF a unique system-of-systems perspective for managing shared IW risks.

IW Solutions Analysis Integrated Product Team (IW SA IPT) supported modernization planning for IW Mission Area and Solutions Analysis Processes. Continuously identified and evaluated commercial and Government inventory of available products that could be used to meet IW mission deficiencies. Information Warfare Architectures provided architectural solutions that resulted in systems designed with IW fundamentals. Provided Government laboratories and private industry guidance on new technologies needed for the next 10 to 25 years. Support of this effort will transfer in FY 2004.

Demonstrated and migrated Attack Tree Methodology to AF networks to provide improved situational awareness during cyber attacks. The first phase of this project incorporated the knowledge of AF networks and national level cyber vulnerabilities databases and performed an Attack Tree analysis of the networks. The analysis provided AF network administrators attack paths into their networks. The second phase of this project monitored real time cyber attack information and provided intelligent assessments of the type of the cyber attack and end goals for the cyber attack.

Cancelled project 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 were used for risk reduction and technology migration. Technologies studied included wireless infrastructure components such as Blackberry, Bluetooth and wireless local area networks.

(Technical work done under Cyber Lighthouse. Received Joint Expeditionary Force Experiment [JEFX02] money for demonstrations.) Completed Integrated SATCOM Interference Detection and Response (ISIDR) concept exploration, prototyping, and demonstration. During JEFX02, ISIDR was successfully demonstrated that this technology can quickly identify when unprotected Command, Control, Communications, and Computers/Intelligence, Surveillance, and Reconnaissance (C4ISR) SATCOM jamming occurs and characterizes the jamming signal. Due to this success, further investigations and demonstrations were conducted with inputs from JEFX02 participants. Results from this investigation provided the warfighter with C4ISR situational awareness of SATCOM jamming. Investigated unprotected C4ISR SATCOM jammer excision technology leading to prototype demonstration. Investigated in concert with the SATCOM interference detection and characterization. Successful demonstration of this technology and subsequent developments would have provided the warfighter unfettered C4ISR unprotected SATCOM during real world operations.

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Security Program

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4579 Information Warfare

Cyber Lighthouse (a Congressional Add) is a cyber security research and development program managed by the Air Forces HQ Electronic Systems Center (ESC). The work under Cyber Lighthouse is performed by three Federally Funded Research and Development Centers - MITRE (MA), Carnegie Mellon University's Software Engineering Institute (PA), and MIT/Lincoln Lab (MA). 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 and Space Operations Centers (AOC). On a separate Cyber Lighthouse effort, research is being performed to aid in identifying a solution for a demonstrated Global Positioning System timing vulnerability. This project developed an Automated Incident Reporting System referred to as AirCERT. AirCERT was 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.

This project 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) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Managed Cyber Lighthouse Security Technology Development Program (Congressional Add)	3.800	1.000	0.000
(U) Managed Enabling Technologies for Information Assurance (IA) (Congressional Add)	1.000	0.000	0.000
(U) Managed the Center for Information Assurance (IA) Security (Congressional Add)	3.500	2.100	0.000
(U) Completed Exportable Vulnerability Assessment/Risk Management (VA/RM) Attack Trees	0.376	0.843	0.000
(U) Completed IA Architecture Infrastructure Assessments	0.140	0.794	0.000
(U) Transferred responsibility for IW SA IPT activities, analyses, database support	0.336	0.080	0.000
(U) Transferred responsibility for cross-domain solutions	0.334	0.280	0.000
(U) Cancelled Common Access Card (CAC) concept exploration and prototyping of wireless technologies	0.792	0.780	0.000
(U) Cancelled Migration of Attack Tree Methodology for enterprise Mission Assurance Support System (eMASS)	0.773	0.000	0.000
(U) Total Cost	11.051	5.877	0.000

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(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) AF RDT&E									
(U) Other APPN									
N/A									

(U) **D. Acquisition Strategy**

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

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
07 Operational System Development			0303140F Information Systems Security Program					4579 Information Warfare				
<u>(U) Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
<u>(U) Product Development</u>												
MITRE	C	San Antonio, TX	30.272	9.639	Oct-02	3.422	Oct-03				43.333	43.333
MIT/Lincoln Labs	C	Boston, MA	2.992	0.952	Apr-02	0.239	Oct-03				4.183	4.183
Carnegie-Mellon Software Engineering Institute (SEI)	C	Pittsburgh, PA	1.444	0.460	Jun-02	0.116	Oct-03				2.020	2.020
University of TX, San Antonio	RL Grant/CRADA	San Antonio, TX	0.000	0.000	Jul-02	2.100	Mar-03				2.100	2.100
Subtotal Product Development			34.708	11.051		5.877		0.000		0.000	51.636	51.636
Remarks:												
<u>(U) Total Cost</u>			34.708	11.051		5.877		0.000		0.000	51.636	51.636

Exhibit R-4, RDT&E Schedule Profile

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4579 Information Warfare

Exhibit R-4: BPAC 4579 Information Warfare (p 2 of 2)

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Transfer responsibility for cross-domain solutions								△																				
Cancel CAC & wireless technologies exploration								△																				
Cancelled Migration for eMAS S				▲																								

- ☆ Major Event or Milestone
- ▬ Planned Ongoing Activity
- ▬ Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

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PROJECT NUMBER AND TITLE
4579 Information Warfare

Exhibit R-4: BPAC 4579 Information Warfare (p 1 of 2)

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Manage Cyber Lighthouse	█				█																							
Managed Enabling Techs for IA	█																											
Manage CAIS	█				█																							
Complete Exportable VA/RM attack trees	█				█																							
Complete IA Arch Infrastructure Assessments	█				█																							
Transfer responsibility IW SA IPT	█				█																							

- ☆ Major Event or Milestone
- █ Planned Ongoing Activity
- █ Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

Exhibit R-4a, RDT&E Schedule Detail

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4579 Information Warfare**(U) Schedule Profile**

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Managed Cyber Lighthouse Program (Congressional Add)	1-4Q	1-4Q	
(U) Managed Enabling Technologies for IA (Congressional Add)	1-4Q		
(U) Managed the Center for IA Security (Congressional Add)	1-4Q	1-4Q	
(U) Completed Exportable VA/RM Attack Trees	1-4Q	1-4Q	
(U) Completed IA Architecture Infrastructure Assessments	1-4Q	1-4Q	
(U) Transferred the integration of cross-domain solutions		4Q	
(U) Transferred support of the IW SA IPT activities, analysis, database support		4Q	
(U) Cancelled CAC concept exploration and prototype wireless	2-4Q	1-4Q	
(U) Cancelled the Migration of Attack Tree Methodology for enterprise Mission Assurance Support System (eMASS)	1-4Q		

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0303140F Information Systems Security Program			PROJECT NUMBER AND TITLE 4861 Cryptologic 2000		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4861 Cryptologic 2000	0.000	9.708	2.813	3.302	3.533	3.597	3.637	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

NOTES: FY 2004: AFEKMS received \$5.6 M in Congressional Plus-Ups that belong to two other PEs. Specifically, \$4.6 M intended for PE 0303141F, GCSS for their Enterprise Data Warehouse; and \$1.0 for PE 0303164F, for Services Support Information System Security Program (ISSP) for Northcom.

(U) A. Mission Description and Budget Item Justification

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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 4861 Cryptologic 2000		
(U) Continue program office contract support of User Application Software (UAS) including architectural planning and migration to the Key Management Infrastructure		0.000	0.905	0.620
(U) Continue End User Application Software Development: Common UAS, Local Management Device (LMD/Data Management Device (DMD), KOV-21 (for F-22), and computer-based training		0.000	3.203	2.193
(U) Enterprise Data Warehouse (Congressional Add)		0.000	4.600	
(U) Services Support ISSP for Northcom (Congressional Add)		0.000	1.000	
(U) Total Cost		0.000	9.708	2.813

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2003</u> Actual	<u>FY 2004</u> Estimate	<u>FY 2005</u> Estimate	<u>FY 2006</u> Estimate	<u>FY 2007</u> Estimate	<u>FY 2008</u> Estimate	<u>FY 2009</u> Estimate	<u>Cost to Complete</u>	<u>Total Cost</u>
(U) AF RDT&E									
(U) Other APPN N/A									

(U) D. Acquisition Strategy

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

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 4861 Cryptologic 2000
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(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>												
Science Applications International Corporation (SAIC)	BPA	San Antonio, TX	0.000		Oct-02	3.488	Oct-03	2.193		Continuing	TBD	TBD
Mitre	C	San Antonio, TX	0.000		Oct-02	0.620	Oct-03	0.620		Continuing	TBD	TBD
TBD	TBD	TBD	0.000			4.600		0.000			4.600	4.600
TBD	TBD	TBD	0.000			1.000		0.000			1.000	1.000
Subtotal Product Development			0.000	0.000		9.708		2.813		Continuing	TBD	TBD
Remarks:												
(U) <u>N/A</u>												
(U) Total Cost			0.000	0.000		9.708		2.813		Continuing	TBD	TBD
Remarks: N/A												

Exhibit R-4, RDT&E Schedule Profile

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PROJECT NUMBER AND TITLE
4861 Cryptologic 2000

Exhibit R-4: BPAC 4861 Cryptologic 2000

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
Architectural planning & migration to Key Mgmt. Infrastructure					[Planned Ongoing Activity]																													
User Application Software Development					[Planned Ongoing Activity]																													
Transfer Enterprise Data Warehouse Cong add						△																												
Transfer svcs support ISSP for Northcom Cng add						△																												

- ☆ Major Event or Milestone
- [Grey Bar] Planned Ongoing Activity
- [Black Bar] Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

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	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) <u>Schedule Profile</u>			
(U) Continue End User Application SW development, Common UAS, LMD/DMD, KOV-21 integration, etc.	1-4Q	1-4Q	1-4Q
(U) Continue Program Office contract support of the EKMS UAS for KMI	1-4Q	1-4Q	1-4Q
(U) Transfer Enterprise Data Warehouse Congressional Add to PE 0303141F		2Q	
(U) Transfer Services Support ISSP Northcom Congressional Add to PE 0303164F		2Q	

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BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0303140F Information Systems Security Program			PROJECT NUMBER AND TITLE 4871 Information Operations Technology		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4871 Information Operations Technology	1.055	0.745	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

In FY 2005, Project 674871, Information Operations Technology , efforts were transferred to PE 0305887F, Intelligence Support to Information Warfare, Project 670374, Information Warfare Support. This was done in order to move the only offensive project out of a defensive PE; and to move it under the management of the AF Deputy Chief of Staff (DCS) for Air and Space Operations (AF/XOIW).

(U) A. Mission Description and Budget Item Justification

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BUDGET ACTIVITY 07 Operational System Development			PE NUMBER AND TITLE 0303140F Information Systems Security Program		PROJECT NUMBER AND TITLE 4871 Information Operations Technology				
(U) The IO Technology Program will support the IW SA IPT and the IWMission Area Team (MAT) through studies, rapid prototyping, and demonstrations of state-of-the-art IO technologies to meet the warfighters' IO requirements.					1.055	0.745	0.000		
(U) Total Cost					1.055	0.745	0.000		
(U) C. Other Program Funding Summary (\$ in Millions)									
	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) AF RDT&E									0.000
(U) Other APPN									0.000
This project's studies leveraged 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.									
(U) D. Acquisition Strategy									
All major contracts within this Project are awarded after full and open competition unless other than full and open is justified to the Designated Acquisition Commander (DAC).									

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
07 Operational System Development			0303140F Information Systems Security Program					4871 Information Operations Technology				
<u>(U) Cost Categories</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2003 Cost</u>	<u>FY 2003 Cost</u>	<u>FY 2003 Award Date</u>	<u>FY 2004 Cost</u>	<u>FY 2004 Award Date</u>	<u>FY 2005 Cost</u>	<u>FY 2005 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
<u>(U) Product Development</u>												
Lockheed-Martin	CPFF	Boston, MA	1.040	0.738	Oct-02	0.407	Oct-03			Continuing	TBD	TBD
BAE Systems	CPFF	Boston, MA	0.168	0.117	Oct-02	0.120	Oct-03			Continuing	TBD	TBD
Mitre	C	Boston, MA	0.269	0.200	Oct-02	0.218	Oct-03			Continuing	TBD	TBD
Subtotal Product Development			1.477	1.055		0.745		0.000		Continuing	TBD	TBD
Remarks:												
<u>(U) Total Cost</u>			1.477	1.055		0.745		0.000		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

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February 2004

BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
0303140F Information Systems Security Program

PROJECT NUMBER AND TITLE
4871 Information Operations Technology

Exhibit R-4: BPAC 4871 Information Operations Technology

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
IO Technology Study/Prototype/bi-annual Demos		▲		▲		△		△																				

- ☆ Major Event or Milestone
- ▬ Planned Ongoing Activity
- ▬ Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

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Exhibit R-4a, RDT&E Schedule Detail	DATE February 2004
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 4871 Information Operations Technology
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(U) <u>Schedule Profile</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) IO Technology Study/Prototype/ Bi-annual Demos	2-4Q	2-4Q	

Exhibit R-2a, RDT&E Project Justification

DATE
February 2004

BUDGET ACTIVITY 07 Operational System Development				PE NUMBER AND TITLE 0303140F Information Systems Security Program			PROJECT NUMBER AND TITLE 5100 Cryptographic Modernization		
Cost (\$ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
5100 Cryptographic Modernization	0.000	23.128	72.269	102.350	207.369	357.820	242.243	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

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 Fiscal Year Defense Plan (FYDP), modernization/transformation activities take precedence.

Replacement Efforts: Five replacement efforts are currently identified: KG-3X and KI-22 both support the Nuclear Command and Control (NC2) mission; Communication Security/ Transportation Security (COMSEC/TRANSEC) Integrated Circuit/DS-101 Hybrid (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.

This project 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) B. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Continue KI-22 Cryptographic Modernization analysis for development of replacement	0.000	11.110	30.550
(U) Continue KG-3X Cryptographic Modernization analysis for development of replacement	0.000	5.916	9.800
(U) Continue IFF Cryptographic Modernization analysis for development of replacement	0.000	4.917	16.696

Exhibit R-2a, RDT&E Project Justification

DATE

February 2004

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 5100 Cryptographic Modernization
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(U) Continue CTIC/CDH Cryptographic Modernization analysis for development of replacement	0.000	0.953	0.085
(U) Completed CI-13 Cryptographic Modernization analysis for development of replacement	0.000	0.232	0.000
(U) Initiate Studies and Analyses	0.000	0.000	3.405
(U) Initiate Space Cryptographic Modernization analyses for development of replacements	0.000	0.000	11.733
(U) Total Cost	0.000	23.128	72.269

(U) **C. Other Program Funding Summary (\$ in Millions)**

	<u>FY 2003</u> Actual	<u>FY 2004</u> Estimate	<u>FY 2005</u> Estimate	<u>FY 2006</u> Estimate	<u>FY 2007</u> Estimate	<u>FY 2008</u> Estimate	<u>FY 2009</u> Estimate	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
(U) AF RDT&E									
(U) AF Other Procurement PE 0303140F			25.000	27.200	29.300	30.600	11.500	Continuing	TBD

(U) **D. Acquisition Strategy**

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

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Exhibit R-3, RDT&E Project Cost Analysis

DATE
February 2004

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 5100 Cryptographic Modernization
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(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Cost</u>	<u>FY</u> <u>2003</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2004</u> <u>Cost</u>	<u>FY</u> <u>2004</u> <u>Award</u> <u>Date</u>	<u>FY</u> <u>2005</u> <u>Cost</u>	<u>FY</u> <u>2005</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>												
KI-22	MIPR	OO-ALC/LM, Hill AFB, UT	0.000	0.000		11.110	Oct-03	30.550		Continuing	TBD	TBD
KG-3X	MIPR	ESC/NDM, Hanscom AFB, MA	0.000	0.000		5.916	Oct-03	9.800		Continuing	TBD	TBD
CTIC-CDH	MIPR	CPSG, Lackland AFB, TX	0.000	0.000		0.953	Oct-03	0.085		Continuing	TBD	TBD
IFF	MIPR	ESC/DIW, Lackland AFB, TX	0.000	0.000		4.917	Oct-03	16.696		Continuing	TBD	TBD
ESC/DIW (CI-13)	MIPR	ESC/DIW, Lackland AFB, TX	0.000	0.000		0.232	Oct-03	0.000		Continuing	TBD	TBD
Studies and Analyses	N/A	CPSG, Lackland AFB, TX	0.000	0.000		0.000	Oct-03	3.405		Continuing	TBD	TBD
Space	N/A	CPSG, Lackland AFB, TX	0.000	0.000		0.000	Oct-03	11.733		Continuing	TBD	TBD
Subtotal Product Development			0.000	0.000		23.128		72.269		Continuing	TBD	TBD
Remarks:												
(U) Total Cost			0.000	0.000		23.128		72.269		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2004

BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
0303140F Information Systems Security Program

PROJECT NUMBER AND TITLE
5100 Cryptographic Modernization

Exhibit R-4: BPAC 5100 Cryptographic Modernization

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
KI-22					[Planned Ongoing Activity]																											
KG-3X					[Planned Ongoing Activity]																											
IFF Mode S CM					[Planned Ongoing Activity]																											
CTIC/CDH					[Planned Ongoing Activity]																											
CI-13					[Planned Ongoing Activity]																											
Studies & Analyses					[Planned Ongoing Activity]																											
Space CM					[Planned Ongoing Activity]																											

- ☆ Major Event or Milestone
- [Grey Bar] Planned Ongoing Activity
- [Black Bar] Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

Exhibit R-4a, RDT&E Schedule Detail

DATE

February 2004

BUDGET ACTIVITY

07 Operational System Development

PE NUMBER AND TITLE

0303140F Information Systems Security Program

PROJECT NUMBER AND TITLE

5100 Cryptographic Modernization

(U) Schedule Profile

FY 2003

FY 2004

FY 2005

(U) Continue KG-3X Cryptographic Modernization analysis for development of replacement

1-4Q

1-4Q

(U) Continue IFF Cryptographic Modernization analysis for development of replacement

1-4Q

1-4Q

(U) Continue CTIC-CDH Cryptographic Modernization analysis for development of replacement

1-4Q

1-4Q

(U) Continue CI-13 Cryptographic Modernization analysis for development of replacement

1-4Q

1-4Q

(U) Initiate Studies and Analyses

2Q

(U) Initiate Space Cryptographic Modernization analyses for development of replacements

2Q

Exhibit R-2a, RDT&E Project Justification

DATE

February 2004

BUDGET ACTIVITY 07 Operational System Development		PE NUMBER AND TITLE 0303140F Information Systems Security Program					PROJECT NUMBER AND TITLE 7820 Computer Security RDT&E: Firestarter			
Cost (\$ in Millions)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
7820	Computer Security RDT&E: Firestarter	9.553	8.260	4.543	4.083	5.633	5.935	7.208	Continuing	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

This project 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 project 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 protection needs/requirements. Additionally, this project utilizes information assurance technology investments by Defense Advanced Research Projects Agency (DARPA) as a jump-start for providing a solution to Air Force requirements and cooperates with Defense Information Systems Agency (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.

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Continue development of technology for self-healing network systems (to include automated system recovery)	0.460	0.320	0.311
(U) Continue development of information attack correlation methodologies	0.543	0.608	0.777
(U) Continue development of methodologies for commercial software evaluation and steganography detection	0.246	0.315	0.091
(U) Continue development of secure agent frameworks for Enterprise Defense to support protection of the warfighter	0.876	0.926	0.300

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Exhibit R-2a, RDT&E Project Justification

DATE
February 2004

BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 7820 Computer Security RDT&E: Firestarter
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C4ISR systems			
(U) Continue effort to transition DARPA information assurance (IA) technology into AF Information Protection, Detection, & Response architecture	0.422	0.476	0.316
(U) Continue effort to develop metrics for reliable information assurance (IA) measurement and testing	0.486	0.218	0.163
(U) Continue development of secure interoperable distributed agent computing (partial Congressional Add)	5.435	2.708	0.768
(U) Completed effort to evaluate biometric systems in conjunction with wired and wireless IA network applications	0.133	0.226	0.000
(U) Continue development of cyber forensic tools and methodologies	0.408	0.458	0.330
(U) Continue effort to provide active response and dynamic policy enforcement to computer/network attack	0.028	0.456	0.416
(U) Continue effort to provide dynamic, cost effective, risk mitigation information assurance techniques for wireless terminals and networks	0.516	0.438	0.327
(U) Continue effort to provide IA/Cyber modeling and simulation for mission impact assessment and dynamic planning		0.420	0.278
(U) Continue effort to provide secure coalition IA data management, collaboration, and visualization		0.455	0.350
(U) Continue effort to provide Internet Protocol (IP) Telephony (Voice Over IP) security tools		0.236	0.116
(U) Total Cost	9.553	8.260	4.543

(U) C. Other Program Funding Summary (\$ in Millions)

	<u>FY 2003</u> <u>Actual</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>FY 2006</u> <u>Estimate</u>	<u>FY 2007</u> <u>Estimate</u>	<u>FY 2008</u> <u>Estimate</u>	<u>FY 2009</u> <u>Estimate</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>
(U) AF RDT&E									
(U) Other APPN									
N/A									

(U) D. Acquisition Strategy

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

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Exhibit R-3, RDT&E Project Cost Analysis

DATE

February 2004

BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT NUMBER AND TITLE				
07 Operational System Development				0303140F Information Systems Security Program				7820 Computer Security RDT&E: Firestarter				
(U) <u>Cost Categories</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>Cost to</u>	<u>Total</u>	<u>Target</u>
(Tailor to WBS, or System/Item Requirements) (\$ in Millions)			<u>Prior to FY</u>	<u>2003</u>	<u>2003</u>	<u>2004</u>	<u>2004</u>	<u>2005</u>	<u>2005</u>	<u>Complete</u>	<u>Cost</u>	<u>Value of</u>
			<u>Cost</u>	<u>Cost</u>	<u>Award</u>	<u>Cost</u>	<u>Award</u>	<u>Cost</u>	<u>Award</u>			<u>Contract</u>
					<u>Date</u>		<u>Date</u>		<u>Date</u>			
(U) <u>Product Development</u>												
FFRDC (MITRE)	C	Multiple Locations	4.955	0.938	Oct-02	1.495	Oct-03	1.085		Continuing	TBD	TBD
Multiple Contractors	CPFF	Multiple Locations	8.888	8.224		5.933		2.854		Continuing	TBD	TBD
Multiple Universities	CPFF	Multiple Locations	3.954	0.391		0.832		0.604		Continuing	TBD	TBD
Subtotal Product Development			17.797	9.553		8.260		4.543		Continuing	TBD	TBD
Remarks:	Multiple contractors & multiple universities reflect on-going efforts with over a dozen contractors & universities. Each has a different contract date depending on when that particular contract was awarded.											
(U) Total Cost			17.797	9.553		8.260		4.543		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2004

BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
0303140F Information Systems Security Program

PROJECT NUMBER AND TITLE
7820 Computer Security RDT&E: Firestarter

Exhibit R-4: BPAC 7820, Firestarter (p 1 of 2)

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Rqmnts. Review Board		▲				△				△				△				△				△				△		
Info Attack Correlation Methodologies	█				█				█				█				█				█							
Commercial SW & Steganography	█				█				█				█				█				█							
Secure Agent Frameworks for Enterprise	█				█				█				█				█				█							
DARPA IA Transition	█				█				█				█				█				█							
Metrics for reliable IA meas. & test	█				█				█				█				█				█							
Secure, interoperable distributed agent computing	█				█				█				█				█				█							

- ☆ Major Event or Milestone
- █ Planned Ongoing Activity
- █ Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

Exhibit R-4, RDT&E Schedule Profile

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February 2004

BUDGET ACTIVITY
07 Operational System Development

PE NUMBER AND TITLE
0303140F Information Systems
Security Program

PROJECT NUMBER AND TITLE
7820 Computer Security RDT&E:
Firestarter

Exhibit R-4: BPAC 7820 Firestarter (p 2 of 2)

Fiscal Year	FY 03				FY 04				FY 05				FY 06				FY 07				FY 08				FY 09			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Eval. of biometric systems	█				█																							
Cyber forensic tools & methods	█				█				█				█				█											
Active response & policy enforcement to attack	█				█				█				█				█				█							
Risk Mitigation for wireless					█				█																			
IA/Cyber Modeling & Simulation					█				█				█															
Secure Coalition					█				█				█				█				█							
IP Telephony					█				█																			

- ☆ Major Event or Milestone
- █ Planned Ongoing Activity
- █ Ongoing Activity that is Complete
- ▲ Completed Event
- △ Planned Task(s)

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Exhibit R-4a, RDT&E Schedule Detail	DATE February 2004
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BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0303140F Information Systems Security Program	PROJECT NUMBER AND TITLE 7820 Computer Security RDT&E: Firestarter
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	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>
(U) Schedule Profile			
(U) Requirements Review Boards	2Q	2Q	2Q
(U) Continue development of self-healing network systems	1-4Q	1-4Q	1-4Q
(U) Continue information attack correlation methodologies	1-4Q	1-4Q	1-4Q
(U) Continue development of methodologies for commercial software evaluation and steganography	1-4Q	1-4Q	1-4Q
(U) Continue development of secure agent frameworks for Enterprise Defense	1-4Q	1-4Q	1-4Q
(U) Continue DARPA information assurance transition	1-4Q	1-4Q	1-4Q
(U) Continue to develop metrics for reliable IA measurement and testing	1-4Q	1-4Q	1-4Q
(U) Continue secure interoperable distributed agent computing (partial Congressional add)	1-4Q	1-4Q	1-4Q
(U) Completed the evaluation of biometric systems	1-4Q	1-4Q	1-4Q
(U) Continue to develop cyber forensic tools and methodologies	1-4Q	1-4Q	1-4Q
(U) Continue to develop active response and dynamic policy enforcement to computer/network attack	1-4Q	1-4Q	1-4Q
(U) Continue risk mitigation IA technology for wireless terminals and networks		2-4Q	1-4Q
(U) Continue IA/Cyber modeling and simulation		2-4Q	1-4Q
(U) Continue secure coalition IA data management collaboration and visualization		2-4Q	1-4Q
(U) Continue Internet Protocol (IP) Telephony (Voice Over IP) security tools		2-4Q	1-4Q