

(U) RESEARCH & TECHNOLOGY



This Exhibit is ~~SECRET//NOFORN~~

FY 2006 includes Base, Title IX, and Supplemental Appropriations

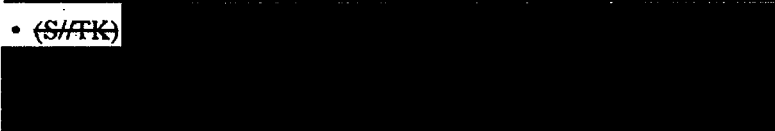
(U) Description

(U//~~FOUO~~) The Research & Technology Expenditure Center (EC) includes funding to conceive, research, and develop technology-driven opportunities to significantly increase actionable intelligence. The NRO technology enterprise demonstrates promising technologies, in relevant operational environments to prove they are ready for integration into operational systems. The Director, Advanced Systems and Technology (AS&T), manages and allocates resources across the entire NRO technology enterprise, including the technology elements of the SIGINT, IMINT, and Communications Directorates.

(U) Technology enterprise activities supporting the above goals and objectives include:

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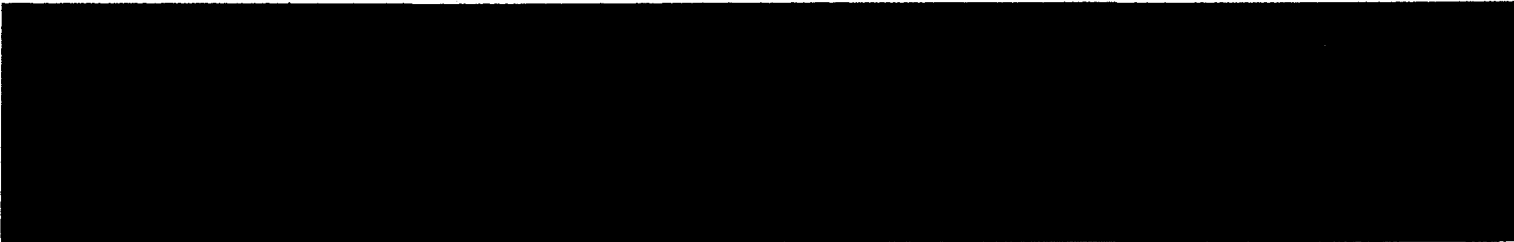
- (S//~~TK~~) 

(U) These activities were funded in the Advanced Technology, Applied Technology, and Technology Demonstrations and Support ECs in the FY 2007 CBJB.

(U) Budget Request – Key Changes

(U) The FY 2008 request reflects the following change from FY 2007 base appropriations, excluding bridge and supplemental funding for Counterterrorism and Iraq operations—the reallocation of advanced research and development funding to higher priority IC programs.

(U) RESEARCH & TECHNOLOGY
(U) BASIC RESEARCH



This Exhibit is ~~SECRET//NOFORN~~

(U) Description

(U) The Basic Research project provides funding for new and innovative sources and methods through the Director's Innovation Initiative (DII), the Innovative Solutions Initiative (ISI), and white papers proposed by industry, academia, other government organizations, and laboratories.

(U) The DII solicitation provides unclassified access to revolutionary R&D concepts and provides a risk-tolerant environment to invest in cutting edge technologies and high-payoff concepts relevant to the NRO's mission. Examples include using carbon nanotube-based electronics for low-power, high frequency applications and carbon nanotube structures in support of next generation nanolaminate reflectors. Developers, both traditionally and non-traditionally associated with the NRO, are provided the opportunity to participate in building the NRO of the 21st century.

(U) The ISI is a classified solicitation that explores new and innovative ideas, concepts, technologies, and methods that will provide the nation and the IC with actionable intelligence to solve current and enduring problems. Examples include the development of high efficiency solar cells beyond the industrial roadmap, and unique and

innovative millimeter wave and very small aperture terminal mapping concepts to enhance overhead SIGINT collection capabilities. The ISI is a risk managed program focused on near-term solutions, preferably less than five years.

(U) Performance Information

(U//FOUO) This project supports NIS Enterprise Objective 8, exploit path-breaking scientific and research advances that will enable us to maintain and extend our intelligence advantage against emerging threats.

(U) The following important performance outcome, to be accomplished in FY 2007, FY 2008, and future years, contributes to achieving this objective: Ensure the NRO has continuous access to revolutionary concepts and ideas which have the potential for rapid transition to NRO systems and operations. **Association to NIS:** The DII and ISI programs foster innovation and provide seed funding to push the boundaries of technology to dramatically improve our nation's overhead reconnaissance capabilities.

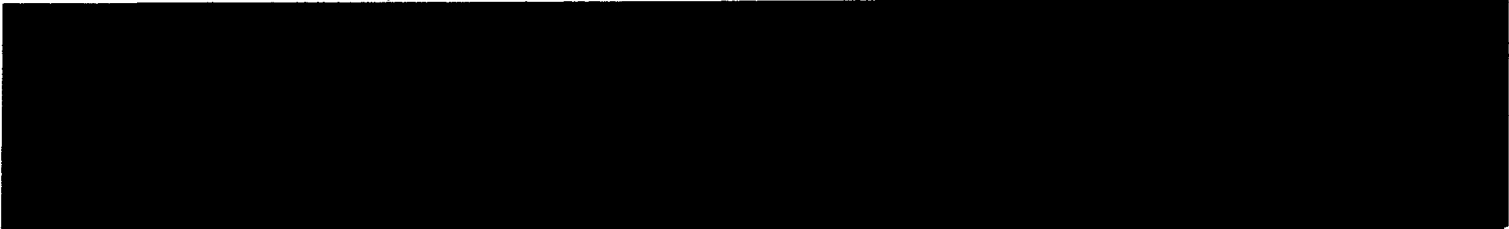
(U) In FY 2007

- (U) Identify and fund approximately 30 new DII proposals addressing innovations in technology areas spanning the NRO technology enterprise. (P-EO8)
- (U) Continue development of the four most promising FY 2006 DII projects. (P-EO8)
- (U) Identify and fund approximately eight new ISI proposals addressing near-term solutions to the IC's most pressing intelligence problems. (P-EO8)
- (U) Continue development of the four most beneficial FY 2006 ISI projects. (P-EO8)

(U) In FY 2008

- (U) Identify and fund approximately 28 new DII proposals addressing innovations in technology areas spanning the NRO technology enterprise. (P-EO8)
- (U) Continue development of the three most promising FY 2007 DII projects. (P-EO8)
- (U) Identify and fund approximately seven new ISI proposals addressing near-term solutions to the IC's most pressing intelligence problems. (P-EO8)
- (U) Continue development of the four most beneficial FY 2007 ISI projects. (P-EO8)

(U) RESEARCH & TECHNOLOGY
(U) APPLIED RESEARCH

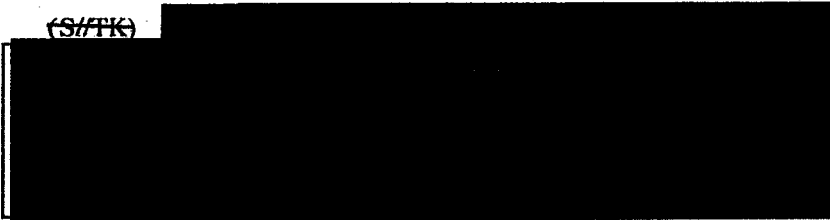


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(U) Description

(U) The Applied Research project provides resources to develop technologies for future overhead SIGINT and GEOINT architectures, communications technologies, and new design approaches for space and ground applications.

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(U) A brief description of each major investment area supported by this project follows.

(U) Communications Technology

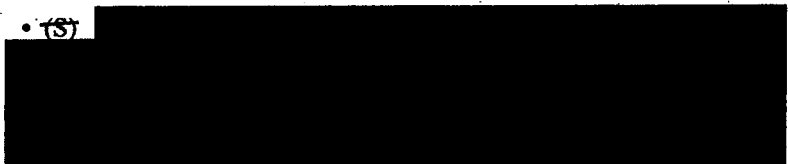
(U) This investment area focuses on new communication technologies and design approaches for space, ground, and network applications, and supports virtually all NRO mission areas.

(U) Specific focus areas include:

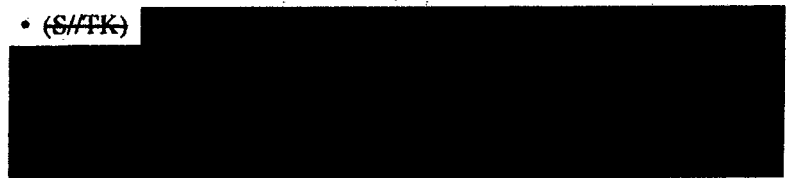
- (U//~~FOUO~~) Wideband radio frequency (RF) communications: Conducts advanced development and risk reduction for high-value communications and focuses on maturing high data rate RF technologies for insertion into highly elliptical orbit (HEO), geosynchronous orbit (GEO), and low earth orbit (LEO) SIGINT and GEOINT satellites.

- (U//~~FOUO~~) Information applications: Examines communications network phenomenology and the critical technologies necessary to produce high data rate space-qualified encryption devices for insertion into HEO and GEO SIGINT and GEOINT satellites and their associated ground systems.

- (S)



- (S//FK)



Additional research emphasizes new and innovative methods [REDACTED]

(U) GEOINT Technology

~~(S)~~ [REDACTED]

(U) Specific focus areas include:

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

(U) SIGINT Technology

~~(S//FK)~~ [REDACTED]

(U) Specific focus areas include:

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• ~~(S//FK)~~ [REDACTED]

• (S//TK) [REDACTED]

• (S//TK) [REDACTED]

(U) Crosscutting Technology

(U) This investment area focuses on applied research efforts not tied to a specific communication, GEOINT, or SIGINT application.

(U) Specific focus areas include:

- (U//~~FOUO~~) Emerging concepts and opportunities for technology investment.
- (U//~~FOUO~~) Component radiation hardening: Pursues radiation hardened microelectronics that can significantly increase spacecraft processing capabilities, and enabling designs which will better survive the environmental effects of space.

• (S//TK) [REDACTED]

• (U//~~FOUO~~) Advanced bus technology: Pursues data transfer and distribution devices and protocols, power, structural/thermal materials, and propulsion which can better survive the environmental effects of space and significantly reduce spacecraft size, weight, power, and cost, enabling new generations of spacecraft designs.

• (U//~~FOUO~~) The AS&T Futures Lab: Enables virtual experiments, demonstrations, studies, and physics based modeling and simulation of concepts and technology applications.

• (U//~~FOUO~~) International programs: Funds joint activities with governments of other nations to further cooperation in R&D and operational capability for intelligence.

(U) Performance Information

(U//~~FOUO~~) This project supports NIS Mission Objective 4, develop innovative ways to penetrate and analyze the most difficult targets, and Enterprise Objective 8, exploit path-breaking scientific and research advances that will enable us to maintain and extend our intelligence advantage against emerging threats.

(U) The following important performance outcomes, to be accomplished in future years, contribute to achieving these objectives:

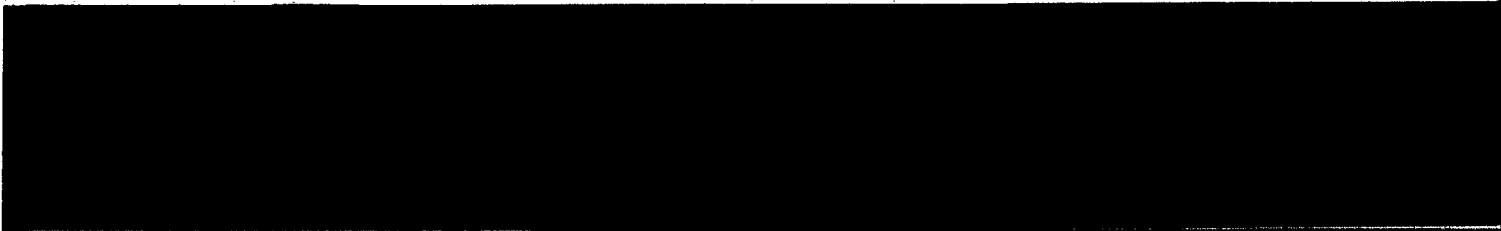
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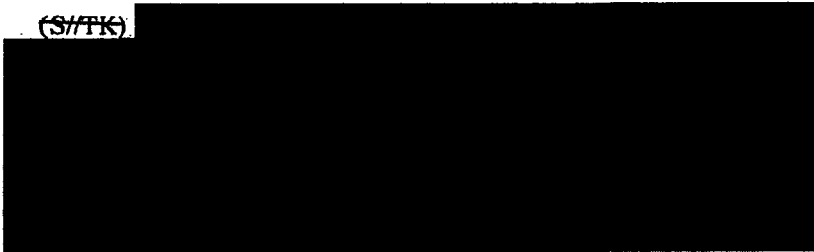
**(U) RESEARCH & TECHNOLOGY
(U) ADVANCED TECHNOLOGY DEVELOPMENT**



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(U) Description

(U) The Advanced Technology Development project applies unique area expertise to demonstrate the utility of new sources and methods to enhance the collection capabilities to deliver timely actionable intelligence. The NRO accomplishes this through collaboration between the AS&T technology teams to determine the best candidates for demonstration of new concepts and technologies plus cost sharing with mission partners and/or technology allies.



(U) A brief description of each major investment area supported by this project follows.

(U) Segmented Mirror Demonstrations (SMD)

• (S//TK)



• (S//TK)



(U) Interferometric SAR (InSAR)

(S//TK)



(U) Phased Array Technology Maturity

(S//TK)



[REDACTED]

(S//TK) [REDACTED]

(S//TK) [REDACTED]

(U) Performance Information

(U//FOUO) This project supports NIS Mission Objective 1, defeat terrorists at home and abroad by disarming their operational capabilities and seizing the initiative from them by promoting the growth of democracy and freedom; Mission Objective 2, prevent and counter the spread of weapons of mass destruction; Mission Objective 4, develop innovative ways to penetrate and analyze the most difficult targets; and Enterprise Objective 8, exploit path-breaking scientific and research advances that will enable us to maintain and extend our intelligence advantage against emerging threats.

- (S//TK) [REDACTED]

(U) The following important performance outcomes, to be accomplished in future years, contribute to achieving these objectives:

- (S//TK) [REDACTED]

- (S//TK) [REDACTED]

- (S//TK) [REDACTED]

(U) In FY 2007

- (S//TK) [REDACTED]

- (S//TK) [REDACTED]

- (S//TK) [REDACTED]

- (S//TK) [REDACTED]

(U) RESEARCH & TECHNOLOGY
(U) RESEARCH & TECHNOLOGY SUPPORT



This Exhibit is ~~SECRET~~//NOFORN

(U) Description

(U) The Research & Technology Support project provides system engineering and infrastructure support to the Director, AS&T for research and technology activities to include:

- (U) State-of-the-art engineering and scientific analysis.
- (U) Technology analysis and forecasting.
- (U) Contracting, financial, and human resource management.
- (U) Information Technology.
- (U) Security.
- (U) Computer-aided design, simulation technology, and applications.
- (U) Graphics production, multimedia products, and administrative support.
- (U) Technology Forum/Technology Symposium coordination.

(U) Performance Information

(U//~~EOUO~~) This project supports NIS Enterprise Objective 8, exploit path-breaking scientific and research advances that will enable us to maintain and extend our intelligence advantage against emerging threats.

(U) The following important performance outcome, to be accomplished in FY 2007, FY 2008, and future years, contributes to achieving this objective: Provide the Director, AS&T all required scientific, acquisition, financial, security, human resource, and IT support to facilitate implementation of the NIS and NRO *Strategic Framework*. **Association to NIS:** These highly specialized services provide the Director, AS&T with professional advice and guidance in the areas of systems analysis, acquisition, information technology, security, and financial management and help to ensure the advanced R&D program is implemented in accordance with established federal, DNI, and DoD guidelines.

(U) In FY 2007

- (U//~~EOUO~~) Provide systems engineering expertise in support of technical thrusts, technology roadmaps, assessments, and prioritization models that focus research and technology solutions on NIS objectives. (P-EO8)

- (U//~~FOUO~~) Analyze the research and technology portfolio to ensure it maintains a comprehensive, cohesive and synergistic approach regarding technical integration, architectural assessments, and future systems studies. As a result, provide the Director, AS&T a semi-annual assessment to ensure ongoing basic and applied research, and advanced technology demonstrations are consistent with AS&T goals and objectives and the NIS. (P-EO8)
- (U//~~FOUO~~) Provide acquisition support that ensures sound legal and ethical business practices by following the NRO Acquisition Manual, Federal Acquisition Regulations (FAR), and DoD FAR to reduce protests and disputes. (P-EO8)
- (U//~~FOUO~~) Provide physical, operational, administrative, personnel, communications, and automated information systems security. (P-EO8)

(U) In FY 2008

- (U//~~FOUO~~) Provide systems engineering expertise in support of technical thrusts, technology roadmaps, assessments, and prioritization models that focus research and technology solutions on NIS objectives. (P-EO8)
- (U//~~FOUO~~) Analyze the research and technology portfolio to ensure it maintains a comprehensive, cohesive, and synergistic approach regarding technical integration, architectural assessments, and future systems studies. As a result, provide the Director, AS&T a semi-annual assessment to ensure ongoing basic and applied research, and advanced technology demonstrations are consistent with AS&T goals and objectives and the NIS. (P-EO8)
- (U//~~FOUO~~) Provide acquisition support that ensures sound legal and ethical business practices by following the NRO Acquisition Manual, FAR, and DoD FAR to reduce protests and disputes. (P-EO8)
- (U//~~FOUO~~) Provide physical, operational, administrative, personnel, communications, and automated information systems security. (P-EO8)