

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4		PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment RDT&amp;E ADC&amp;P</b>						
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	38.866	38.060	38.823	40.293	41.230	41.716	42.185
P162 Nuclear & Conventional Phys Sec Equip	0.000	38.866	38.060	38.823	40.293	41.230	41.716	42.185

**A. Mission Description and Budget Item Justification:** The purpose of this program is to develop physical security equipment (PSE) systems for all DoD components. This program supports the protection of tactical, fixed, and nuclear weapons systems, DoD personnel and DoD facilities. The funds are used to provide PSE RDT&E for continuing and evolving individual Service and joint PSE requirements that provide capability in the areas of force protection and tactical security equipment; robotic security systems integration; waterside security systems; explosive detection equipment; locks, safes and vaults; commercial-off-the-shelf (COTS) testing; and nuclear weapons security. Many RDT&E efforts arising from this PE will transition to PE 604161D8Z for system demonstration and validation. The PSE program is organized so that representatives from the Army, Navy, Air Force, and Defense Threat Reduction Agency (DTRA) monitor, direct and prioritize potential and existing PSE programs through the auspices of the Physical Security Equipment Action Group (PSEAG) and the Security Policy Verification Committee (SPVC). With few exceptions, each Service sponsors RDT&E efforts for technologies and programs that have multi-Service application. This program element supports the Army's advanced engineering development of Interior and Exterior Detection, Security Lighting, Security Barriers and Security Display Units. In a like manner, the program element also supports the Air Force's PSE RDT&E effort in the areas of Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion. Finally, the program supports Navy RDT&E efforts in the areas of Waterside Security, Explosive Detection, and improved technology for Locks, Safes and Vaults. Beginning with FY 1997, this PE includes funding for Force Protection Commercial-Off-The-Shelf (FP COTS) evaluation and testing, which has received focus since the 1996 Khobar Towers terrorist bombing incident. The FP COTS testing applies to all available technologies, which are considered effective for DoD physical security use.

Prior efforts were transitioned from Air Force PE 603287F and OSD PE 605161D8Z.

<b>B. Program Change Summary</b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	0.000	33.890	39.012	39.578
Current BES/President's Budget (FY 2008/2009)	0.000	38.866	38.060	38.823
Total Adjustments	0.000	4.976	-0.952	-0.755
Congressional Program Reductions				
Congressional Rescissions		-0.224		
Congressional Increases		5.200		
Reprogrammings				
SBIR/STTR Transfer				
Other			-0.952	-0.755

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APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE

**0603161D8Z - Nuclear and Conventional Physical Security Equipment RDT&E  
ADC&P**

Recognizing the synergy between nuclear weapons and conventional physical security, funds were realigned, beginning in FY 2007, from PE 603287F and 605161D8Z to this PE so that DATSD(Nuclear Matters) may leverage nuclear weapons and conventional physical security equipment programs to develop common solutions to common capability gaps.

**C. Other Program Funding Summary:** Not Applicable.

**D. Acquisition Strategy:** Not Applicable.

**E. Performance Metrics:**

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						
08						

Comment: The program performance metrics are established/approved through the DoD Physical Security Equipment Action Group (PSEAG) and the Security Policy Verification Committee (SPVC). The cost, schedule and technical progress of each project is reviewed at quarterly PSEAG and SPVC meetings. Performance variances are addressed and corrective action is implemented as necessary.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P162 Nuclear & Conventional Phys Sec Equip	0.000	38.866	38.060	38.823	40.293	41.230	41.716	42.185

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Prior efforts were transitioned from Air Force PE 603287F and OSD PE 605161D8Z.

**B. Accomplishments/Planned Program:**

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Force Protection/Tactical Security Equipment (FP/TSE):	0.000	15.635	13.439	13.600

FY 2006 Accomplishments:  
Prior efforts were transitioned from Air Force PE 603287F.

- FY 2007 Plans:
- Begin Light Kit, Motion Detection (LKMD) Prototype Design, Fabrication, and Integration of 40 prototype systems.
  - Conduct a Leap Ahead assessment of current PSE capability.
  - Develop an enhanced Command and Control Display Element (CCDE) for Physical Security Systems.
  - Develop the software to support the Common Operational Picture.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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- Conduct Combined Test Force Evaluation of Phase IV development of the Remote Detection and Tracking System (RDTS).
- Demonstrate Wireless Security Sensor Networks.
- Conduct Operational Test and Evaluation (OT&E) of Smart Gate.
- Execute a congressional add to develop the Integrated High Activity Response System.
- Execute a congressional add to continue designing software for Intelligent Decision Exploration.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have Physical Security Equipment (PSE) utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.

FY 2008 Plans:

- Integrate Identify Friend or Foe with radar detection systems.
- Evaluate Commercial-Off-The-Shelf (COTS) Wireless Sensor System Network technology.
- Plan for Smart Gate maintenance and sustainment.
- Interface Smart gate with applicable database management systems.
- Conduct Light Kit, Motion Detection (LKMD) product verification testing (PVT).
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.

FY 2009 Plans:

- Develop a Trip Wire Sensor.
- Develop an improved active infrared detection system.
- Complete LKMD PVT.
- Continue spiral development of the Aircraft Self-Protection System (ASPSS).
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Robotic Security Systems Integration (RSSI):	0.000	1.763	1.024	1.036

FY 2006 Accomplishments:  
 Prior efforts were transitioned from Air Force PE 603287F.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment                  RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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FY 2007 Plans:

- Integrate data feeds obtained from unmanned air and ground vehicles to improve surveillance capability and the common operation picture.
- Begin to integrate remote weapon systems with robotic platforms.
- Evaluate user and site requirements for Multi-robot Operator Control Unit (MOCU) integration with an Unmanned Aerial Vehicle (UAV).
- Execute a congressional add to continue the development of the Digital Network Centric Remotely Operated Weapon System.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve robotic integration capability.

FY 2008 Plans:

- Complete Force Protection Aerial Surveillance System (FPASS) Web-Based Proficiency Simulation.
- Begin FPASS Web Training certification process
- Transition FPASS web-based Trainer and system to USAF.
- Develop, test, evaluate, and modify Multi-robot Operator Control Unit/Unmanned Aerial Vehicle (MOCU/UAV) interface.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to test, develop, and integrate equipment to improve robotic integration capability.

FY 2009 Plans:

- Collaborate on Human Presence sensor integration and testing on robotic platform in exterior environment to refine hardware and algorithms.
- Demonstrate Networked Remotely Operated Weapon System (NROWS) detecting and tracking multiple targets under various control scenarios.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security robotic integration capability.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Waterside Security System (WSS):	0.000	2.928	3.250	3.290

FY 2006 Accomplishments:

Prior efforts were transitioned from Air Force PE 603287F.

FY 2007 Plans:

- Continue efforts to develop the next generation WQX-2 Sonar with Allies.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment                  RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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- Leverage WSS efforts in support of SSBNs. Continue to explore opportunities to develop a viable non-lethal means to neutralize swimmer threats.
- Further develop brassboard WSS prototypes transitioned from concept development.
- Develop AN/WQV-2 ADCAP version 3.1 software.
- Continue to research technology to protect shipboard and Marine expeditionary forces.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

FY 2008 Plans:

- Develop and integrate a prediction tool into the AN/WQX-2 ADCAP processor.
- Add patrol boat and radar tracking capability to ADCAP processor.
- Complete overwater development of Remote Detectio and Tracking Sensor (RDTS).
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have Physical Security Equipment (PSE) utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

FY 2009 Plans:

- Continue to develop swimmer detection capability.
- Continue to improve algorithms that provide target analysis of waterborne threat.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Explosive Detection Equipment (EDE):	0.000	5.763	6.394	6.471

FY 2006 Accomplishments:

Prior efforts were transitioned from Air Force PE 603287F.

FY 2007 Plans:

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment                  RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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- Acquire emerging explosive detection technology for comparative testing and realignment of a Baseline Explosive Detection Architecture.
- Conduct System Design Review for the Video/Radar Concealed Bomb Detection.
- Develop a hybrid image/trace explosive detection capability.
- Continue to invest in the development of a viable technology to provide a stand off explosive detection capability against Improvised Explosive Devices (IEDs).
- Reduce Remote/Standoff Explosive Detection System (R/SEDS) detection time yet increase detection capability.
- Conduct comparative testing of commercial and developmental explosive detection devices.
- Conduct OT&E of R/SEDS.
- Determine the feasibility of using Computed Tomography (CT) X-Ray technology to detect explosives.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE/EDE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

FY 2008 Plans:

- Refine the capability of Remote/Standoff Explosive Detection System (R/SEDS) to specifically identify the type of explosive.
- Develop and test a backpack version of the Quantum Sniffer.
- Develop a CT Scan algorithm for explosive detection.
- Explore the use of TerraHertz technology to detect explosives at a distance.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE/EDE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

FY 2009 Plans:

- Develop a phosphor plate detector for a Computed Tomography (CT) Explosive Scanner.
- Upgrade and test the CT Scanner algorithms.
- Develop a 650 GHz source for teacher imaging.
- Continue to explore TerraHertz technology in academia and the National Labs.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE/EDE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Locks, Safes, Vaults:	0.000	1.560	1.731	1.752

FY 2006 Accomplishments:  
 Prior efforts were transitioned from Air Force PE 603287F.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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FY 2007 Plans:

- Develop an Integrated Locking Device (ILD) universal mount prototype.
- Incorporate ILD design improvements that will increase operation. capability and improve resistance against forced entry.
- Develop an ILD with biometrics verification capability.
- Integrate biometrics technology with high security lock technology.
- Hold 8th Annual Seals Symposium.
- Identify shock and vibration requirements for shipboard security containers.
- Continue to manage, develop, evaluate, and test Delay/Denial products.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security of facilities.

FY 2008 Plans:

- Integrate and automate locking systems into other support systems.
- Begin Operational Test and Evaluation (OT&E) of Storage Magazine redesign.
- Plan and execute a Seals Symposium.
- Maintain field support program.
- Integrate Internal Locking Device (ILD) identity verification capability software.
- Continue to manage, develop, evaluate, and test Delay/Denial products.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security of facilities.

FY 2009 Plans:

- Begin Low Rate Initial Production (LRIP) of redesigned storage magazines.
- Begin Operation Testing and Evaluation (OT&E) of Storage Magazine redesign.
- Continue field support program.
- Continue to develop ILD with biometrics/identity verification capability.
- Continue to manage, develop, evaluate, and test Delay/Denial products.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security of facilities.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Commercial-Off-The-Shelf (COTS) Testing:	0.000	2.617	2.228	2.255

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE <b>0603161D8Z - Nuclear and Conventional Physical Security Equipment                  RDT&amp;E ADC&amp;P</b>	PROJECT <b>P162</b>
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FY 2006 Accomplishments:  
 Prior efforts were transitioned from Air Force PE 603287F.

- FY 2007 Plans:
- Refine Force Protection Equipment Demonstration (FPED) VI on-line registration and informational website.
  - Continue to seek near-term (commercial) solutions for immediate force protection needs.
  - Execute FPED VI.
  - Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
  - Continue to manage sensor and assessment product developments and tests.
  - Continue to test, develop, and integrate equipment to improve security and access to facilities.

- FY 2008 Plans:
- Continue to seek near-term (commercial) solutions for immediate force protection needs.
  - Plan FPED VII.
  - Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
  - Continue to manage sensor and assessment product developments and tests.
  - Continue to test, develop, and integrate equipment to improve security and access to facilities.

- FY 2009 Plans:
- Execute FPED VII.
  - Find commercial solutions to a Common Relevant Operational Picture.
  - Continue to seek near-term (commercial) solutions for immediate force protection needs.
  - Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
  - Continue to manage sensor and assessment product developments and tests.
  - Continue to test, develop, and integrate equipment to improve security and access to facilities.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Nuclear Weapon Physical Security:	0.000	8.600	9.994	10.419

FY 2006 Accomplishments:  
 Prior efforts were transitioned from OSD PE 605161D8Z.

- FY 2007 Plans:
- Apply lessons learned from Secure Brow test and evaluation.
  - Develop a fully functioning, interactive, 3D view client workstation for the Joint Conflict and Tactical Simulation (JCATS).
  - Design, fabricate, and install prototype delay upgrade hardware in a (Payload Transporter (PT) III Van.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

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APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE

**0603161D8Z - Nuclear and Conventional Physical Security Equipment  
RDT&E ADC&P**

PROJECT  
**P162**

- Continue developing the Virtual Perimeter Security System (VPS).
- Improve capability to apply immediate sufficient duress at a Protective Aircraft Shelter.
- Develop hardened capability in the protection of nuclear weapons storage sites and launch facilities.
- Begin to incorporate secure wireless communication and sensor data fusion into virtual presence and extended detection.
- Continue to develop systems that deny access to nuclear weapons facilities and systems by designing Pierside and Dry Dock vessel access denial systems.
- Conduct a product improvement of the Radar Track Processor that will enhance the ability to track marine vessels operating near nuclear facilities.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

## FY 2008 Plans:

- Continue developing the Active Protection System.
- Add a 3D viewer to the JCATS after action review tool to expand the capability of simulation runs.
- Publish a design guidance document based on the findings of the Physical Security of Storage Magazine Study.
- Continue to build algorithms that model terrorist attacks against critical resources.
- Conduct developmental testing of modeling and simulation software.
- Fabricate access denial system prototypes.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
- Continue to prepare operational systems improvement plans; develop technology roadmaps, and update system architecture.
- Continue to test, develop, and integrate equipment to improve security and access to facilities.

## FY 2009 Plans:

- Develop a fully function, interactive, 3D view client workstation.
- Conduct Operational Test and Evaluation (OT&E) of Virtual Perimeter Security System prototype.
- Develop a risk management tool for nuclear weapons physical security.
- Support the retrofit of Storage Magazines.
- Continue to adapt weapons intercept technology to provide protection of nuclear weapons facilities.
- Test and evaluate access denial systems.
- Continue to manage, develop, evaluate, and test Detection/Assessment/Delay/Denial products.
- Continue to manage sensor and assessment product developments and tests.
- Continue to research technological advances within industry; at DARPA; DoD, DoE, and University Labs; etc., that have PSE utility.
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**0603161D8Z - Nuclear and Conventional Physical Security Equipment  
RDT&E ADC&P**

PROJECT  
**P162**

**C. Other Program Funding Summary:** Not Applicable.

**D. Acquisition Strategy:** Not Applicable.

**E. Major Performers** Not Applicable.