

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE	
APPROPRIATION/BUDGET ACTIVITY								R-1 ITEM NOMENCLATURE	
RDT&E, Defense-Wide/Advanced Technology Development - BA3								Counterproliferation Support-Advanced Development; 0603160BR	
Cost (In Millions)	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	Cost to Complete
Total 0603160BR Cost	0	53.0	81.2	75.8	74.7	75.9	77.7	79.3	Continuing
Project P535 SOF Counterproliferation Support	0	12.8	20.9	20.8	18.8	18.9	19.4	19.9	Continuing
Project P539 Counterforce	0	40.2	60.3	55.0	55.9	57.0	58.3	59.4	Continuing

A. Mission Description and Budget Item Justification - In August 1994, DoD established the Counterproliferation Support Program specifically to address the DoD shortfalls in counterproliferation operational capabilities documented in the May 1994 Report to Congress titled *Report on Nonproliferation and Counterproliferation Activities and Programs*. Counterproliferation Support Program funds are used to leverage DoD acquisition programs to meet the counterproliferation priorities of the Commanders-in-Chief (CINCs) of the Combatant Commands and accelerate the deployment of enhanced capabilities to the field. Specifically, the goal of the Counterproliferation Support Program is to improve specific military counterproliferation capabilities by (1) building on ongoing programs in the Services, DoD agencies, Department of Energy and US Intelligence; (2) focusing on the most critical counterproliferation shortfalls to address major gaps in deployed capabilities (as reflected in the CINCs' priorities and the Counterproliferation Review Committee's (CPRC) prioritized list of counterproliferation Areas for Capability Enhancements); (3) leveraging existing program funding to more rapidly field capabilities by accelerating the deliverables of DoD programs; (4) identifying and enhancing the development of high payoff technologies to accelerate capabilities to the warfighter; (5) identifying and promoting key non-material initiatives that complement technological advances; (6) transitioning Counterproliferation Support Program projects to the Services as soon as practicable; and (7) procuring counterproliferation unique development products for CINCs.

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Project P535 - SOF Counterproliferation Support - In 1995 the SECDEF assigned the core task of countering the proliferation of weapons of mass destruction (WMD) to SOF. Within SOF, Project P535 develops and demonstrates SOF unique devices that enable SOF and special mission units to detect, disable, and neutralize WMD and their associated facilities under the direction of a geographic CINC in support of CONPLAN 0400. This project is employed by SOF units with direct application to the nation's effort to counter the spread of WMD (CP-WMD). Efforts in this project include the defeat of hard and deeply buried targets (HDBT), explosive ordinance disposal (EOD), and maritime efforts to prevent the spread of WMD technology or systems using the sea-lanes. HDBT is focused on breaching tools, improved communications, life support equipment, detection and defeat sensors, underground navigation systems, and target defeat capabilities. The EOD focus is on detection, characterization, extraction, and emergency destruction of nuclear, biological, and chemical (NBC) agents and devices. Efforts seek to improve these capabilities by providing greater standoff range and utilizing non-intrusive technologies. Maritime CP operations concentrate on defeating and neutralizing WMD or WMD material being transported or concealed on maritime platforms. Also included are efforts to enhance our existing capability in support of the domestic response to the WMD threat on U.S. soil. The CP-WMD effort also addresses support requirements that apply to all three of the previously identified efforts.

FY 1998 Accomplishments

Funding and activities accomplished under PE 0603160D8Z.

FY 1999 Plans

SOF Projects (\$12,763K)

Specific details are classified.

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Project P535 - SOF Counterproliferation Support (cont'd) -

FY 2000 Plans

SOF Projects (\$20,928K)

Specific details are classified.

FY 2001 Plans

SOF Projects (\$20,763K)

Specific details are classified.

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Project P539 - Counterforce - The purpose of this project is to develop technologies, demonstrate prototype systems in an operationally realistic environment and provide the warfighter with enhanced capabilities in response to current threat projections for potential adversaries who have the capability to develop and/or employ nuclear, biological and chemical (NBC) weapons in future regional conflicts involving the U.S. or its allies. The U.S. requires the capability to identify and characterize NBC research, production, storage and operational support facilities and be prepared to attack and neutralize them while mitigating collateral effects resulting from expulsion and release of NBC agents. The potential target set includes fixed, aboveground and underground hardened and unhardened facilities. The project started in FY95 and was structured to exploit ongoing technology programs wherever possible. Early project emphasis was applied to efforts to predict and measure target response and dispersion of agents associated with attacks against NBC facilities using existing conventional weapons. Project emphasis evolved to mitigation of collateral effects through advanced weapon development and greatly enhanced deliberate target planning leading to optimized weapon employment. The focus through FY98 was the demonstration of target planning tools, weapons and sensors supporting direct attacks on an expanded set of NBC targets. In the near-term (FY99-03), the project emphasis will change to standoff penetrating weapons, collateraleffects assessment and the supporting planning tools. Prototype or modified systems integrating these technologies will then be evaluated in an Advanced Concept Technology Demonstration (ACTD), and a residual operational capability provided to the warfighters.

A second counterforce CP ACTD was approved by DUSD(AT). The original CP ACTD has been retitled CP1 ACTD for the first CP ACTD. The second CP ACTD is called the Second Counterproliferation Counterforce Advanced Concept Technology Demonstration (CP2 ACTD). FY98 was the transition year with CP1 ACTD concluding and CP2 ACTD starting.

This project builds on previous Defense Threat Reduction Agency (DTRA), previously named the Defense Special Weapons Agency, projects to develop and mature sensor systems to provide additional capabilities for pre-, trans- and post-attack target characterization, and damage and collateral effects assessments. The project further develops and

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Project P539 - Counterforce (cont'd) - accelerates capabilities in collateral effects prediction, target/weapon interaction prediction, and funds the integration of these capabilities into Service/CINC target planning systems. The project also builds on Service programs in advanced weapon guidance, penetration and fuze enhancements. Service weapon development expertise will be used to integrate complementary, demonstrated technologies into prototype weapons that can improve prompt response, enhance lethality and control collateral effects. The project milestones are broken into four major product areas or subprojects, sensors, collateral effects, target planning and weapons, plus the operational demonstrations.

Sensors - This effort will provide improved warfighting residual capabilities for facility characterization, battle damage assessment (BDA) and collateral effects assessment against the spectrum of NBC facilities. Research and development has been conducted at DTRA to characterize signatures from shallow underground facilities for exploitation by tactical unattended ground sensors (TUGS). Objectives of the program included development of techniques for source identification, localization, and performing change detection in trans-attack signatures for weapon effectiveness analysis. Intelligence community (IC) and Department of Energy (DoE) programs involved research and development to assess sensor performance and approaches for optimum sensor application for surface target detection and underground facility detection and characterization. Other project activities included enhancing the performance of existing forward looking infrared (FLIR) sensors. This sub-project has leveraged existing programs to (1) define concept of operations and sensor system (ground and air) architectures for BDA, collateral effects assessment, and facility characterization; (2) develop and demonstrate sensor technologies and prototype sensor systems for BDA and facility characterization; (3) produce data fusion and processing module for BDA and facility characterization to meet user requirements on existing platforms; (4) produce an integrated BDA module to support airborne sensors; (5) develop and demonstrate a man-emplaced TUGS system that includes multi-sensor arrays; (6) integrate stand-off and point sensors onto air platforms and demonstrate the ability to confirm, identify, and assess the release of chemical and biological agents in support of

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Project P539 - Counterforce (cont'd) - attacks on NBC facilities. CP2 ACTD sensors and data fusion will address confirming the presence of chemical and/or biological agents post attack and assist in predicting transport patterns by updating pre-strike predictions of the potentially hazardous plume with real-time data. The CP2 ACTD sensor program will leverage on-going sensor efforts within the chemical and biological defense community to minimize program risk in developing sensors for counterforce missions. This program will also monitor the progress of remote biological agent detectors for potential incorporation into the collateral effects assessment system. For FY99, the sensor sub-project will continue to analyze CINC requirements for collateral effects assessment, assess the maturity of chemical and biological detector technologies, conduct risk reduction activities for a few key technologies, and define the systems to be demonstrated as a part of CP2 ACTD. CP2 ACTD sensor development will start in FY00.

Collateral Effects - The Collateral Effects program provides predictive tools for NBC expulsion and dispersion resulting from attacks on WMD facilities as well as acts of terrorism and hostile use of WMD for a variety of applications supporting NBC target attack planning. Requirements include high-resolution weather models and population databases. A key element in developing these collateral effects codes is chemical/biological expulsion tests and modeling. Modeling of chemical/biological expulsion sources will be based on theoretical model and empirical data. Codes will be validated from existing data, other predictive models and special collateraleffects experiments. The collateral effects tools will provide pre-attack prediction and post-attack assessment. The Hazard Prediction and Assessment Capability (HPAC) predicts the release and transport of NBC materials and the subsequent collateral effects. The high resolution weather prediction capability provides timely wind, cloud, and precipitation data necessary for NBC collateral effects predictions. Weather data currently does not have the resolution or quality necessary. This weather data will be available to other users in the theater such as Joint Warning Network (JWARN). These toolswill be integrated into target attack planning tools to assess the consequences of attacks on WMD facilities.

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Project P539 - Counterforce (cont'd) -

Target Planning - This effort will provide a new deliberate planning combat assessment capability and a major upgrade for existing theater level planning capabilities for defeating or denying NBC facilities and capabilities. This effort builds upon the Integrated Mission Effects Assessment (IMEA) planning tool developed for CP1. IMEA provides a forward deployable target planning capability for NBC targets. IMEA is an integration of the Munitions Effects Assessment (MEA) tool providing targeting solutions using conventional weapons for a variety of structures and equipment and the HPAC developed under the Collateral Effects subproject. The current effort will produce the Integrated Target Planning Tool Set (ITPTS) that will provide a spectrum of planning capabilities from deliberate to crisis. ITPTS includes IMEA II and high resolution weather prediction. IMEA II will import target data and import attack assessment data from prior planned strikes. ITPTS will also predict weapons performance and associated NBC collateral effects, develop targeting solutions that minimize collateral effects, and provide the results through the appropriate interfaces for a variety of targets including functionally and structurally complex facilities. The major differences between IMEA and IMEA II is a greatly enhanced interface to the Intelligence community and upgrades to handle additional target types including complex facilities, to handle additional weapons and platforms, to provide more operator friendly displays, to import attack assessment data, and to efficiently interface with Service planning systems. The ITPTS interfaces include but are not limited to Global Command and Control System, the Service targeting and strike execution control systems, strategic and tactical intelligence and sensor systems, the weather community, and the NBC warning system. The "plug and play" architecture is required to accommodate differing CONOPS, theaters, and performers in several geographic locations. The deliberate planning capability requires significant input from the intelligence community including data regarding NBC facilities, processes, and surrounding populations. This effort will support the intelligence community in developing the necessary interfaces to provide for the efficient transfer of intelligence data. ITPTS will include IMEA, an advanced wind and weather prediction capability, and a "plug and play" architecture to facilitate additional capabilities. This effort will

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Project P539 - Counterforce (cont'd) - execute a full verification and validation program, in accordance with the Joint Technical Coordinating Group for Munitions Effects Procedures, for all delivered capabilities including extensive field testing at all functional levels.

Weapons - Conventional explosive-filled weapons are often relatively ineffective in destroying large underground reinforced concrete facilities. Even if the weapon detonates inside the facility, substantial interior walls and/or floors often confine the blast and fragmentation thus causing significant overpressure and venting through the penetration hole. Likewise conventional explosive-filled weapons often result in complete and uncontrolled destruction of soft buried and aboveground facilities. When these facilities protect NBC, the random use of conventional weapons greatly increases the risk of agent dispersal that may result in extensive civilian or force casualties. This sub-project will develop, integrate and demonstrate advanced conventional weapons technologies to improve mission effectiveness against NBC facilities while mitigating collateral effects. For CP1 ACTD, these technologies included improvements in adverse-weather/precision guidance, enhanced penetrating capabilities, and advanced fuzing options. Technologies that were successfully demonstrated are being weaponized into systems. Advanced fuzes enable weapons employment options to maximize lethality and/or control collateral effects. The focus for CP2 ACTD is to provide the warfighter with a demonstrated option to attack NBC facilities in a standoff mode. CP2 ACTD will improve on existing standoff weapon platforms to provide enhanced penetration and advanced fuzing. Standoff weapons to be enhanced include a Tactical Tomahawk version called the Tactical Tomahawk Penetrator Variant (TTPV) and the Conventional Air Launched Cruise Missile (CALCM). Enhanced payloads can reduce collateral effects by neutralizing agents before they are released or by reducing the amount released. The enhanced payload technologies are less mature and will remain in technology base development. Once matured, enhanced payloads efforts will explore alternate warhead options to conventional blast/fragmentation with the objectives of mitigating collateral effects associated with dispersal of NBC materials while also minimizing the number of weapons required to functionally defeat WMD facilities.

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Project P539 - Counterforce (cont'd) -

Operational Demonstrations - The Counterproliferation ACTD will improve the operational capability for holding NBC targets at risk with minimum collateral effects. The objective is to integrate available or near-term technologies for sensors, weapons, collateral effects prediction and target planning tools, evaluate the technologies in an operational context, and transition improved capabilities rapidly to warfighters. Specifically, this project will enhance and accelerate existing programs to provide integrated target planning to include collateral effects prediction codes and sensors for facility simulated chemical production facilities using the characterization and BDA, and advanced weapons development programs to meet NBC target defeat requirements. This project will also support demonstration operations to include system operational concept, demonstration planning, scenario development, and execution of the ACTD and post-demonstration analysis. Planning and execution of the ACTDs uses a time phased approach to screen candidate technologies for maturity, develop prototype systems and demonstrate enhancements in military capability against a warfighter prioritized subset of all potential NBC target types. This approach results in a cycle of prototype development and testing followed by periods of operational demonstration.

Two operational demonstration series were defined for the CP1 ACTD. The first demonstration, named Dipole Orbit (DO), was successfully completed in February 1997. This first demonstration used new target planning tools to determine the "best" employment of current weapons with a smart fuze against simulated biological agents housed in soft aboveground bermed structures. The second and final demonstration series, named Dipole Jewel (DJ), was completed in October 1998. This demonstration assessed improved capabilities in weapons, sensors, and enhanced planning tools against a simulated, hardened chemical weapons production facility in a shallow-buried, cut-and-cover structure. After the start of CP1 ACTD, the sponsoring command identified a need to understand their ability to conduct counterforce operations against soft aboveground-simulated chemical production facilities using the TLAM-C. The Dipole Tiger (DT)

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Project P539 - Counterforce (cont'd) - demonstration series was added as a quick response to the users' request. DT ran from April 1997 through May 1997.

Three operational demonstration series are planned during CP2 ACTD over the period of FY2000-2003 to provide the sponsor and participating commands with the opportunity to assess the utility of the selected technologies. The objective of the first demonstration series in CP2 ACTD, called Dipole Yukon (DY), is to exploit near-term technology by demonstrating the baseline capabilities of the Joint Air-to-Surface Stand-off Missile (JASSM) to conduct chemical/biological (C/B) counterforce missions through operationally realistic attacks against a simulated biological weapons storage facility. The objective of the second demonstration, called Dipole Zodiac (DZ), is to assess the suitability of the CALCM with a penetrating warhead. The objective of the third demonstration, called Divine Canberra (DC), is to evaluate the end-to-end set of products of the CP2 ACTD including the target planning tool, in its final operational context, and a TTPV stand-off attack penetrating weapon capability. Specific collateral effects assessment sensors to participate in these three demonstrations will be defined during FY99.

FY 1998 Accomplishments

Funding and activities accomplished under PE 0603160D8Z.

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Project P539 - Counterforce (cont'd) -  
FY 1999 Plans

Sensors (\$2,698K)

Continue design, fabrication, and demonstration of modifications for standoff chemical sensor.

Evaluate biological sensors for the counterforce role.

Continue development of the High Frequency Active Auroral Research Program (HAARP)

Collateral Effects (\$6,750K)

Deliver a theater weather server and provide high-resolution predictive weather capability for regional operations.

Continue validation tests for collateral effects modules.

Deliver HPAC 4.0 Prototype.

Deliver soft chemical facility hazard source term model.

Initiate urban collateral effects model development.

Develop world-wide land cover and population database for collateral effects casualty predictions.

Target Planning (\$14,550K)

Develop and deliver a multiple weapon capability for IMEA.

Execute scale tests/analyses and validate target planning tools.

Enhance WMD component damage prediction models to include multiple weapons.

Initiate development of ITPTS and demonstrate prototype with three integrated tools.

Complete and deliver IMEA 4.0 software to support CP2 ACTD.

Support SOF project (details are classified).

Initiate WMD facility analysis and database population for the Counterproliferation Analysis and Planning System (CAPS).

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Project P539 - Counterforce (cont'd) -  
Weapons (\$13,045K)

Fabricate and test Hard Target Smart Fuze (HTSF) hardware with expanded capabilities.  
 Conduct CALCM penetrator systems design and integration.  
 Conduct TTPV penetrator systems integration.  
 Initiate TTPV penetrator payloads system design.  
 Initiate TTPV penetrator missile systems design and engineering.  
 Initiate TTPV penetrator air-vehicle modification design and fabrication.  
 Continue smart fuze design to meet Navy certification requirements.  
 Continue TTPV penetrator warhead design, fabrication, and test.  
 Initiate TTPV penetrator command and control modifications.  
 Initiate TTPV penetrator system test and evaluation.  
 Complete scale tests of selected high temperature incendiaries (HTI) and chemical  
 neutralization agents against simulated chemical and biological agents.  
 Continue modeling and simulation to support enhanced payloads concept screening and  
 down select.

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Project P539 - Counterforce (cont'd) -  
Operational Demonstrations (\$3,145K)

- Prepare Dipole East (DE) 165 target (1/4 refurbishment of Dipole Jewel target structure).
- Conduct Dipole East 165 demonstration.
- Complete target construction for Dipole Yukon 1.

FY 2000 Plans

Sensors (\$9,000K)

- Initiate design, fabrication, and demonstration modifications of air platform to provide remote sensing capability.
- Continue design and test of mini-UAV modification.
- Continue to configure, fabricate, integrate, and test components for combat assessment mini-UAVs.
- Continue to develop concept of operations, communications, data fusion/display ground station, and interface requirements.

Collateral Effects (\$6,300K)

- Deliver a biological hazard source model and transport capability for soft facilities.
- Develop high resolution databases for real populations and real land surfaces for customer determined locations.
- Develop human effects model for civilian populations to better predict WMD collateral effects (casualties).
- Deliver theater weather server with high fidelity weather model.
- Deliver initial urban collateral effects capability.
- Deliver HPAC 4.0.

Target Planning (\$15,760K)

- Demonstrate IPTS prototype with five integrated tools.

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Project P539 - Counterforce (cont'd) -

Deliver Joint Air-to-Surface Standoff Missile (JASSM) weapon effects/performance models for IMEA.

Complete modeling capability for a complex aboveground target.

Deliver sub-system level validation report for planning tools.

Complete and deliver IMEA 5.0 software to support Dipole Yukon.

Deliver weapons effects/performance models for the Tactical Tomahawk Penetrator Variant.

Initiate cruise missile (TTPV and CALCM) performance models for IMEA.

Continue WMD facility analysis and database population for CAPS.

Weapons (\$18,800K)

Conduct CALCM penetrator systems design and integration.

Conduct TTPV penetrator systems integration.

Continue TTPV penetrator warhead design, fabrication, and test.

Continue TTPV penetrator command and control modifications.

Continue TTPV penetrator payloads system design.

Continue TTPV penetrator missile systems design and engineering.

Continue TTPV penetrator air-vehicle modification design and fabrication.

Conduct TTPV penetrator system test and evaluation.

Conduct enhanced payloads static scaled tests against soft chemical/biological targets.

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Project P539 - Counterforce (cont'd) -

Conduct modeling and simulation support for enhanced payloads scale testing.  
Operational Demonstrations (\$10,457K)  
Conduct Dipole East 166 and 167 demonstrations.  
Analyze demonstration results and report.  
Complete target construction for Dipole Zodiac demonstration.  
Conduct Dipole Yukon 1 demonstration.  
Conduct Dipole Zodiac 1 demonstration.  
Complete target construction for Dipole Yukon 2.  
Support CP analysis for concept of operations development.

FY 2001 Plans

Sensors (\$9,000K)

Integrate and test mini-UAV on air platform.  
Continue remote sensor testing on air platform.  
Conduct tests of combat assessment component in mini-UAV.  
Continue simulant and agent tests for remote and point sensors.  
Continue to develop concept of operations, communications, data fusion/display ground station, and interface requirements.

Collateral Effects (\$7,500K)

Deliver final hazard source models for CP2 ACTD standoff weapons.

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Project P539 - Counterforce (cont'd) -

- Develop modeling for urban internal transport.
- Deliver Meteorological Data Server in ITPTS architecture.
- Deliver human effects module integrated with population data.
- Validate weather models and wind field data for priority regional areas.
- Complete ITPTS access to all HPAC capabilities.

Target Planning (\$13,900K)

- Complete and deliver ITPTS 1.0 with interoperability among the seven integrated tools.
- Deliver CALCM weapon effects/performance models.
- Enhance penetration model for complex targets and angle of attack.
- Enhance WMD damage prediction and expulsion models to include fermenters and stills.
- Complete and deliver IMEA 6.0 software to support Dipole Zodiac.
- Continue WMD facility analysis and database population for CAPS.

Weapons (\$16,289K)

- Complete CALCM penetrator systems design and integration.
- Conduct TTPV penetrator systems integration.
- Continue TTPV penetrator warhead design, fabrication, and test.
- Complete TTPV penetrator command and control modifications.
- Continue TTPV penetrator payloads system design.
- Continue TTPV penetrator missile systems design and engineering.

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Project P539 - Counterforce (cont'd) -

- Continue TTPV penetrator air-vehicle modification design and fabrication.
- Conduct TTPV penetrator system test and evaluation.
- Conduct full scale enhanced payloads tests against chemical/biological targets.
- Complete modeling and simulation of selected enhanced payloads concept.

Operational Demonstrations (\$8,389K)

- Conduct Dipole Yukon 2 demonstration.
- Analyze demonstration results and report.
- Complete target construction for Dipole Idle 4 demonstration.
- Conduct Dipole Zodiac 2 demonstration.

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<b>B. <u>Project Change Summary</u></b>	<u>FY1998</u>	<u>FY1999</u>	<u>FY2000</u>	<u>FY2001</u>
Previous President's Budget	0	70.6	68.1	64.2
Current President's Budget	0	53.0	81.2	75.8

Change Summary Explanation:

The FY99 President's Budget of \$70.6M was reduced by \$25.0M during the appropriations cycle which transferred the funds to the Special Reconnaissance Capabilities Program. Funding was increased by \$7.4M in support of the CAPS and HAARP Programs. The FY00 request restores CINC priority initiatives in Sensor and SOF programs deferred by the FY99 reduction and adds funding for CAPS (\$10.0M FY00, \$8.9M FY01)