RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense-Wide/BA 3	**R-1 ITEM NOMENCLATURE** Strategic Environmental Research and Development Program **PE 0603716D8Z**

COST *(In Millions)*	FY2001	FY2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total Program Element (PE) Cost	59.007	62.165	60.468	63.172	64.191	64.771	65.734	Continuing	Continuing
SERDP/P470	59.007	62.165	60.468	63.172	64.191	64.771	65.734	Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

(U) BRIEF DESCRIPTION OF ELEMENT

(U) Congress established the Strategic Environmental Research and Development Program (SERDP) in 1990 (10 U.S.C. Section 2901-2904) to address Department of Defense (DoD) and Department of Energy (DOE) environmental concerns. It is conducted as a DoD program, jointly planned and executed by the DoD, DOE, and the Environmental Protection Agency (EPA), with strong participation by other Federal agencies, industry, and academia. SERDP`s objective is to improve DoD mission readiness by providing new knowledge, cost-effective technologies, and demonstrations in the areas of environmental Cleanup, Unexploded Ordnance (UXO), Compliance, Conservation, and Pollution Prevention. SERDP does this by (1) addressing high priority, mission-relevant, defense environmental technology needs necessary to enhance military operations, improve military systems` effectiveness, enhance military training/readiness, and help ensure the safety and welfare of military personnel and their dependents; and (2) enhancing pollution prevention capabilities to reduce operational and life-cycle costs, as well as reducing the cost of necessary cleanup actions and compliance with laws and regulations. As a secondary benefit, SERDP helps solve significant national and international environmental problems. The keys to a growing list of SERDP technological successes are the ability to respond aggressively to these priority defense needs; the pursuit of universal, world-class technical excellence; emphasis on constant technology transfer to field use; and sound fiscal management.

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(U) Project Number and Title: P470 SERDP

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

(U) FY 2001 Accomplishments:

(U) General: Continue development of environmental technologies that respond to the DoD`s highest priority environmental needs

(U) By Thrust:

Pollution Prevention : Development of new plating materials and technologies to replace toxic chromium and cadmium in weapon systems and platforms has shown exceptional progress. Technologies to inspect aircraft, ships and tanks for corrosion without stripping the paint continue under development. Efforts on the development of non-ozone depleting chemicals for firefighting remained a focal point as have the elimination and reduction of hazardous air emissions. ($ 18.797 million)

(U)Cleanup: Technology development efforts continued to address the remediation high priority pollutants including energetics, chlorinated solvents and ammonium perchlorate. These include advances in site characterization focusing on optimization of long-term groundwater monitoring systems; Risk Assessment and Standards; Bioremediation; and Physio-chemical Remediation. ($ 14.723 million)

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(U)Compliance : The Compliance Thrust Area continued efforts to support waste treatment and disposal, environmental monitoring and environmental management that is not directly related to site restoration but is meeting current and future environmental compliance requirements of DoD and DOE. Focus was on reduction of hazardous air emissions, fate and impact of contaminants, and characterization and treatment of contaminated waters and sludges.
($12.304 million)

(U)Conservation : Work continued in the assessment and mitigation of military impacts on DoD lands with an emphasis on range sustainability. Efforts addressed issues associated with threatened and endangered species and Ecosystem Management to develop the scientific understanding of ecosystem processes on military lands that will permit the continued use of these lands.
($10.488 million)

(U) Unexploded Ordnance (UXO) Detection : Continuing efforts to improve UXO detection capability, including the development of sensor technologies that exploit all of the physical characteristics of UXO. Equally important is the continued development of methods and techniques for accurately discriminating UXO from scrap in order to significantly reduce the cost of clearance.
($ 2.695 million)

(U) FY 2002 Plans:

(U)General: SERDP will continue research and technology efforts to address the high priority requirements in Pollution Prevention ; Cleanup; Compliance; Conservation; and Unexploded Ordnance (UXO). Particular attention is being directed to UXO and other issues which impact the sustainability of the Department's training and testing ranges. The increase in the FY2002 request was directed towards the detection and discrimination of UXO as well as the multitude of issues concerned with the contamination of soil and groundwater due to energetic materials expended during live fire operations.

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In the Pollution Prevention thrust area: In addition to the ongoing projects, the new start focus areas for FY 2002 include: environmental fate, transport and effects of the new energetic material CL-20; environmentally benign polymer matrix composites; tagging technologies to permit the remote localization and identification of UXO; environmentally benign, low-temperature, powder coatings; environmentally benign packaging for military rations; environmentally acceptable pyrotechnics; technologies to prevent or limit marine fouling of ship hulls and heat exchangers; and environmentally acceptable replacements of fluorescent dyes for non-destructive testing of weapons systems. In addition, a major effort to develop "green" medium caliber ammunition began. ($15.576 million)

For the Compliance thrust area: The areas of interest for new start projects include: determination of the emissions from live fire activities as well as the fate and effects of the energetics on training and testing ranges; source and ambient air toxic monitoring technologies; technologies to control aquatic non-indigenous species in Navy ships; and observation and prediction technologies for hazardous emissions from DoD operations. ($11.610 million)

Within the Conservation thrust area: The new starts focus on: techniques to cost effectively detect and evaluate artifacts on DoD ranges that fall under the Native America Graves Protection and Reparation Act; evaluation of the impact of fog oil "smoke generators" on the plants and animals on DoD ranges; techniques to assess the impact of land use changes (urbanization, encroachment) outside DoD installations on the installations' ecosystems; techniques to determine the impact of noise on animals; and the development of micro- and nano-scale sensors for ecosystem parameters. ($10.047 million)

In the Cleanup thrust area the focus of the new starts includes: technologies for remediation of soil and groundwater contaminated with energetic materials; developing a more complete understanding of the basic chemistry and physics of in-situ oxidation remediation methods; development of techniques to assess and predict the impact of source zone removal on the time and cost of total remediation; developing alternatives to expensive microcosm protocols for bioremediation; and development of technologies for cost effective long term monitoring. ($14.321 million)

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In the Unexploded Ordnance (UXO) area the new start areas of interest include: developing technologies for the characterization and remediation of high density areas such as aerial bombing targets; new sensors, platforms or processing techniques for UXO detection in rugged or heavily vegetated terrain; new geolocation techniques and new render-safe or removal technologies. Efforts will be initiated in address the detection and discrimination of underwater UXO. ($ 10.611 million)

(U) FY 2003 Plans:

(U) General: SERDP will continue to aggressively pursue technologies to address the Service's high priority environmental issues. The sustainability of our training and testing ranges as well as our installation infrastructure is a key focus area. The environmental issues surrounding our bases are both numerous and varied. The impacts of live fire training includes not only the UXO issue, but also the contamination of the soil and ground water with explosives, as well as the impact of noise from munitions on threatened and endangered species. Threatened and endangered species are also impacted by range management activities and the potential loss of habitat. Air emissions from both live fire training and military platforms (aircraft, ships and tanks, etc) contribute to regional air pollution and are becoming an issue in non-attainment areas. All of these issues are exacerbated by the encroachment of urban and suburban development upon our installations.

SERDP will continue a comprehensive research agenda to address these issues. Research in all five thrust areas contribute to the solutions. Cleanup projects address the remediation of energetics in soil and groundwater. Compliance projects develop methods to measure and control air emissions as well as determine the fate and effect of explosives in the environment. Conservation projects determine the impact of military operations on threatened and endangered species and develop methods and protocols for managing our natural and cultural resources. The development of "green" munitions and weapon systems that will not impact on the environment as well as low-emissions power sources are core objectives of pollution prevention. And finally, the increased emphasis on UXO detection, discrimination and remediation will continue.

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In addition to developing technologies to permit the long term sustainability of our training and testing ranges, SERDP will continue to develop technologies that reduce the Department's future liability. The costs associated with compliance with environmental regulation coupled with the cost of environmental restoration, including the removal of UXO, are extensive and continue to grow. Technologies that reduce these costs significantly are and will be actively pursued. SERDP will also continue to pursue technologies that will permit the "greening" of our industrial complex. The elimination or reduction of toxic and hazardous materials from our weapons systems, platforms and the processes that we use to repair and maintain them remains a primary objective. The projects include the elimination of heavy metals such as chromium, cadmium and lead, the replacement of volatile organic compounds (VOC's) with benign alternatives and the development of environmentally friendly ship hull coatings.
($ 60.468 million)

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(U) B. Program Change Summary	FY 2001	FY 2002	FY 2003	Total Cost
Previous President's Budget Submit	51.357	53.346	49.360	Continuing
Delta	7.650	16.030	0.000	
FY2002 Amended President's Budget Submission	59.007	69.376	49.360	Continuing
Appropriated Value	59.557	62.876	0.000	Continuing
Adjustments to Appropriated Value				
a. Congressionally Directed Undistributed Reduction	0.000	-0.711	0.000	
b. Rescission/Below-threshold Reprogramming, Inflation Adjustment	-0.550	0.000	0.000	
c. Other	0.000	0.000	11.048	
Current FY 2003 Budget Submission	59.007	62.165	60.468	Continuing

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Change Summary Explanation:

(U) **Funding**: FY 2001 reductions reflected Section 8086 adjustments and recissions. Increases in FY 2002/2003 reflect changes for UXO efforts.

(U) **Schedule**: N/A

(U) **Technical**:

(U) **C.** **Other Program Funding Summary Cost**: N/A

(U) **D.** **Acquisition Strategy**: N/A

(U) **E.** **Schedule Profile**: N/A