

# **Defense Nuclear Nonproliferation**

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## **Defense Nuclear Nonproliferation**

### **Proposed Appropriation Language**

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense, defense nuclear nonproliferation activities, in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, [\$1,327,612,000] *\$1,348,647,000*, to remain available until expended.

#### **Explanation of Change**

The only change from the language proposed in FY 2004 is the proposed funding amount.



# Defense Nuclear Nonproliferation

## Funding Schedule by Subprogram

(dollars in thousands)

	FY 2003 Comparable Appropriation	FY 2004 Original Appropriation	FY 2004 Adjustments	FY 2004 Comparable Appropriation	FY 2005 Request
Defense Nuclear Nonproliferation					
Nonproliferation and Verification					
Research and Development.....	256,092	231,997	0	231,997	220,000
Nonproliferation and					
International Security.....	130,873	110,107	+ 3,977	114,084	124,000
International Nuclear Materials					
Protection and Cooperation.....	333,029	258,487	0	258,487	238,000
Russian Transition Initiatives.....	39,081	39,764	0	39,764	41,000
HEU Transparency Implementation....	17,118	17,894	0	17,894	20,950
International Nuclear Safety.....	33,570	3,977	- 3,977	0	0
Elimination of Weapons-Grade					
Plutonium Production.....	49,221	49,735	+ 15,300	65,035 <sup>a</sup>	50,097
Accelerated Material Disposition.....	894	0	0	0	0
Fissile Materials Disposition.....	445,528	652,818	0	652,818	649,000
Offsite Source Recovery Project.....	2,172	0	+ 1,961	1,961	5,600
Subtotal, Defense					
Nuclear Nonproliferation.....	1,307,578	1,364,779	+ 17,261	1,382,040	1,348,647
Use of Prior Year Balances.....	-84,125	-45,000	-3,000	- 48,000	
Total, Defense					
Nuclear Nonproliferation.....	1,223,453	1,319,779	+ 14,261	1,334,040	1,348,647

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### Public Law Authorization:

P.L. 108-136, National Defense Authorization Act, FY 2004

P.L. 108-137, Energy and Water Development Appropriations Act, FY 2004

<sup>a</sup> Funds reappropriated from unobligated balances expiring in FY 2003 transferred from Department of Defense in accordance with the National Defense Authorization Act.

<sup>b</sup> Excludes \$3,000,000 for EEOICPA Reprogramming action approved in FY 2004.

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FYNSP Total
Defense Nuclear						
Nonproliferation & Verification.						
Research and Development..	220,000	229,000	235,000	246,000	248,000	1,178,000
Nonproliferation and						
International Security.....	124,000	119,038	119,700	119,800	120,400	602,938
International Nuclear Materials						
Protection and Cooperation....	238,000	244,000	250,000	258,000	259,818	1,249,818
Russian Transition Initiatives..	41,000	42,000	43,000	43,000	44,000	213,000
HEU Transparency						
Implementation.....	20,950	21,212	21,000	20,000	20,000	103,162
Elimination Weapons						
Grade Plutonium Production...	50,097	56,000	59,497	60,339	66,862	292,795
Fissile Material Disposition.....	649,000	661,000	673,000	685,000	697,000	3,365,000
Offsite Source Recovery.....	5,600	8,750	8,803	8,861	8,920	40,934
Total, Defense Nuclear						
Nonproliferation.....	1,348,647	1,381,000	1,410,000	1,441,000	1,465,000	7,045,647

## FY 2003 Execution

(dollars in thousands)

	FY 2003 Approp	Use of PY Balance	Rescission	Supple- mental	Reprogram- ming/ Transfers	Comp Adjustment	Current FY 2003 Comparable
Nonproliferation and Verification R&D.....	283,407	0	- 1,824	20,000	- 45,491	0	256,092
Nonproliferation and International Security.....	92,668		- 596	22,000	+ 500	+ 16,301	130,873
International Nuclear Materials Protection and Cooperation.....	233,077		- 1,500	106,000	- 4,548	0	333,029
Russian Transition Initiatives.....	39,334		- 253	0	0	0	39,081
HEU Transparency Implementation.....	17,229		- 111	0	0	0	17,118
International Nuclear Safety.....	11,576		- 75	0	+ 25,354	- 3,285	33,570
Elimination of Weapons Grade Plutonium Production.....	49,339		- 318	0	+ 200	0	49,221
Accelerated Material Disposition.....	14,000	0	- 90	0	0	- 13,016	894
Fissile Materials Disposition.....	448,000	- 64,000	- 2,472	0	0	0	381,528
Offsite Source Recovery Project.....	0	0	0	0	0	+ 1,837	1,837
Use of PY Balances.....		- 20,125					-20,125
<b>Total, Defense Nuclear Nonproliferation.....</b>	<b>1,188,630</b>	<b>- 84,125</b>	<b>- 7,239</b>	<b>148,000</b>	<b>- 23,985</b>	<b>+ 1,837</b>	<b>1,223,118</b>

## FY 2004 Appropriation

(dollars in thousands)

	FY 2004 Enacted Approp	Use of Prior Yr Balance	Pending 0.59% Rescission	Supplemental	Reprogram- ming/ Transfers	Comp Adjustments	Current FY 2004 Comp
Nonproliferation and Verification Research and Development.....	233,373	0	- 1,376	0	0	0	+ 231,997
Nonproliferation and International Security.....	110,734	0	- 627	0	0	+ 3,977	+ 114,084
International Nuclear Materials Protection and Cooperation.....	260,000	0	- 1,513	0	0	0	+ 258,487
Russian Transition Initiatives.....	40,000	0	- 236	0	0	0	+ 39,764
HEU Transparency Implementation.....	18,000	0	- 106	0	0	0	+ 17,894
International Nuclear Safety.....	4,000	0	- 23	0	0	- 3,977	+ 0
Elimination of Weapons Grade Plutonium Production.....	65,300 <sup>a</sup>	0	- 265	0	0	0	+ 65,035
Accelerated Material Disposition.....	0	0	0	0	0	0	+ 0
Fissile Materials Disposition.....	656,505	0	- 3,687	0	0	0	+ 652,818
Offsite Source Recovery Project.....	0	0	0	0	0	+ 1,961	+ 1,961
Use of PY Balances.....	-45,000	0			-3,000		- 48,000
<b>Total, Defense Nuclear Nonproliferation.....</b>	<b>1,342,912</b>	<b>0</b>	<b>- 7,833</b>	<b>0</b>	<b>-3,000</b>	<b>+ 1,961</b>	<b>+ 1,334,040</b>

### Mission

The Defense Nuclear Nonproliferation mission is to provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons.

<sup>a</sup> Includes reappropriated portion of Department of Defense transferred balances expiring in FY 2003, \$15,300.

## **Benefits**

The Defense Nuclear Nonproliferation program supports the NNSA and DOE mission to protect our national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and rogue states. These efforts are implemented through a Global Partnership.

## **Program Goal**

The Department's Strategic Plan identifies four strategic goals (one each for defense, energy, science, and environment aspects of the mission plus seven general goals that tie to the strategic goals). The Defense Nuclear Nonproliferation program supports the following goals:

The Defense Nuclear Nonproliferation program has one program goal which contributes to General Goal 2 in the "goal cascade":

General Goal 2, Nuclear Nonproliferation, provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons

## **Contribution to General Goal 2**

Within the Defense Nuclear Nonproliferation appropriation, eight programs each make unique contributions to General Goal 2 as follows:

The Nonproliferation and Verification Research and Development program (Program Goal 02.40.00.00) contributes to this goal by developing new technologies to improve U.S. capabilities to detect and monitor nuclear weapons production and testing worldwide.

The HEU Transparency program (Program Goal 02.41.00.00) contributes to this goal by providing reasonable assurances that the LEU being purchased under the Russian HEU purchase agreement is derived from dismantled nuclear weapons, by developing and performing mutually agreeable transparency measures, to permanently process 500 MT of HEU into non-weapons material by 2013.

The Elimination of Weapons-Grade Plutonium Production program (Program Goal 02.42.00.00) contributes to this goal by facilitating shutdown of the three remaining weapons-grade plutonium production reactors in the Russian Federation through: (1) construction of a new fossil-fuel (coal) plant at Zheleznogorsk; (2) refurbishment of an existing fossil-fuel (coal) power plant at Seversk; and (3) execution of a nuclear safety upgrades project to improve reactor safety pending shutdown of the reactors. The Nonproliferation and International Security program (Program Goal 02.44.00.00) contributes to this goal by detecting, preventing, and reversing the proliferation of weapons of mass destruction (WMD) materials, technology, and expertise, and to strengthen the nonproliferation regime.

The Russian Transition Initiatives program (Program Goal 02.45.00.00) contributes to this goal by preventing adverse migration of weapons of mass destruction expertise by engaging weapons experts in peaceful efforts and by helping to downsize the Russian nuclear weapons complex.

The International Nuclear Materials Protection and Cooperation program (Program Goal 02.46.00.00) contributes to this goal by working in Russia and other regions of concern to (1) secure and eliminate vulnerable nuclear weapons and weapons-usable material; (2) locate, consolidate and secure radiological

materials that can be used in a dirty bomb; and (3) install detection equipment at border crossings and Mega-Seaports to prevent and detect the illicit transfer of nuclear material.

The Fissile Materials Disposition program (Program Goal 02.47.00.00) contributes to this goal by disposing of inventories of U.S. Weapons-grade plutonium and highly enriched uranium (HEU) as well as providing technical support for, and ultimately implementation of, efforts to obtain the reciprocal disposition of Russian surplus weapon-grade plutonium.

NNSA has assumed responsibility for the Offsite Source Recovery Project (Program Goal 02.62.00.00) from the Office of Environmental Management. This program recovers excess and unwanted sealed sources from non-DOE sites, and places them in storage at DOE facilities to reduce the risk of their possible use in a radiological dispersal device. The cost of this effort is projected to total about \$40 million through the FYNSP period.

### **Annual Performance Results and Targets**

Annual performance results and targets for Defense Nuclear Nonproliferation work is included in the sub-program sections of this budget where it is more meaningful to the reader. During FY2004 budget appropriations process, Congress eliminated funding for the International Safety Program (Program Goal 02.43.00.00) and the Accelerated Material Disposition program (Program Goal 02.48.00.00). The Accelerated Material Disposition program was a new initiative and therefore had no performance results of targets. Performance results and targets for FY2000-FY2003 for the International Nuclear Safety Program are documented in this section for completeness.

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
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International Nuclear Safety

<p>Complete a full-scope simulator for Kola Unit 4 and Balakovo Unit 4 in Russia, and for South Ukraine Unit 3 in Ukraine. (MET GOAL)</p>	<p>Complete safety parameter display systems for Ukraine's South Ukraine nuclear plant unit 3, and Zaporizhzhya nuclear plant units 2 and 4. (MET GOAL)</p> <p>Complete implementation of symptom-based emergency operating instructions at the Ignalina plant in Lithuania. (MET GOAL)</p>	<p>Develop a small nuclear safety pilot program between the U.S. Department of Energy and the Vietnamese Atomic Energy Commission. (MET GOAL)</p>	<p>Successfully complete and close down the Soviet-designed reactor safety program. (MIXED RESULTS)</p> <p>Evaluate and prioritize nuclear safety concerns at nuclear power plants, research reactors and non-reactor nuclear fuel cycle facilities, and prepare needs assessments for technology transfers of nuclear safety methods based on risk with potential participant countries. (MIXED RESULTS)</p>
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## **Means and Strategies**

The Defense Nuclear Nonproliferation program will use various means and strategies to achieve its program goals. However, various external factors may impact the ability to achieve these goals. The program also performs collaborative activities to help meet its goals.

The Defense Nuclear Nonproliferation program goal is to detect, prevent, and reverse the proliferation of Weapons of Mass Destruction (WMD) while promoting nuclear safety worldwide. Our programs address the danger that hostile nations or terrorist groups may acquire weapons of mass destruction or weapons-usable material, dual-use production or technology, or WMD capabilities. This emphasizes the importance of our programs to properly secure or eliminate vulnerable stockpiles of weapon-usable materials in Russia and countries of concern.

The events of September 11 make it clear that our threat detection programs are required on an accelerated basis. We will fully exploit the world-class expertise of our National Laboratories to increase our design testing, and fielding capabilities for detection technologies.

The pace and nature of treaties and agreements, extremely poor economic conditions in host countries, political and economic uncertainties in the former Soviet Union, and the unwillingness of threshold states to engage in negotiations can all have dramatic effects on our performance and effectiveness. Customs issues, Nuclear Regulatory Commission actions, and other Department of Energy elements can also cause significant impacts to our ability to achieve program objectives.

We work with many different U.S. agencies, international organizations, and non-governmental organizations to further our nonproliferation goals. All major policy issues are coordinated with the National Security Council, and we also work closely with the Departments of State and Defense on many of our programs. We continually leverage our considerable nuclear nonproliferation Research and Development base within the national laboratory complex. In addition, NNSA coordinates with the Department of Commerce on export control policy and international agreements, and the Nuclear Regulatory Commission on nuclear safety programs, as well as working with the International Atomic Energy Agency to further international safeguards. The United States Enrichment Corporation and the Tennessee Valley Authority are involved in the HEU purchase agreement and fissile materials disposition programs, and the U.S. Industrial Coalition is NNSA's partner in the Initiatives for Proliferation Prevention and Nuclear Cities Initiatives. The U.S. Agency for International Development, the Nuclear Energy Agency, the intelligence community, and other agencies are also involved in some programs. Finally, we anticipate frequent collaborations with the new Department of Homeland Security as that new department assumes its role in the national security arena.

## **Validation and Verification**

To validate and verify program performance, NNSA will conduct various internal and external reviews and audits. NNSA's programmatic activities are subject to continuing review by the Congress, the General Accounting Office, the Department's Inspector General, the National Security Council, the Defense Nuclear Facilities Safety Board, the Department's Office of Engineering and Construction Management, and the Department's Office of Independent Oversight and Performance Assurance. Each year numerous external independent reviews are conducted of selected projects. Additionally, NNSA Headquarters senior management and Field managers conduct frequent, in-depth reviews of cost, schedule, and scope to ensure projects are on-track and within budget.

NNSA has established a comprehensive validation and verification process as part of its Planning, Programming, Budgeting and Evaluation (PPBE) system. Long-term performance goals are established/validated during the Planning Phase and linked in a performance cascade to annual targets and detailed technical milestones. During the Programming Phase, budget and resources trade-offs and decisions are evaluated based on the impact to annual and long-term performance measures. These NNSA decisions are documented and used to develop the budget requests during the Budgeting Phase. Program and financial performance for each measure is monitored and progress verified during the Execution and Evaluation Phase.

NNSA validation and verification activities during the PPBE Execution and Evaluation phase include a set of tiered performance reviews to examine everything from detailed technical progress to program management controls to corporate performance against long-term goals. This set of reviews includes: (1) the Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART); (2) NNSA Administrator Program Reviews; (3) Program Managers Detailed Technical Reviews; (4) quarterly reporting of progress through the Department's JOULE performance tracking system; and (5) the NNSA Administrator's Annual Performance Report.

NNSA is using the OMB PART process to perform annual internal self-assessments of the management strengths and weaknesses of each NNSA program. Among other things, the PART process helps NNSA ensure that quality, clarity, and completeness of its performance data and results are in accordance with standards set in the Government Performance and Results Act of 1993 and reinforced by the President's Management Agenda. Independent PART assessments conducted by OMB provide additional recommendations to strengthen NNSA programs.

Each NNSA program is reviewed at least annually by the NNSA Administrator during the NNSA Administrator Reviews. These reviews involve all members of the NNSA management council to ensure progress and recommendations are fully integrated for corporate improvement. The focus of these reviews is to verify and validate that NNSA programs are on track to meet their long-term goals and annual targets. A second more detailed review of each program is conducted by the program managers. These Program Manager Detailed Technical Reviews are normally held at least quarterly during the year. The focus of these reviews is to verify and validate that NNSA contractors are achieving detailed technical milestones that result in progress towards annual targets and long-term goals. These two reviews work together to ensure that advanced warnings are given to NNSA managers in order for corrective actions to be implemented. NNSA sites are responsible and accountable for accomplishing the verification and validation of their and their sub-contractors performance data and results prior to submission to NNSA Headquarters.

The results of all of these reviews are reported quarterly in the Department's JOULE performance tracking system and annually in the NNSA Administrator's Annual Performance Report and the DOE Performance Accountability Report (PAR). Both documents help to measure the progress NNSA programs are making toward achieving annual targets and long-term goals. These documents are at a summary level to help senior managers verify and validate progress towards NNSA and Departmental commitments listed in the budget.

In addition, the General Accounting Office, Inspector General, National Security Council, Foster Panel, Defense Nuclear Facility Safety Board, and Secretary of Energy Advisory Board provide independent reviews of NNSA programs. Recent Inspector General and General Accounting Office reports on the

Defense Nuclear Nonproliferation programs include Audit of the Materials Protection, Control, and Accounting program (MPC&A) (A03AI001); Pit Disassembly and Conversion Facility at the Savannah River Site (A03SR021); and Russian Plutonium Production (360357).

### **Program Assessment Rating Tool (PART)**

OMB used PART to review one NN program for the FY2005 budget. The OMB assessment of the Elimination of Weapons Grade Plutonium Production program concluded that it is a new program for NNSA and even though it has developed solid, tangible performance measures – it is too new to have developed a track record of results that would justify any rating other than “Results Not Demonstrated” at this time. OMB is directing NNSA to evaluate the possibility of re-allocating funds from other delayed or lower priority programs to accelerate the EWGPP work and to establish a funding profile more consistent with a construction project.

For the FY 2004 budget, OMB rated one NN program, the International Nuclear Materials Protection and Cooperation Program (MPC&A), and it achieved the highest score of Effective. MPC&A was given very high marks for program purpose and performance measurement data. NNSA is completing the recommendations identified by OMB. All findings from last year’s assessments have been addressed. These changes are discussed in more detail in each program’s budget submissions. In addition, NNSA provided OMB with an FY2005 PART update for the MPC&A program that was reviewed in FY2004.

**Funding by General and Program Goal**  
(dollars in thousands)

	FY 2003 Comp Approp	FY 2004 Comp Approp	FY 2005 Request	FY 2006	FY 2007	FY 2008	FY 2009
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**General Goal 2,  
Defense  
Nuclear  
Nonproliferation**

Program Goal 2.1, Nonproliferation and Verification Research and Development ....	256,092	231,997	220,000	229,000	235,000	246,000	248,000
Program Goal 2.2, Nonproliferation and International Security.....	130,873	114,084	124,000	119,038	119,700	119,800	120,400
Program Goal 2.3, International Nuclear Materials Protection and Cooperation .....	333,029	258,487	238,000	244,000	250,000	258,000	259,818
Program Goal 2.4, Russian Transition Initiatives .....	39,081	39,764	41,000	42,000	43,000	43,000	44,000
Program Goal 2.5, HEU Transparency Implementation .	17,118	17,894	20,950	21,212	21,000	20,000	20,000
Program Goal 2.6, International Nuclear Safety..	33,570	0	0	0	0	0	0
Program Goal 2.7, Elimination of Weapons Grade Plutonium Production .....	49,221	65,035	50,097	56,000	59,497	60,339	66,862
Program Goal 2.8, Accelerated Materials Disposition .....	894	0	0	0	0	0	0

	FY 2003 Comp Approp	FY 2004 Comp Approp	FY 2005 Request	FY 2006	FY 2007	FY 2008	FY 2009
Program Goal 2.9, Fissile Materials Disposition .....	445,528	652,818	649,000	661,000	673,000	685,000	697,000
Program Goal 2.10, Offsite Source Recovery Project .....	1,837	1,961	5,600	8,750	8,803	8,861	8,920
Subtotal, Defense Nuclear Nonproliferation	1,307,243	1,382,040	1,348,647	1,381,000	1,410,000	1,441,000	1,465,000
Use of Prior Year Balances .....	- 84,125	- 48,000	0	0	0	0	0
<b>Total, Defense Nuclear Nonproliferation</b>	<b>1,223,118</b>	<b>1,334,040</b>	<b>1,348,647</b>	<b>1,381,000</b>	<b>1,410,000</b>	<b>1,441,000</b>	<b>1,465,000</b>

Funding for a proportional share of NNSA's annual assessment required to pay for Defense Contract Audit Agency activities is included in this appropriation. The amount estimated for Defense Nuclear Nonproliferation is \$361,878 for FY 2004 and \$368,611 for FY 2005, to be paid from program funding.

Funding for a proportional share of the NNSA assessment for conducting External Independent Reviews on pending construction projects is included in this appropriation. The amount estimated for Defense Nuclear Nonproliferation is \$614,000 to be paid from program funding.

### Significant Program Shifts

The 1998 U.S.-Russia Joint Scientific and Technical Cooperation Agreement, which provided limited liability protection for technical work (pre-construction) in support of plutonium disposition, expired in July 2003. Senior officials in both countries are working to develop satisfactory liability provisions to be added to the September 2000 U.S.-Russia Plutonium Management and Disposition Agreement. This Agreement covers design, construction and operation of facilities required for plutonium disposition.

Preliminary site characterization work in Russia is required to begin exchanging detailed technical engineering data required to "Russianize" the design of the U.S. MOX Facility. However, this work was not completed when needed in November 2003. Therefore, there will be a delay of approximately one year in the start of construction and an increase in the cost of the U.S. plutonium disposition program due to the Congressional requirement to maintain parallel progress in both programs. The start of construction for both the U.S. and Russian MOX facilities is now planned for May 2005.

### Global Partnership

The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, formed at the Kananaskis Summit in June 2002 has recommitted the G8 nations (the United States, Canada, France, Germany, Italy, Japan, Russia, and the United Kingdom) to address nonproliferation, disarmament, counter-terrorism, and nuclear safety issues. The G8 leaders have pledged to devote up to

\$20 billion over ten years to support cooperative efforts, initially in Russia, and have invited other similarly motivated countries to participate in this partnership. President Bush has committed the U.S. to provide \$10 billion over ten years to be matched by \$10 billion from the other members, attesting to the belief that nonproliferation concerns are of the highest government priority; and therefore that this program's work is of paramount importance for the security of the nation and the world. The following table reflects the Department of Energy activities by country and program which are part of the government-wide activities totaling \$1 billion in the years FY 2005-2009

**U.S. Nonproliferation and Threat Reduction Assistance to Former Soviet States  
(dollars in millions)**

Summary by Country	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Russia .....	427.9	405.9	422.6	412.7	406.2
Kazakhstan .....	6.5	17.1	15.6	3.7	4.0
Ukraine .....	4.3	16.4	16.4	4.5	4.9
Uzbekistan .....	.5	.6	.6	.6	.6
Georgia .....	.1	.1	.1	.1	.1
Total, Russia & FSU .....	439.2	440.1	455.3	421.6	415.8

**Risk Based Analysis**

The FY 2005 Budget request was developed by taking into account a number of risk-based factors such as: likelihood of crisis, urgency, legal or moral obligation. The Defense Nuclear Nonproliferation program is continuing to formalize this approach to make it a useful tool that can be applied to the allocation of funding.



# Nonproliferation and Verification Research and Development

## Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Nonproliferation and Verification					
Proliferation Detection.....	128,012	126,127	111,544	- 14,583	- 11.6%
Nuclear Explosion Monitoring.	94,979	96,592	101,931	+ 5,339	+ 5.5%
Chemical and Biological					
National Security.....	23,064	0	0	0	0
Supporting Activities.....	10,037	9,278	6,525	- 2,753	- 29.7%
Total, Nonproliferation and Verification R&D.....	256,092	231,997	220,000	- 11,997	- 5.2%

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FYNSP Total
Nonproliferation and Verification R&D.....	220,000	229,000	235,000	246,000	248,000	1,178,000

## Description

This program will develop new technologies to improve U.S. capabilities to detect and monitor nuclear weapons production and testing worldwide.

### Benefits to Program Goal 02.40.00.00 Nonproliferation and Verification Research and Development

The Nonproliferation and Verification Research and Development program has two main subprograms that make unique contributions to Program Goal 02.40.00.00. The Proliferation Detection subprogram coordinates with other agencies the development of advanced remote sensing and ground-based technologies to address the most challenging problems related to detection, location, and analysis of global proliferation of nuclear weapon technology, and the diversion of special nuclear materials. The Nuclear Explosion Monitoring subprogram builds the nation's operational treaty monitoring space sensors, produces and updates the regional geological datasets to enable operation of the nation's ground based treaty monitoring networks. In addition, the Supporting Activities line includes crosscutting costs of the two main Office of Nonproliferation Research and Engineering subprograms such as participation in DOE's Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs.

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
<p>Develop improved technologies and systems for early detection, identification, and response to weapons of mass destruction proliferation and illicit materials trafficking. (MET GOAL)</p> <p>Test first generation prototype hand-held detector for enhanced detection of chemical agents. (MET GOAL)</p> <p>Complete architecture development to protect a "special event" from biological attacks. (MET GOAL)</p> <p>Launch the Multispectral Thermal Imager (MTI) small satellite to demonstrate temperature measurement from space for the passive detection and characterization of proliferant activities. (MET GOAL)</p>	<p>Demonstrate systems to protect key infrastructure and special events from chemical and biological attacks. (MET GOAL)</p> <p>Conduct Critical Design Reviews for three new-generation nuclear explosion-monitoring sensors that are proposed for future satellite deployment. (MET GOAL)</p>	<p>Field a demonstrated, deployable prototype biological threat system at the Winter Olympics. (MET GOAL)</p> <p>Demonstrate a chemical agent detection system in a subway system. (MET GOAL)</p> <p>Start satellite sensor-payload assembly of operational nuclear explosion detection payloads for the next generation of Global Positioning System satellites scheduled for first launch in 2004. (MET GOAL)</p> <p>Perform experiments of prototype, unmanned-aerial-vehicle-based Light Detection and Ranging (LIDAR) systems to detect proliferation. (MIXED RESULTS)</p>	<p>Demonstrate prototype commercial cargo inspection system to detect fissile materials and high explosives. (MET GOAL)</p> <p>Provide two assays for biological threat agents to the Center for Disease Control Laboratory Response Network. (MET GOAL)</p> <p>Demonstrate a fixed system to protect complex, key infrastructure facilities, components, and capabilities. (MET GOAL)</p>

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
<p>Development of Advanced U.S. Capabilities to Detect Nuclear Weapons Proliferation:</p> <p>Number of advanced radiation and remote sensing technologies developed and evaluated through customized tests that challenge and characterize their operating parameters. These advanced technologies are intended to improve U.S. capability to detect the early stages of nuclear weapon programs.</p>	4	7	8	6	7	7	9	Annual targets advance the state of the art in advanced technology to provide future capabilities for U.S. monitoring agencies.
<p>Development of Advanced U.S. Capabilities to Detect Nuclear Explosions:</p> <p>Number of advanced technologies and operational systems (e.g. satellite payloads and seismic stations calibration data sets) delivered to U.S. national security users which improves the accuracy and sensitivity of nuclear weapons test monitoring.</p>	4	6	6	11	8	10	5	Annual targets advance state of the art in concert with deployment schedule of user agencies.
<p>Programmatic Oversight and Review: Annual percentage of all active R&amp;D projects for which an independent R&amp;D merit assessment has been completed within the last three years to determine the scientific quality and continued user and mission relevance.</p>	20%	40%	70%	100%	100%	100%	100%	Subject all projects and proposals to merit review process.
<p>Advancement of Knowledge within the Nonproliferation R&amp;D Community:</p> <p>Number of professional papers/exchanges presented-each representing Science and Technology knowledge and U.S. leadership in program areas.</p>	250	200	200	200	200	200	200	Maintain scientific underpinnings of advanced R&D program.

## Detailed Justification

(dollars in thousands)

	FY 2003	FY 2004	FY 2005
<b>Proliferation Detection .....</b>	<b>128,012</b>	<b>126,127</b>	<b>111,544</b>

The Proliferation Detection program coordinates with other agencies the development of advanced remote sensing and ground-based technologies to address the most challenging problems related to detection, location, and analysis of the global proliferation of nuclear weapon technology, and the diversion of special nuclear materials. The program applies the unique facilities and scientific skills of laboratory scientists, in partnership with industry and academia, to address sensitive requirements and technical gaps identified through close interaction with users. Although the program has many near-term Advanced Concepts Technology Demonstration (ACTD)-like projects conducted in collaboration with other government agencies (i.e., IC, DOD, DHS, and law enforcement), these typically result from long-term fundamental science programs that are guided by knowledge of sensitive and classified nuclear weapons program information, operational strategies, and emerging national policies. The long-term scientific growth is enabled through sustained innovation and frequent interaction on real world problems caused by the threat of global proliferation in strategic WMD capability.

A goal of the Proliferation Detection program is to hand off technical know-how to the industrial and acquisition programs that support US national security programs and missions. Technical advances, new proven methodologies, and improvements to capabilities are transferred to operational programs through technical partnerships including developing special prototypes to assist major acquisition efforts. Partnerships with the industrial suppliers are often coordinated with user programs to facilitate successful outcomes.

The Remote Sensing focus area represents the nation’s core expertise in several fields, including remote chemical detection, synthetic aperture radar, and optical and radio frequency measurement and analysis. A specific accomplishment during FY 2005 will be the completion of payload integration for an advanced space demonstration of a detector with on-orbit processing related to proliferation applications. The payload will be manifested for launch by the Air Force space test program as launch schedules dictate.

The Nuclear and Radiological National Security Program focus area has core expertise in several fields, including nuclear forensic science, and advanced radiation detection. FY 2005 plans include demonstration of advanced mass spectrometry detector technology to improve proliferation detection, and feasibility assessment and sensor technology evaluation for attribution of nuclear weapons including improvised nuclear devices.

<b>Total, Proliferation Detection .....</b>	<b>128,012</b>	<b>126,127</b>	<b>111,544</b>
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(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Nuclear Explosion Monitoring**..... **94,979**      **96,592**      **101,931**

The Nuclear Explosion Monitoring program builds the nation’s operational treaty monitoring space sensors, produces and updates the regional geological datasets to enable operation of the nation’s ground based treaty monitoring networks.

The satellite-based segment of the program builds three distinct sensors and two “support” packages for each Global Positioning System satellite. These packages constitute the Global Burst Detector payloads for monitoring atmospheric detonations. In addition to building the payloads, the program supports the integration, initialization and operation of these payloads. The satellite segment also supports the maintenance, integration and test of the previously built high altitude detection system payloads on the Defense Support Program satellites. The program conducts a limited amount of R&D to prepare the next generation sensors.

In FY 2005, the program will balance the multiyear production of GPS IIF payloads, support for the remaining GPS IIR payloads, and early design and development of GPS III payloads to best meet delivery timelines and requirements as launch schedules and on-orbit satellite health dictate.

A significant new effort (Space and Atmospheric Burst Reporting System) in the satellite-based program is the production of the follow-on high altitude-monitoring payload to replace the current system that will be retired by the US Air Force. This payload will satisfy recently revalidated requirements for monitoring upper atmosphere and space detonations. Production will ramp-up in FY 2005 to support Air Force specified launch schedules.

Ground-Based Systems provide classified, focused, applied research and engineering products integrated into a knowledge base, with appropriate testing, demonstration, and technical support for use by the Air Force in the U.S. National Data Center and U.S. Atomic Energy Detection System. NNSA has a memorandum of understanding with U.S. monitoring agencies to provide integrated state-of-the-art engineered systems for nuclear explosion monitoring. In FY 2005, the program will provide calibration data consistent with the installation of seismic stations. The NNSA ground-based systems integration function at the national laboratories will be supplied in part with products from research opportunities from open competition.

*Increase due to new high-altitude monitoring payload for the Space and Atmospheric Burst Reporting System.*

**Total, Nuclear Explosion Monitoring** ..... **94,979**      **96,592**      **101,931**

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Supporting Activities** ..... **10,037**      **9,278**      **6,525**

Supporting activities includes crosscutting costs of the Office of Nonproliferation Research and Engineering. These activities provide for strategic initiatives such as technology roadmapping and assessment, nonproliferation analysis and studies, and fund the Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs. Publication activities enhance communications between the technologists in the DOE community, policymakers, and the general public through vehicles such as the Arms Control and Nonproliferation Technologies Newsletter.

Decrease reflects Congressional earmark to provide the last year of funding to the Incorporated Research Institutions for Seismology PASSCAL Instrument Center was addressed in FY 2004.

**Total, Supporting Activities** ..... **10,037**      **9,278**      **6,525**

**Chemical and Biological National Security Program..**      **23,064**      **0**      **0**

The Chemical and Biological National Security Program was transferred to the U.S. Department of Homeland Security in FY 2003.

**Total, Chemical and Biological National Security Program** ..... **23,064**      **0**      **0**

## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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- **Proliferation Detection**

FY 2004 specified program funding for development of chemical and biological detection sensors and biodefense presumed completion accounts for decrease .....	- 14,583
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- **Nuclear Explosion Monitoring**

Increase due to a significant new effort (Space and Atmospheric Burst Reporting System) in the satellite-based program to produce the follow-on high altitude-monitoring payload to replace the current system on the DSP satellites, which are being retired by the US Air Force (to be replaced by the Spaced-based Infrared (SBIRS) satellite system). This payload will satisfy recently revalidated requirements for monitoring upper atmosphere and space detonations. Production will ramp-up in FY05 to support Air Force-specified launch schedules. Although this effort requires an increase of \$10 million to the satellite-based program, the requested increase has been offset due to the completion of Congressional earmarks to the ground-based program.....	+ 5,339
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- **Supporting Activities**

Decrease reflects Congressional earmark to provide the last year of funding to the Incorporated Research Institutions for Seismology PASSCAL Instrument Center was addressed in FY 2004 .....	- 2,753
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<b>Total Funding Change, Nonproliferation Verification R&amp;D .....</b>	- 11,997
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# Nonproliferation and International Security

## Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Nonproliferation and International Security					
Nonproliferation Policy.....	67,924	57,567	63,216	+ 5,649	+ 9.8%
Export Control.....	20,519	15,711	22,246	+ 6,535	+ 41.6%
International Safeguards.....	35,752	34,060	31,330	- 2,730	- 8.0%
Treaties and Agreements....	3,393	2,769	3,208	+ 439	+ 15.9%
International Emergency Management and Cooperation.....	3,285	3,977	4,000	+ 23	+ 0.6%
Total, Nonproliferation and International Security.....	130,873	114,084	124,000	+ 9,916	+ 8.7%

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FYNSP Total
Nonproliferation and International Security.....	124,000	119,038	119,700	119,800	120,400	602,938

## Description

The mission of the Office of Nonproliferation and International Security, as a complement to efforts under the Russian Transition Initiatives, is to detect, prevent, and reverse the proliferation of weapons of mass destruction (WMD) materials, technology, and expertise, and to strengthen the nonproliferation regime.

### Benefits to Program Goal 02.44.00.00 Nonproliferation and International Security and Goal 02.43.00.00 International Emergency Management and Cooperation

This program, as a complement to efforts under the Russian Transition initiatives program, will detect and prevent the proliferation of WMD materials, technology and expertise to proliferant states or terrorists, and will strengthen the nonproliferation regime. Within the Nonproliferation and International Security program, five subprograms each make unique contributions to Program Goal 02.44.00.00. The Nonproliferation Policy subprogram administers the Reduced Enrichment Research and Test Reactor (RERTR), Russian Research Reactor Fuel Return (RRRFR), and Fuel Cycle Analysis activities, which

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are integral to the U.S. Government's HEU minimization policy. It also secures plutonium-bearing spent fuel in Kazakhstan, develops technical solutions to regional security problems, develops transparency and confidence-building measures to strengthen the nonproliferation regime, and provides support for nonproliferation and arms control policy-making. The Export Control subprogram secures technology by reviewing export license applications, and strengthens the nonproliferation regime by providing assistance to multilateral supplier organizations and improving foreign export control practices. The International Safeguards subprogram upgrades security of foreign materials, and strengthens the nonproliferation regime by providing support to the International Atomic Energy Agency (IAEA) and ensuring DOE compliance with IAEA safeguards. The Treaties and Agreements sub-program supports implementation of bilateral or multilateral, Presidentially-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level initiatives, agreements and treaties. The International Emergency Management and Cooperation subprogram conducts information sharing and coordination with other foreign governments regarding emergency management cooperation and providing technical support for the multinational effort to permanently shutdown the BN-350 breeder reactor in Kazakhstan.

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	Completed canning of BN-350 fast reactor spent fuel. (MET GOAL)	<p>Developed and implement lab-to-lab counter-terrorism technology demonstrations at Russian technical institutes. (MET GOAL)</p> <p>Conducted field missions to North Korea to maintain status of spent fuel in the Nyongbyon spent fuel facility. (MET GOAL)</p> <p>Expanded cooperation with other states and U.S. Customs to improve export control capabilities. (MET GOAL)</p> <p>Developed verification capabilities to support implementation of the U.S.-Democratic Peoples Republic of Korea Agreed Framework. (MET GOAL)</p>	<p>Expedite the retrieval of spent nuclear fuel from Central Asia (MIXED RESULTS)</p> <p>Work with US Customs personnel to familiarize them with nuclear equipment, material, and technology, and to improve real-time analysis of suspect shipments. (MET GOAL)</p> <p>Expand bilateral physical protection visits, physical protection training, and the IAEA's International Physical Protection Advisory Service to help protect WMD facilities around the world against terrorist attack and sabotage. (MET GOAL)</p>

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Cumulative percentage of work completed on 98 targeted research and test reactor cores converted from HEU to LEU.**	Completed 39% of work to convert 98 targeted reactors. Completed design of suitable pin-type fuel for Russian-supplied research reactors.	Complete 42% of work to convert 98 targeted reactors.	Complete 45% of work to convert 98 targeted reactors.	Complete 51% of work to convert 98 targeted reactors.	Complete 55% of work to convert 98 targeted reactors.	Complete 59% of work to convert 98 targeted reactors.	Complete 70% of work to convert 98 targeted reactors.	Complete 100% of the 98 targeted reactors by 2013.
Annual number of safeguards or physical protection courses conducted.	Conducted five physical protection-training courses.	Conduct nine physical protection-training courses.	Conduct six courses on physical protection and one on Accounting and Control.	Conduct five physical protection-training courses.	Conduct three physical protection-training courses.	Conduct three physical protection-training courses.	Conduct three physical protection-training courses.	Ongoing.
Annual percentage of U.S. exports reviewed for proliferation concern. (EFFICIENCY MEASURE)	Reviewed 100% of U.S. nuclear-related transfers, and 50% of missile technology and chemical and biological-related exports.	Review 100% of U.S. nuclear-related transfers, and 60% of missile technology and chemical and biological-related exports.	Review 100% of U.S. nuclear-related transfers, and 70% of missile technology and chemical and biological-related exports.	Review 100% of U.S. nuclear-related transfers, and 80% of missile technology and chemical and biological-related exports.	Review 100% of U.S. nuclear-related transfers, and 90% of missile technology and chemical and biological-related exports.	Review 100% of U.S. nuclear-related transfers, and 100% of missile technology and chemical and biological-related exports.	Review 100% of U.S. nuclear-related transfers, and 100% of missile technology and chemical and biological-related exports.	Ongoing.
Cumulative number of cooperative agreement actions completed.	Administered 11 cooperative agreements, including sister-lab agreements, with foreign countries and organizations and complete 5 tasks.	Administer 19 cooperative agreements, including sister-lab agreements, with foreign countries and organizations and complete 15 tasks.	Complete an additional 10 tasks under active cooperative agreements for a total of 25 completed tasks.	Complete an additional 10 tasks under active cooperative agreements for a total of 35 completed tasks.	Complete an additional 10 tasks under active cooperative agreements for a total of 45 completed tasks.	Complete an additional 10 tasks under active cooperative agreements for a total of 55 completed tasks.	Complete an additional 10 tasks under active cooperative agreements for a total of 65 completed tasks.	Ongoing
Cumulative kilograms of HEU purchased and delivered.	Developed agreements for the HEU Research	Sign agreement. Purchase and deliver an	Purchase and deliver approximately 160kg HEU, for	Purchase and deliver approximately 160kg HEU, for	1,500 kg of HEU by FY2014.			

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
	Reactor Fuel Purchase and transportation arrangements.	estimated 177kg HEU.	a cumulative amount of 337 kg.	a cumulative amount of 497 kg.	a cumulative amount of 657 kg.	a cumulative amount of 817 kg.	a cumulative amount of 977 kg.	

\*\* In FY2003, the number of research and test reactors cores targeted to be converted from HEU to LEU significantly increased from 42 to 98.

## Detailed Justification

(dollars in thousands)

### Nonproliferation Policy

	FY 2003	FY 2004	FY 2005
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### Reduced Enrichment Research and Test Reactor (RERTR) .....

**6,352                      8,860                      9,965**

The Reduced Enrichment Research and Test Reactor (RERTR) program prevents proliferation of nuclear weapons by minimizing the use of highly enriched uranium (HEU) in civil nuclear programs worldwide. It develops the technologies needed to substitute low enriched uranium for HEU in research and test reactors, which use nearly all of the HEU in civil programs, without significant penalties in performance, economy, or safety. The FY 2005 base program will concentrate on development of new fuel types. The program is accelerating the development of LEU fuel for 5 large domestic HEU fueled research reactors. Each reactor will be converted as soon as appropriate, as LEU fuel becomes available. In addition, there are 19 large Russian-supplied research reactors that use up to 400 kilograms of HEU per year. RERTR funding is being provided for the development of appropriate LEU fuels to assist conversion of foreign HEU-fueled research reactors to LEU fuel.

Increase is due to the acceleration of RERTR in the development of LEU fuel for 5 large domestic HEU fueled research reactors.

### Russian Research Reactor Fuel Return (RRRFR) .....

**9,520                      9,691                      9,866**

The Russian Research Reactor Fuel Return (RRRFR) program prevents proliferation of nuclear weapons by repatriating to Russia highly enriched uranium (HEU) fuel from Russian-supplied research reactors throughout the world.

### Kazakhstan Spent Fuel Disposition.....

**8,124                      8,270                      2,000**

The Kazakhstan Spent Fuel Disposition program prevents proliferation of nuclear weapons by securing the nearly three tons of weapons-grade plutonium in the BN-350 spent fuel at Aktau, Kazakhstan - enough material for hundreds of nuclear weapons. Under this cooperative program, the spent fuel assemblies have been stabilized, packaged in theft resistant canisters, and placed under IAEA safeguards. The program also seeks to provide long-term storage of the spent fuel in dual-use cask dry storage and provide physical protection support for all operations. The USG and the Republic of Kazakhstan have agreed on the approach using dual-purpose casks for both transportation and storage of the material. The USG has already decided through an NSC-led interagency process that this project should proceed because it protects our national security interests within the volatile Central Asia region. This project will design, procure, and conduct licensing of the casks. Much of the equipment required for the project is complex and must be custom designed. In addition, the design process is intricate and the lead-time for procurement is extensive.

(dollars in thousands)

**Nonproliferation Policy**

FY 2003	FY 2004	FY 2005
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Decrease made possible through the planned use of carry over funds (\$23,000,000) to complete current stage of the Kazakhstan Spent Fuel Disposition project (i.e., design, fabrication and procurement of the dual-use storage and transportation cask).

<b>Democratic People’s Republic of Korea (DPRK) .....</b>	<b>1,393</b>	<b>25</b>	<b>0</b>
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Until last year, the Democratic People’s Republic of Korea (DPRK) Spent Fuel Disposition program supported the disposition of weapons-grade plutonium-bearing spent fuel in stabilization canisters under continuous International Atomic Energy Agency monitoring in North Korea. This program worked for eight years to reverse and prevent further proliferation, and to reduce the immediate threat to U.S. national security interests posed by plutonium generated in DPRK nuclear weapons material production facilities. However, due to North Korea’s revelation in October 2002 of a covert enrichment program, its decision to quit the Non-Proliferation Treaty, and to abandon IAEA safeguards, all work under this program has stopped.

<b>Fuel Cycle Analysis.....</b>	<b>1,020</b>	<b>1,038</b>	<b>1,057</b>
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The Fuel Cycle Analysis program includes nonproliferation assessments and proliferation resistant fuel cycle technology (PRFCT) policy and development. Nonproliferation assessments assist in the formulation of policy to minimize the use of weapons-usable materials and to identify opportunities to reduce proliferation risk in civil fuel cycle activities. PRFCT strengthens the nonproliferation regime through comparative analysis of existing and proposed fuel cycle technologies and reduces the long-term threat to U.S. national security by providing state-of-the-art tools to evaluate and improve proliferation resistant technology.

<b>Global Regimes.....</b>	<b>4,285</b>	<b>4,562</b>	<b>5,141</b>
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The Global Regimes program supports policy making, negotiations, and implementation regarding the following arms control and nonproliferation regimes: Nuclear Nonproliferation Treaty (NPT); Biological Weapons Convention (BWC); Chemical Weapons Convention (CWC); Threshold Test Ban Treaty (TTBT); Limited Test Ban Treaty (LTBT); fissile material production limits; and bilateral peaceful nuclear cooperation agreements. The program provides policy and technical expertise on such treaties and agreements and ensures that their negotiation and implementation meet U.S. national security and foreign policy objectives and can be implemented at DOE/NNSA National Laboratories and other facilities.

<b>Regional Security .....</b>	<b>8,660</b>	<b>8,307</b>	<b>8,756</b>
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The Regional Security program covers the following regions: Middle East; South Asia; East Asia; and Central Asia. The program focuses on preventing the proliferation of weapons of mass destruction by developing technical solutions to regional security problems. The regional security program also

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(dollars in thousands)

**Nonproliferation Policy**

FY 2003	FY 2004	FY 2005
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provides a large portion of the funding for Sandia National Laboratories' Cooperative Monitoring Center (CMC).

**Warhead Dismantlement and Fissile Material**

<b>Transparency (WDT) .....</b>	<b>16,150</b>	<b>15,814</b>	<b>16,431</b>
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The Warhead Dismantlement and Fissile Material Transparency (WDT) program promotes transparent nuclear reductions by providing confidence that Russian nuclear weapons are being dismantled and that excess fissile materials, including those removed from dismantled Russian nuclear weapons, are not used in the production of new nuclear weapons. The Program evaluates initiatives that might include the monitoring of nuclear warheads, nuclear warhead dismantlement, and studies technologies to support such efforts. It also develops methodologies that could be used for warhead and fissile material transparency, and comprehensively evaluates the issues associated with potential monitoring regimes. Additionally, the WDT program evaluates technologies based on transparency initiatives that could also be used to combat nuclear-related terrorism (e.g., nuclear material detectors). The WDT program consists of the following:

- U.S.-Russian Federation Plutonium Production Reactor Agreement (PPRA) policy and monitoring implementation,
- U.S.-Russian Federation Warhead Safety and Security Exchange (WSSX) Agreement,
- U.S.-Russian Federation Highly Enriched Uranium (HEU) Purchase Agreement Transparency policy,
- START I and Treaty of Moscow implementation and future arms control and nonproliferation initiatives (SFAC).

<b>HEU Research Reactor Fuel Purchase .....</b>	<b>12,420</b>	<b>1,000</b>	<b>10,000</b>
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Purchase on average 160 kg per year of Russian HEU per year to be used to manufacture fuel for four U.S. HEU-fueled research reactors (one DOE, one NIST, and two university reactors). The Russian HEU would be shipped to the NNSA Y-12 plant for interim storage pending shipment to the U.S. fuel manufacturer. The majority of the program funds will be provided to the Russian Federation for HEU purchase. Project management will be supported through Oak Ridge, Y-12 plant and BWXT contractor. While it is U.S. policy to minimize civil HEU use, HEU fuel is required for approximately the next 10 years, until LEU fuel is developed for these research reactors under the DOE Reduced Enrichment for Research and Test Reactors (RERTR) program. HEU purchases for research reactor fuel will be coordinated with the RERTR program and discontinued once reactors are converted.

Funding in FY 2003 provided for the program set-up and purchase of 177kg of HEU in FY 2004.

Increase reflects the cost to secure the second purchase of HEU research reactor fuel from Russia.

<b>Total, Nonproliferation Policy .....</b>	<b>67,924</b>	<b>57,567</b>	<b>63,216</b>
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(dollars in thousands)

<b>Export Control</b>	FY 2003	FY 2004	FY 2005
<b>Export Control Operations .....</b>	<b>12,119</b>	<b>12,269</b>	<b>15,341</b>

Export Control Operations includes domestic licensing and multilateral activities.

Licensing Operations reviews and provides advice and recommendations on U.S. license applications for dual-use items and munitions that could have use in the development of nuclear, chemical, and biological weapons and delivery systems. For this purpose, the program maintains the Proliferation Information Network System, an automated, classified system for the review and assessment of dual-use licenses. As provided under law, the Export Control program participates in interagency license review groups, including Advisory Committee on Export Policy, the Operating Committee, the Sub-Group on Nuclear Export Controls, the Missile Technology Export Group, and Shield (chemical and biological technologies). The program interacts closely with the Departments of Commerce, State and Defense in updating with U.S. export control lists, including the "Nuclear Referral List," which identifies nuclear dual-use items requiring special attention, such as special metals, high-speed cameras, and sensitive electronic equipment, and cooperates with Customs (Department of Homeland Security) in the area of export control enforcement through workshops and analysis identifying proliferation-sensitive commerce and reviewing suspicious shipments for proliferation risk. Another major area of responsibility is administration of Secretarial authorizations for the transfer of U.S. nuclear technology, as provided under the Atomic Energy Act and the implementing regulations in 10 CFR Part 810, and supports a range of activities to promote export control compliance across the DOE complex.

The Multilateral Program provides technical and policy support to U.S. Government diplomacy involving the Nuclear Suppliers Group, the Non-Proliferation Treaty Exporters' (Zangger) Committee, and the Missile Technology Control Regime, each of which formulates internationally-agreed upon definitions of materials and commodities and export control practices. The Multilateral Program draws on the unparalleled technical expertise in DOE national labs and is a recognized international leader in the area of nuclear export controls. The program developed and operates a state-of-art NSG Information Sharing System, a secure internet based system that allows Nuclear Suppliers Group members to share information on license denials, provides technical support to regime members, and engages in outreach activities with supplier and transit states to stress the importance of compliance with multilateral standards of conduct. Finally, under the Proliferation Risk and Analysis Project, the program conducts technical proliferation assessments to identify export control vulnerabilities and critical technology needs of countries of proliferation concern.

*Increase will broaden scope of program beyond FSU and assist other USG agencies in these capabilities.*

<b>International Nonproliferation Export Control Program .....</b>	<b>8,400</b>	<b>3,442</b>	<b>6,905</b>
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The International Nonproliferation Export Control Program (INECP) works with partner governments in Russia, the New Independent States (NIS), South Asia, the Middle East, and East Asia to strengthen

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(dollars in thousands)

**Export Control**

FY 2003	FY 2004	FY 2005
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national systems of international nonproliferation export control in countries and regions of proliferation concern. The program targets established and emerging suppliers and high-traffic transit nations. Increase of funds in FY 2005 for INECP will enable the program to accelerate on-going assistance in Russia, Ukraine, Kazakhstan, the Baltics, the Caucasus, and Uzbekistan, and to expand assistance in the Middle East, South Asia, East Asia, and initiate assistance in Central Asia, the Balkans, and South America.

Increase in Export Control will help establish and strengthen competent export control authorities in foreign countries beyond the former Soviet Union, particularly emerging supplier states and critical transshipment states in the Middle East, South Asia, and East Asia. In addition, the increase will enable the program to assist other USG agencies, particularly the new Department of Homeland Security, to strengthen our own capability to identify proliferation-sensitive commerce and review suspicious shipments for proliferation risk.

<b>Total, Export Control .....</b>	<b>20,519</b>	<b>15,711</b>	<b>22,246</b>
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(dollars in thousands)

**International Safeguards**

FY 2003	FY 2004	FY 2005
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**IAEA Safeguards and Nonproliferation Policy**

**Support..... 12,393 15,697 10,600**

The International Safeguards program provides policy and technical leadership to strengthen the nuclear nonproliferation regime, particularly through efforts to strengthen IAEA safeguards and to promote global nuclear security. The program develops policy and provides new safeguards approaches and technologies, such as environmental sampling and remote monitoring, to enable the IAEA to detect clandestine nuclear activities and to safeguard declared nuclear material. (These approaches and technologies will support implementation of IAEA “strengthened safeguards” globally, while specialized tools developed under the “Nuclear Noncompliance Verification” budget item will be tailored to address the unique problems posed by specific proliferant states). The International Safeguards program also provides policy and technical assistance to support application of IAEA safeguards at DOE/NNSA sites (including inspections of excess material and preparations to implement the IAEA Additional Protocol), and with Russia and the IAEA to develop and implement new verification arrangements for excess materials.

The reduction in funding levels reflects the transfer of international physical protection activities, including bilateral cooperation and multilateral assistance through the IAEA, to a new activity that includes both the international physical protection work and cooperation on nuclear materials security. That program, referred to as Global Nuclear Security, is discussed below.

**International Cooperation..... 11,604 5,196 5,500**

DOE/NNSA reduces the threat of nuclear proliferation through the negotiation and implementation of cooperative agreements and arrangements that support Non-Proliferation Treaty (NPT) goals, promotion of effective safeguards and physical protection of nuclear materials. The International Cooperation program transfers advanced technology applications for IAEA strengthened safeguards and enhanced physical protection of nuclear material through bilateral safeguards cooperation agreements. The program promotes the peaceful application of nuclear technology through bilateral “Sister Laboratory” arrangements in support of U.S. treaty obligations under the NPT. The program also supports the nonproliferation regime through planning and preparations for the NPT Review Conferences.

**Nuclear Noncompliance Verification ..... 9,436 6,000 6,000**

The objectives of work to be performed under this heading are to detect undeclared nuclear programs around the world and to verify the dismantlement of those programs. These Nuclear Noncompliance Verification activities must be done largely by the International Atomic Energy Agency (IAEA), and, furthermore, can be done only with specially designed tools and technologies that are still being developed. The requested funding will enable development of those tools, with emphasis on detection and verification of plutonium programs.

(dollars in thousands)

**International Safeguards**

FY 2003	FY 2004	FY 2005
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**Global Nuclear Security** ..... **2,319**                      **7,167**                      **9,230**

For FY 2005, the name of this program area has changed. Although the U.S. has been actively engaged in various global nuclear security efforts since 1974, the programs have recently been reorganized to form the Global Nuclear Security Program (GNSP). The GNSP aims to improve nuclear security systems in all non-weapons states. The GNSP is working cooperatively with governments worldwide and the International Atomic Energy Agency (IAEA) to strengthen physical protection measures at nuclear facilities. The program exercises its mandate through the following projects:

This program provides technical personnel to the IAEA to lead and/or support International Physical Protection Advisory Service (IPPAS) Missions. IPPAS was established by the IAEA in 1996 to assist Member States in the evaluation and improvement of their physical protection systems. Many of these missions lead to recommendations for, and implementation of, additional security upgrades.

The program ensures that countries possessing U.S.-origin nuclear material are adequately protected against theft, sabotage and nuclear smuggling. As codified in the 1978 Atomic Energy Act, the U.S. must ensure that there is adequate security for U.S.-origin nuclear material provided to other countries for peaceful purposes. Approximately 5 visits are conducted per year by the program.

Upgrades are also provided on a bilateral basis based on recommendations from IPPAS mission, U.S. bilateral visits, and the results of the NNSA's Global Research Reactor Security Initiative (GRRSI). The program is currently engaged in providing nuclear security assistance on a bilateral basis to countries including Kazakhstan, Romania, Indonesia, Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Serbia, Belarus, Poland, Ukraine, Greece, Uzbekistan and Portugal.

Upon completion of security upgrades in these countries, the responsibility for sustaining the systems will be transitioned away from bilateral assistance to the states themselves. In the case of countries of the NIS/Baltics region, this will be accomplished with assistance provided as needed through the IAEA's nuclear materials security program.

The program is also actively engaged in training students from throughout the world in nuclear security topics. Training includes the biannual International Training Course, several Regional Training Courses in countries such as the Czech Republic, China, Brazil, Australia and Mexico, and other international courses including Security System Design and Analysis, Design Basis Threat, Insider Analysis, and Vital Area Identification.

The reduction in the funding level for International Safeguards reflects the one-time funding increase in fiscal year 2004 for initiatives to remove nuclear weapons-usable material from vulnerable sites around the world.

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**Total, International Safeguards**..... **35,752**                      **34,060**                      **31,330**

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(dollars in thousands)

	FY 2003	FY 2004	FY 2005
<b>Treaties and Agreements .....</b>	<b>3,393</b>	<b>2,769</b>	<b>3,208</b>

The Treaties and Agreements sub-program supports implementation of bilateral or multilateral, Presidentially-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level initiatives, agreements and treaties. In addition, it provides for unexpected, unplanned responses to requirements of an immediate nature based on unanticipated U.S. national security needs. Examples of recent accomplishments of this program are:

- Certification of a second Chemical Weapons Convention analytical laboratory (a U.S. Senate mandate arising from the advice and consent process)
- Funding a joint US-Russian counter-terrorism conference
- Funding a regional seminar to improve export control practices in Central Asia and the Caucasus
- Funding to provide WMD training to the Federal Law Enforcement Training Center, to support Shield America (chemical and biological technologies), and to create an export control end-user/end-use directory to speed up and systematize license reviews.

Increase in Treaties and Agreements due to minor internal readjustments to compensate for major reduction in prior fiscal year, and to position program to better respond to time-critical issues of an emergent nature.

<b>Total, Treaties and Agreements.....</b>	<b>3,393</b>	<b>2,769</b>	<b>3,208</b>
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(dollars in thousands)

**International Emergency Management and Cooperation**

	FY 2003	FY 2004	FY 2005
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**Kazakhstan BN-350 Reactor Shutdown** ..... **1,000**      **1,491**      **1,500**

Provide technical support for the multinational effort to permanently shutdown the BN-350 breeder reactor in Kazakhstan. The deactivation of this facility, which will be completed in fiscal year 2006, eliminates a source of fissile material production in Central Asia. Draining the sodium coolant and processing the coolant into an environmentally safe material will accomplish the elimination of the source of fissile material production. Sodium is both flammable and explosive, and the coolant in the BN-350 reactor also contains significant levels of radioactive cesium.

In FY04, the program will conclude the sodium draining process, complete the final design of the Sodium Processing Facility (SPF), and initiate construction. In FY05, proceed with SPF construction by installing process tanks and piping.

**International Emergency Management** ..... **2,285**      **2,486**      **2,500**

Conduct information sharing and coordination with other foreign governments regarding emergency management cooperation. Current ongoing cooperation is predominately with Japan, France, S. Korea, Finland, Armenia, Sweden, Norway, Russia, and Ukraine. Continue liaison with and participation in international organizations (IAEA, Nuclear Energy Agency, EU, NATO, G8, Arctic Council, and the U.N.), exhibiting leadership, under assistance and cooperation agreements to provide effective early warning and notification, and consistent emergency plans and procedures. Research, document, and harmonize differences between worldwide plume modeling and dispersion programs developed by the Atmospheric Release Advisory Capability, Japan's WSPEEDI, EU's RODOS, and Russia's ROSHYDROMET. Integrate the Atmospheric Release Advisory Capability (ARAC) plume modeling and graphic information system into other systems (Japan's WSPEEDI, the European Union's RODOS) for a worldwide capability for nuclear/radiological incidents.

Support IAEA with radiation detectors and technical assistance for their emergency program and to address lost sources. Support emergency response cooperative activities between U.S. and Russia (EMERCOM, Ministry of Atomic Energy, Ministry of Health) protecting the public and the environment from the consequences of nuclear/radiological incidents in Russia. Assist Russia's Minatom in the development of emergency management procedures to enhance its Situation and Crisis Center network. Conduct emergency tabletop drills and exercises involving nuclear facility workers and local and national government counterparts. Develop and conduct three training courses for nuclear facility emergency staff in Russia.

Increase will support the IAEA with radiation detectors and technical assistance for emergency programs.

**Total, International Emergency Management and Cooperation** ..... **3,285**      **3,977**      **4,000**

## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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- **Nonproliferation Policy**

Increase reflects the cost to secure the second purchase of HEU research reactor fuel from Russia. The first purchase utilized FY 2003 appropriated funds, so this increase largely reflects restoration of the program request to the level needed to support annual planned funding requirements partially offset by the decrease in the Kazakhstan Spent Fuel Disposition project using prior year balances to complete current activities .....

+ 5,649

- **Export Controls**

Increase will help establish and strengthen competent export control authorities in foreign countries beyond the former Soviet Union, particularly emerging supplier states and critical transshipment states in the Middle East, South Asia, and East Asia. In addition, the increase will enable the program to assist other USG agencies, particularly the new Department of Homeland Security, to strengthen our own capability to identify proliferation-sensitive commerce and review suspicious shipments for proliferation risk .....

+ 6,535

- **International Safeguards**

The reduction in the funding level reflects the one-time funding increase in fiscal year 2004 for initiatives to remove nuclear weapons-usable material from vulnerable sites around the world .....

- 2,730

- **Treaties and Agreements**

Increase due to minor internal readjustments to compensate for major reduction in prior fiscal year, and to position program to better respond to emerging time-critical issues.....

+ 439

- **International Emergency Management and Cooperation**

Increase will provide the IAEA with radiation detectors and technical assistance for emergency programs .....

+ 23

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**Total Funding Change, Nonproliferation and International Security.....** **+ 9,916**

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# International Nuclear Materials Protection and Cooperation

## Funding Schedule by Activity <sup>a</sup>

(dollars in thousands)

	FY 2003 <sup>b</sup>	FY 2004	FY 2005	\$ Change	% Change
International Nuclear Materials Protection and Cooperation					
Navy Complex.....	24,156	38,000	15,000	- 23,000	- 60.5%
Strategic Rocket Forces.....	8,965	24,000	45,000	+ 21,000	+ 87.5%
MinAtom Weapons Complex.....	42,634	32,487	43,000	+ 10,513	+ 32.4%
Civilian Nuclear Sites.....	13,646	16,000	14,000	- 2,000	- 12.5%
Material Consolidation and Conversion.....	12,082	32,000	30,000	- 2,000	- 6.3%
Radiological Dispersal Devices.....	47,963	36,000	25,000	- 11,000	- 30.6%
National Programs and Sustainability.....	44,439	28,000	27,000	- 1,000	- 3.6%
Second Line of Defense.....	139,144	52,000	39,000	- 13,000	- 25.0%
Total, International Nuclear Materials Protection and Cooperation.....	333,029	258,487	238,000	- 20,487	- 7.9%

<sup>a</sup> FY 2003 Includes \$ 2.194 million for Nuclear Nuclear Assessment Program expended prior to transfer of the program to the Department of Homeland Security on March 1st 2003.

<sup>b</sup> Reflects \$106.0 million from FY 2003 emergency supplemental funding contained in Public Law 108-11.

### Public Law Authorization and Other Agreements:

Public Law 108-136, National Defense Authorization Act for FY 2004

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FYNSP Total
International Nuclear Materials Protection and Cooperation.....	238,000	244,000	250,000	258,000	259,818	1,249,818

### Description

The program prevents nuclear terrorism by working in Russia and other regions of concern to (1) secure and eliminate vulnerable nuclear weapons and weapons-usable material; (2) locate, consolidate and secure radiological materials that can be used in a dirty bomb; and (3) install detection equipment at border crossings and selected seaports, termed Mega-Seaports to prevent and detect the illicit transfer of nuclear material.

#### **Benefits to Program Goal 02.46.00.00 International Nuclear Materials Protection and Cooperation**

Within the International Nuclear Materials Protection and Cooperation program, 8 subprograms each make unique contributions to Program Goal 02.46.00.00. The Navy Complex program element improves security of Russian Federation (RF) Navy weapons usable material by installing improved security systems at RF Navy nuclear warhead sites, RF Navy HEU fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These activities comprise a total of 50 sites: 39 Russian Navy nuclear warhead sites and 11 Russian Navy fuel and other nuclear material storage sites. The Strategic Rocket Forces (SRF) program element improves security of Russian Federation (RF) warheads by installing improved MPC&A systems at RF Strategic Rocket Forces nuclear warhead sites. A total of 14 sites at 12 bases have been approved by the U.S. Government for MPC&A upgrades. Discussions are underway to include additional sites.

The MinAtom Weapons Complex program element enhances U.S. national security by providing MPC&A upgrades to the RF MinAtom nuclear weapons, uranium enrichment, and material processing/storage sites. The MinAtom Weapons Complex, located in closed cities and comprise a total of 9 sites. These sites account for approximately 500 MTs of highly attractive weapons-usable nuclear materials.

The Civilian Nuclear Sites program element installs MPC&A systems at 31 civilian nuclear sites (18 Russian and 13 Non-Russian). The civilian sites contain approximately 40 MTs of the most vulnerable material of proliferation concern.

The Material Consolidation and Conversion (MCC) program element reduces the complexity and the long-term costs of securing weapons-usable nuclear material. The MCC project is designed to significantly reduce the proliferation risk associated with weapons-usable nuclear materials by consolidating excess, non-weapons highly enriched uranium and Pu into fewer, more secure locations.

The Radiological Dispersion Devices (RDD) program element identifies and pursues actions that can be taken to reduce the threat of a radiological attack against the United States. The National Programs and Sustainability program element enables the MPC&A program to implement an exit strategy by helping partner countries, particularly the Russian Federation (RF), establish and implement national and other infrastructure components.

The Second Line of Defense (SLD) program deploys radiation detection monitors at strategic transit and border crossings and at air and sea transshipment hubs in Russia and other countries to provide these governments with the technical means to deter and interdict illicit trafficking in nuclear and other radioactive materials. NNSA is pursuing cooperation with international partners to deploy and equip key ports with radiation detection equipment and to provide training to appropriate law enforcement officials, in order to provide them the technical means to deter and interdict illicit trafficking in nuclear and other radioactive materials.

### **Program Assessment Rating Tool (PART)**

In FY 2004 OMB evaluated the MPC&A program using the PART tool. The MPC&A program achieved a perfect score on purpose and design because it has a clear purpose that addresses a specific need. It also achieved a perfect score in strategic planning because the Department has established specific, measurable goals and time frames. OMB has therefore assigned to this program its highest rating of “Effective”. In addition, MPC&A provided OMB an FY 2005 update to its FY 2004 PART.

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.	Accelerate the rapid and comprehensive upgrades on at-risk plutonium, highly enriched uranium, and Naval nuclear weapons. (MET GOAL)	Install MPC&A upgrades on nuclear weapons and materials, eliminate weapons-usable materials, and consolidate the number of storage locations for weapons-usable materials into fewer buildings and sites to improve security in Russia. (MIXED RESULTS)

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Percentage of 39 Russian Navy warhead sites secured.	Secured 77% of the 39 Russian Navy warhead sites.	Secure 85% of the 39 Russian Navy warhead sites.	Secure 97% of the 39 Russian Navy warhead sites.	Secure 100% of the 39 Russian Navy warhead sites.				Secure 100% of the 39 Russian Navy warhead sites by the end of 2006.
Percentage of 25 Russian Strategic Rocket Forces sites secured.	Initiated MPC&A upgrades at 16% of the 25 Russian Strategic Rocket Forces sites.	Secure 8% of the 25 Russian Strategic Rocket Forces sites.	Secure 12% of the 25 Russian Strategic Rocket Forces sites.	Secure 48% of the 25 Russian Strategic Rocket Forces sites.	Secure 76% of the 25 Russian Strategic Rocket Forces sites.	Secure 100% of the 25 Russian Strategic Rocket Forces sites.		Secure 100% of the 25 Russian Strategic Rocket Forces sites by the end of 2008.
Percentage of 600 MTs of weapons-usable nuclear material secured.	Secured 22% of the 600MTs of weapons-usable nuclear material.	Secure 26% of the 600MTs of weapons-usable nuclear material.	Secure 37% of the 600MTs of weapons-usable nuclear material.	Secure 50% of the 600MTs of weapons-usable nuclear material.	Secure 73% of the 600MTs of weapons-usable nuclear material.	Secure 100% of the 600MTs of weapons-usable nuclear material.		Secure 100% of the 600MTs of weapons-usable nuclear material by the end of 2008.
Percentage of 27 MTs of HEU converted to LEU.	Converted 16.1% of the 27 MTs of HEU to LEU.	Convert 24% of the 27 MTs of HEU to LEU.	Convert 31% of the 27 MTs of HEU to LEU.	Convert 38% of the 27 MTs of HEU to LEU.	Convert 46% of the 27 MTs of HEU to LEU.	Convert 53% of the 27 MTs of HEU to LEU.	Convert 61% of the 27 MTs of HEU to LEU.	Convert 100% of the 27 MTs of HEU to LEU by the end of 2015.
Cumulative number of Radiological Dispersal Devices (RDD) sites secured.	Secured a total of 8 RDD sites.	Secure a total of 35 RDD sites.	Secure a total of 99 RDD sites.	Secure a total of 149 RDD sites.	Secure a total of 199 RDD sites.	Secure a total of 249 RDD sites.	Secure a total of 299 RDD sites.	

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<b>Performance Indicators</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>Endpoint Target Date</b>
Cumulative number of Second Line of Defense (SLD) sites with nuclear detection equipment installed.	Installed radiation detection equipment at 39 sites.	Install radiation detection equipment at 74 sites., (including 3 MegaPorts)	Install radiation detection equipment at 97 sites, (including 6 MegaPorts).	Install radiation detection equipment at 118 sites, (including 7 MegaPorts).	Install radiation detection equipment at 139 sites, (including 8 MegaPorts).	Install radiation detection equipment at 181 sites, (including 10 MegaPorts).	Install radiation detection equipment at 241 sites, (including 15 MegaPorts).	Install radiation detection equipment at 293 border crossing sites and 20 Mega-Ports (assuming no expansion of program sites) by the end of 2012.
Annual percentage of buildings scheduled for completion of security upgrades in a year that are done on time. (EFFICIENCY MEASURE)	Completed security upgrades on 100% of the buildings scheduled for this fiscal year.	Complete security upgrades on 100% of the buildings scheduled for this fiscal year.	Complete security upgrades on 100% of the buildings scheduled for this fiscal year.	Complete security upgrades on 100% of the buildings scheduled for this fiscal year.	Complete security upgrades on 100% of the buildings scheduled for this fiscal year.	Complete security upgrades on 100% of the buildings scheduled for this fiscal year.	Complete security upgrades on 100% of the buildings scheduled for this fiscal year.	

## Detailed Justification

(dollars in thousands)

	FY 2003	FY 2004	FY 2005
<b>Navy Complex .....</b>	<b>24,156</b>	<b>38,000</b>	<b>15,000</b>

The Navy Complex program element improves security of Russian Federation (RF) Navy weapons usable material by installing improved security systems at RF Navy nuclear warhead sites, RF Navy HEU fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These activities comprise a total of 50 sites, 39 Russian Navy nuclear warhead sites and 11 Russian Navy fuel and other nuclear material storage sites. These sites account for approximately 60 MTs of highly attractive weapons-usable nuclear materials and hundreds of at-risk RF Navy nuclear warheads. The Navy Complex has refined the process of working with the RF Navy which includes upgrades design driven by vulnerability assessments (VAs), a rapid upgrades phase that is typically completed within six months, a comprehensive upgrades phase requiring 12-18 months to complete and a sustainability program which assures the systems will remain effective after the installation of upgrades is complete.

Complete MPC&A upgrades at an additional 12% (5 sites) of the 39 Russian Navy nuclear warhead sites (increasing the total warhead sites secured (with either completed rapid and/or comprehensive upgrades) to 97% (38 sites)). Comprehensive upgrades will begin at the remaining Russian Navy warhead site. These upgrades will include physical protection and material control enhancements to Russian Navy sites that store or handle nuclear warheads. Upon completion of these upgrades, sustainability activities will begin at these warhead sites.

MPC&A comprehensive upgrades were completed on 100% of the 11 Navy fuel and other nuclear material storage sites in FY 2004, no new work is planned at those sites. However, sustainability and training efforts will continue to ensure that equipment provided is effective in protecting the material.

Decrease due to the completion of either rapid or comprehensive upgrades at a vast majority (85%) of Russian Navy warhead sites in FY 2004 and the transition to sustainability activities.

<b>Total, Navy Complex .....</b>	<b>24,156</b>	<b>38,000</b>	<b>15,000</b>
<b>Strategic Rocket Forces .....</b>	<b>8,965</b>	<b>24,000</b>	<b>45,000</b>

The Strategic Rocket Forces (SRF) program element improves security of Russian Federation (RF) warheads by installing improved MPC&A systems at RF Strategic Rocket Forces nuclear warhead sites. Fourteen sites at 12 bases have been approved by the U.S. Government for MPC&A upgrades. Discussions are underway to include additional sites. For planning purposes, NNSA is assuming that approximately 25 SRF nuclear warhead sites will require upgrades. The process for working with the SRF will be based upon the refined process currently in place with the Russian Navy, which includes upgrades design driven by vulnerability assessments (VAs), a rapid upgrades phase is often completed

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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within six-eight months, a comprehensive upgrades phase, and a sustainability program, which assures the systems will remain effective after the installation of upgrades is complete.

In FY 2005, NNSA plans to complete MPC&A upgrades at an additional 4% (1 site) of the approximately 25 SRF sites, (increasing the total SRF sites secured (with either completed rapid and/or comprehensive upgrades) to 12% (3 sites)). Complete MPC&A rapid upgrades at 4 of the approximately 25 SRF sites (increasing the total sites completed to 14) and initiate MPC&A comprehensive upgrades at 7 sites.

Increase due to the initiation of MPC&A comprehensive upgrades 3 additional sites over the FY 2004 level.

<b>Total, Strategic Rocket Forces</b> .....	<b>8,965</b>	<b>24,000</b>	<b>45,000</b>
<b>MinAtom Weapons Complex</b> .....	<b>42,634</b>	<b>32,487</b>	<b>43,000</b>

The MinAtom Weapons Complex program element enhances U.S. national security by providing MPC&A upgrades to the RF MinAtom nuclear weapons, uranium enrichment, and material processing/storage sites. The MinAtom Weapons Complex, located in closed cities, comprises a total of 9 sites. These sites account for approximately 500 MTs of highly attractive weapons-usable nuclear materials. The goal of this joint cooperative program is to identify areas that handle highly attractive material and provide protection against both internal and external threat scenarios.

Complete MPC&A rapid upgrades on an additional 20% of nuclear material (increasing the total amount of nuclear material rapid upgrades to 55%). Complete MPC&A comprehensive upgrades on an additional 14% of nuclear material (increasing the total amount of nuclear material under comprehensive upgrades to 25%).

At Mayak, continue MPC&A upgrades at the RT-1 fuel reprocessing plant and several sensitive areas within Plant 20. Comprehensive physical protection and material control and accounting upgrades at Mayak Plant 20 will continue immediately after the final list of proliferation vulnerabilities have been identified and the MPC&A system designs are completed. Upgrades and sustainability for Protective Force and secure transportation will continue.

At Tomsk-7, comprehensive physical protection and material control and accounting upgrades will continue at the Conversion Plant, Uranium Enrichment Plant, and the Chemical Metallurgical Plant.

At Krasnoyarsk-26, construction of the new Plutonium storage facility will continue and implementation of the new physical protection and material accounting systems will be in progress. Related upgrades include the completion of a central alarm station and implementation of complex-wide material accounting measurements to verify the nuclear material inventory.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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At Arzamas-16, expand on-going activities to include several new guarded areas. Continue construction of the central storage facility to consolidate material on site. Begin repackaging of the nuclear material to be transferred into the new central storage facility once completed.

At Chelyabinsk-70, expand on-going activities to include several new areas. Continue construction of the central storage facility to consolidate material on site. Begin repackaging of the nuclear material to be transferred into the new central storage facility once completed.

Initiate MPC&A upgrades at one of the remaining two MinAtom Weapons Complex sites.

Continue sustainability activities at Sverdlovsk-44 and Krasnoyarsk-45.

The serial production enterprises (SPEs) of MinAtom contain a significant portion of the nuclear material residing in the Russian weapons complex. Given the extreme national security sensitivity of these sites for the Russian Federation, Minatom has not yet permitted security upgrades at these sites. The goal of NNSA is to continue to pursue a dialogue with MinAtom until a mutually acceptable mechanism for improving material security at the SPEs can be identified and implemented.

Increase due to start of MPC&A rapid/comprehensive upgrades to additional areas within 3 sites.

<b>Total, MinAtom Weapons Complex.....</b>	<b>42,634</b>	<b>32,487</b>	<b>43,000</b>
<b>Civilian Nuclear Sites .....</b>	<b>13,646</b>	<b>16,000</b>	<b>14,000</b>

The Civilian Nuclear Sites program element installs MPC&A systems at 31 civilian nuclear sites (18 Russian and 13 Non-Russian). The civilian sites contain approximately 40 MTs of vulnerable, material of proliferation concern. The basic MPC&A upgrade objective is to employ a cost-effective, graded approach with an initial focus on installing MPC&A upgrades on the most highly attractive nuclear material at each site. Rapid MPC&A upgrades are installed to mitigate the immediate risk of theft and diversion while longer term, more comprehensive MPC&A upgrades are designed, installed and placed into operation. Following completion of site upgrades, U.S. support continues to help foster site capabilities to operate and maintain installed security systems. This line item will cover sustainability support for those sites with completed MPC&A comprehensive upgrades.

Complete MPC&A comprehensive upgrades on an additional 1% of nuclear material (increasing the total amount of nuclear material under comprehensive upgrades to 99%). Complete MPC&A comprehensive upgrades at Bochvar, (increasing the total number of sites completed to 17 of the 18 Russian sites and 13 of the 13 FSU sites). Continue upgrades at the Elektrostal Machine Building Plant and complete MPC&A comprehensive upgrades by the end of FY 2006. Provide support for training, procedures, maintenance, equipment repair, critical spare parts, and performance testing to the sites with completed MPC&A upgrades in order to ensure the sustainability of installed MPC&A upgrades.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Conduct MPC&A cooperation with countries outside of Russia and the former Soviet States. Planned activities include technical exchanges and rapid MPC&A upgrades to sites with weapons usable nuclear materials, which are most vulnerable to theft and/or diversion.

Decrease due to the initiation and ramp-up of MPC&A cooperation with countries outside of Russia and the former Soviet States begun in FY 2004.

<b>Total, Civilian Nuclear Sites .....</b>	<b>13,646</b>	<b>16,000</b>	<b>14,000</b>
<b>Material Consolidation and Conversion.....</b>	<b>12,082</b>	<b>32,000</b>	<b>30,000</b>

Material Consolidation and Conversion (MCC) program element reduces the complexity and the long-term costs of securing weapons-usable nuclear material. The MCC project is designed to significantly reduce the proliferation risk associated with weapons-usable nuclear materials by consolidating excess, non-weapons highly enriched uranium and Pu into fewer, more secure locations. This decreases the number of attractive theft targets and the equipment and personnel costs associated with securing such material. MCC also converts weapons-usable material (HEU and Plutonium) to less proliferant-attractive form, which reduces its attractiveness to would-be proliferators. By the end of FY 2015, it is planned that the MCC project will convert ~27 MTs of HEU to LEU. Based on its consolidation and conversion activity, the MPC&A program plans to have removed all proliferation concern material from 55 buildings.

Continue to implement MPC&A strategy to simplify the nuclear security situation in Russia by consolidating material to fewer sites and fewer buildings, and converting much of this material to less proliferant attractive form (i.e. HEU to LEU), rendering it less attractive to would-be proliferators. Convert an additional 7% (2 MTs) of the total 27 MTs of weapon-grade highly enriched uranium to be converted to non-weapons grade low enriched uranium,(for a total percentage converted of 31%, (8.4 MTs)). Clear an additional 5% (3 buildings) of the 55 buildings to be cleared of all weapons-usable material consolidating it to other secured buildings (increasing the total percentage of buildings cleared to 60%, (33 buildings)).

Decrease due to a slight decrease in the number of buildings scheduled to be cleared of all weapons-usable material and no funding for accelerated MCC until additional HEU that could be available for conversion to LEU is known.

<b>Total, Material Consolidation and Conversion.....</b>	<b>12,082</b>	<b>32,000</b>	<b>30,000</b>
<b>Radiological Dispersal Devices .....</b>	<b>47,963</b>	<b>36,000</b>	<b>25,000</b>

The Radiological Dispersion Devices (RDD) program element identifies and pursues actions that can be taken to reduce the threat of a radiological attack against the United States. Given the large number of radiological sources and facilities storing these materials world-wide, the RDD program is continuing to refine a prioritization of those materials which pose the greatest risk. Also, considered are threat environment and impacts on U.S. National security. The RDD program security upgrades will be based

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(dollars in thousands)

FY 2003	FY 2004	FY 2005
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upon similar methodology used by the MPC&A program to design security enhancements for nuclear warheads and weapons-usable nuclear material.

As candidate RDD sites and orphan or surplus radioactive sources are identified, the RDD Program installs a suite of physical security and material control and accounting upgrades that will significantly enhance the protection of nuclear material at the site to an acceptable level. These upgrades may include: installation of vehicle inspection areas; hardened access control and guard buildings; detection, assessment, and access control systems; exterior access delay systems; and additional response force upgrades if necessary. In FY 2005, the RDD program plans to complete the installation of equipment to secure radiological materials at an additional 64 RDD sites, (increasing the total number of sites secured to 99). A larger number of sites can be completed in FY 2005 than in FY 2004 at a lower funding level since these sites are much smaller and lower cost to compete than the Russian RADON sites. The Program also seeks to recover and dispose of the sources from 100 radio isotope thermal electric generators or sites containing disused/abandoned radiological sources in FY 2005 and each year thereafter.

Provide the IAEA’s Office of Nuclear Security funding to support a globalization Initiative between the U.S., the IAEA, and other members states to secure vulnerable high risk radioactive sources. This funding will focus on developing countries worldwide where the security of radioactive sources needs improvement or is non-existent. The IAEA's Office of Nuclear Security will be tasked to provide the NNSA with the necessary technical, management and administrative assistance to locate, consolidate, transport, secure in storage, or securely dispose of, these high risk sources to reduce the risk of them being used to perpetrate malicious acts.

In response to the need to improve the security of research reactors and other such facilities throughout the world where nuclear and non-nuclear radiological material may be co-located NNSA launched the Global Research Reactor Security Initiative. If not adequately protected, such facilities could be vulnerable to sabotage, theft, or attack. The mission of the Global Research Reactor Security Initiative (GRRSI) is to comprehensively assess nonproliferation and radiological threat concerns that pertain to research reactors and associated facilities and make recommendations on how to mitigate such threats. Following the completion of a study and action plan in FY 2004, follow-on activities in FY 2005 will be performed by the relevant program office and may include: support to the IAEA for working groups on Research Reactor Security; foreign site visits and assessments of high risk reactor sites; development of generic and site-specific security upgrade plans for foreign sites; development of a comprehensive research reactor and related sites data base; support for one international conference on Research Reactor Security Issues; and continuing assessments of threats to research reactors.

Decrease due to the completion in FY 2004 of MPC&A security upgrades to the Russian RADON nuclear waste sites.

<b>Total, Radiological Dispersal Devices .....</b>	<b>47,963</b>	<b>36,000</b>	<b>25,000</b>
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(dollars in thousands)

	FY 2003	FY 2004	FY 2005
<b>National Programs and Sustainability .....</b>	<b>44,439</b>	<b>28,000</b>	<b>27,000</b>

The National Programs and Sustainability element enables the MPC&A program to implement a focused strategy to ensure that MPC&A programs can be sustained in the Russia Federation (RF) and other partner countries, by establishing and implementing national, regional and site infrastructure components necessary for the successful long term operation and management of MPC&A systems. These components are necessary to the creation of an environment in which MPC&A systems can be fully and effectively transitioned to partner countries who will operate and sustain them for the long term.

Continue to assist the RF in establishing the necessary federal and agency level regulations, reporting requirements and oversight processes that set and review the parameters for an acceptable MPC&A system. Continue to create an infrastructure at industry and regional levels to help support and sustain upgraded MPC&A systems at sites. The infrastructure includes facilities and subject matter experts in areas of MC&A, Physical Protection (PP), and Protective Force (PF) training and methodological development; MPC&A inspections; equipment testing, maintenance, repair, and metrology; nuclear reference standards and procedures to support material measurements; and higher education in the MPC&A field.

Operate and maintain 3 regional technical support facilities to provide equipment repair, maintenance, calibration assistance, operations assistance, configuration control, warranty service, spare parts inventories, and training for critical MPC&A systems and components. Continue to develop Russian MPC&A training, infrastructure curricula and support provisions of MPC&A courses.

Assist the Russian sites in achieving long-term effective operation of their MPC&A systems through development of procedures, process analysis, system effectiveness evaluation, cost analysis, and performance testing. This also includes manufacture of transportation overpacks to prevent theft of nuclear material while in transit, and hardening railcars and trucks to provide additional protection for guards escorting material shipments. At this time it is estimated that a total of 550 transportation overpacks will be manufactured, 331 trucks will be hardened and 161 railcars will be hardened. In FY 2005, an additional 3% (19) secure transportation overpacks will be produced, an additional 4% (12) of the trucks will be hardened, and an additional 3% (5) railcars will be hardened, (increasing the total percentages to 71% for overpacks, 66% for trucks and 69% for railcars).

Begin implementation of an MPC&A operations and transition strategy to achieve the goal of fully transitioning operations and maintenance of MPC&A upgrades to full Russian responsibility by working with the Russian Federation to develop the capabilities they need to maintain the security of their weapons usable nuclear material. Decrease due to a reprioritization of all MPC&A program activities to support MPC&A upgrades in countries outside of Russia and the former Soviet States.

<b>Total, National Programs and Sustainability .....</b>	<b>44,439</b>	<b>28,000</b>	<b>27,000</b>
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## Detailed Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Second Line of Defense**

<b>Core Program</b> .....	<b>40,144</b>	<b>47,800</b>	<b>24,000</b>
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The SLD program deploys radiation detection monitors at strategic transit and border crossings and at air and sea transshipment hubs in Russia and other countries to provide these governments with the technical means to deter and interdict illicit trafficking in nuclear and other radioactive materials. Sites to be addressed are selected through a site prioritization and selection methodology established to effectively plan and utilize program resources. The methodology incorporates various prioritization factors and allows for the development of a prioritized list of sites, which can be selected for the effective application of resources to the most important locations. In FY 2005, radiation detection equipment will be installed at an additional 20 foreign sites, increasing the total sites (non-Mega-Port) with completed installations to 91. Additionally, the program will continue to maintain previously deployed Department of State equipment in 22 countries.

Operation of the Nuclear Assessment Program which provides a capability for monitoring and assessing illicit nuclear material trafficking incidents, assessing communicated nuclear threats, and maintaining a centralized data base containing trafficking, threat, and nonproliferation/terrorism information was transferred to the Department of Homeland Security as of March 1<sup>st</sup> in FY 2003.

Decrease due to the completion of radiation detection equipment installations at sites in Greece, Slovenia and the majority of sites in Russia.

<b>Mega-Ports</b> .....	<b>99,000</b>	<b>4,200</b>	<b>15,000</b>
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NNSA is pursuing cooperation with international partners to deploy and equip key ports with radiation detection equipment and to provide training to appropriate law enforcement officials, in order to provide them the technical means to detect, deter and interdict illicit trafficking in nuclear and other radioactive materials. This program supports the Department of Homeland Security's (DHS) Bureau of Customs and Border Protection's Container Security Initiative (CSI). Under CSI, the US Government partners with countries that have ports that ship a large volume of containerized cargo to the United States in an effort to strengthen screening of cargo. By adding radiation detection capabilities at seaports, we will be able to screen cargo for nuclear and radioactive materials that could be used in a weapon of mass destruction or a RDD (dirty bomb) against the US, the host country and our allies. NNSA's program is focused on a subset of the ports that have committed to CSI.

The ports of interest to DOE have been identified based upon several factors, such as routing criteria and traffic characteristics. Under this initiative, NNSA plans to implement the program in up to twenty international ports. Implementation of the Mega-Ports program at any given port is contingent upon the agreement/invitation of the government in the country in which the port lies. NNSA is expanding its efforts to engage those governments that have completed agreements for CSI to determine their interest in working with us to implement the Mega-Ports project.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Provide site surveys, vulnerability assessments, radiation detection equipment design, procurement and installation required for a total of 3 Mega-Seaports, (2 from funds provided in the FY 2003 supplemental, increasing number of ports which are complete to 6). Provide comprehensive training to Customs officials and other appropriate personnel in the host country for the operation and maintenance of installed radiation detection monitors, including alarm evaluations and reporting.

Increase due to the funding for the purchase and installation of radiation detection equipment at one-Mega-Port.

<b>Total, Second Line of Defense.....</b>	<b>139,144</b>	<b>52,000</b>	<b>39,000</b>
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## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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<ul style="list-style-type: none"> <li> <p>▪ <b>Navy Complex</b></p> <p>Decrease due to the completion of either rapid or comprehensive upgrades at a vast majority all (85%) of Russian Navy warhead sites in FY 2004 and the transition to sustainability activities.....</p> </li> <li> <p>▪ <b>Strategic Rocket Forces</b></p> <p>Increase due to the initiation of MPC&amp;A comprehensive upgrades 3 additional sites over the FY 2004 level.....</p> </li> <li> <p>▪ <b>Minatom Weapons Complex</b></p> <p>Increase due to start of MPC&amp;A rapid/comprehensive upgrades to additional areas within 3 sites .....</p> </li> <li> <p>▪ <b>Civilian Nuclear Sites</b></p> <p>Decrease due to the initiation and ramp-up of MPC&amp;A cooperation with countries outside of Russia and the former Soviet States begun in FY 2004.....</p> </li> <li> <p>▪ <b>Material Consolidation and Conversion</b></p> <p>Decrease due to a slight decrease in the number of buildings scheduled to be cleared of all weapons-usable material and no funding for accelerated MCC until additional HEU that could be available for conversion to LEU is known.....</p> </li> <li> <p>▪ <b>Radiological Dispersal Devices</b></p> <p>Decrease due to the completion in FY 2004 of MPC&amp;A security upgrades to the Russian RADON nuclear waste sites.....</p> </li> <li> <p>▪ <b>National Programs and Sustainability</b></p> <p>Decrease due to a reprioritization of all MPC&amp;A program activities to support MPC&amp;A upgrades in countries outside of Russia and the former Soviet States .....</p> </li> <li> <p>▪ <b>Second Line of Defense</b></p> <p>Decrease due to the completion of radiation detection equipment installations in Greece and Slovenia and the majority of sites in Russia, offset by an increase for the purchase and installation of radiation detection equipment at one-Mega-Port....</p> </li> </ul>	<p>- 23,000</p> <p>+ 21,000</p> <p>+ 10,513</p> <p>- 2,000</p> <p>- 2,000</p> <p>- 11,000</p> <p>- 1,000</p> <p>- 13,000</p> <hr style="border: 1px solid black;"/> <p>- 20,487</p> <hr style="border: 1px solid black;"/>
<p><b>Total Funding Change, International Nuclear Materials Protection and Cooperation .....</b></p>	<p>- 20,487</p>

# Russian Transition Initiatives

## Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Russian Transition Initiatives					
Russian Transition Initiatives.....	39,081	39,764	41,000	+ 1,236	+ 3.1%
Total, Russian Transition Initiatives.....	39,081	39,764	41,000	+ 1,236	+ 3.1%

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
Russian Transition Initiatives.....	41,000	42,000	43,000	43,000	44,000	213,000

## Description

This program will prevent adverse migration of weapons of mass destruction expertise by engaging weapons experts in peaceful efforts and by helping to downsize the Russian nuclear weapons complex.

### Benefits to Program Goal 02.45.00.00 Russian Transition Initiatives

The Russian Transition Initiatives program contributes to Program Goal 02.45.00.00 by reducing the global nuclear danger of proliferation of technologies and expertise by engaging NIS WMD experts in cooperative projects involving the ten major DOE/NNSA National Laboratories and U.S. industry.

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
Engaged approximately 2,000 scientists, engineers, and technicians at nuclear NIS institutes, and approximately 800 scientists, engineers and technicians at NIS chemical/biological institutes in 50 projects to provide long-term commercial employment. (MET GOAL)	Engaged approximately 2,000 scientists, engineers, and technicians at nuclear NIS institutes, and approximately 800 scientists, engineers and technicians at NIS chemical/biological institutes in 40 projects to provide long-term commercial employment. (MET GOAL)	Engaged 2,500 former WMD scientists on cooperative commercial projects. (MET GOAL)  Sign an Agreement with the Russian Ministry of Atomic Energy for access to closed nuclear sites. (MET GOAL)	Enhance nonproliferation efforts in the Russian nuclear cities, and accelerate several Russian technology development efforts that have clear counter-terrorism or terrorism response applications under the Russian Transition Initiatives. (MET GOAL)

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Annual number of former Soviet weapons scientists, engineers, and technicians engaged.	7,600	7,900	8,200	8,500	8,800	9,100	9,400	15,000 by 2030
Cumulative number of technologies commercialized or businesses created.	20 technologies commercialized or businesses were created.	21 technologies commercialized or businesses created.	22 technologies commercialized or businesses created.	23 technologies commercialized or businesses created.	25 technologies commercialized or businesses created.	27 technologies commercialized or businesses created.	29 technologies commercialized or businesses created.	60 technologies commercialized or businesses created by 2015. (Intermediate Target)
Cumulative percentage of nuclear complex reduction targets completed at six weapons facilities.	Met 49% of all nuclear complex reduction targets at six weapons facilities and completed all targets at one of six sites.	Meet 53% of all nuclear complex reduction targets at six weapons facilities and complete all targets at one of six sites.	Meet 58% of all nuclear complex reduction targets at six weapons facilities and complete all targets at two of six sites.	Meet 61% of all nuclear complex reduction targets at six weapons facilities and complete all targets at three of six sites.	Meet 68% of all nuclear complex reduction targets at six weapons facilities and complete all targets at three of six sites.	Meet 65% of all nuclear complex reduction targets at six weapons facilities and complete all targets at three of six sites.	Meet 68% of all nuclear complex reduction targets at six weapons facilities and complete all targets at four of six sites.	Meet 100% of the targets for all six weapons facilities by 2015.
Annual percentage of non-USG funding contributions obtained. (EFFICIENCY MEASURE)	Obtained non-USG funding contributions equal to 50% of RTI project funds (\$23 million).	Obtain non-USG funding contributions equal to 60% of RTI project funds (\$24 million).	Obtain non-USG funding contributions equal to 70% of RTI project funds (\$28.7 million).	Obtain non-USG funding contributions equal to 80% of RTI project funds (\$33.6 million).	Obtain non-USG funding contributions equal to 90% of RTI project funds (\$38.7 million).	Obtain non-USG funding contributions equal to 100% of RTI project funds (\$45 million).	Obtain non-USG funding contributions equal to 100% of RTI project funds (\$50 million).	Obtain non-USG funding contributions equal to 100% of RTI project funds by 2008.

## Detailed Justification

(dollars in thousands)

	FY 2003	FY 2004	FY 2005
<b>Russian Transition Initiatives</b> .....	<b>39,081</b>	<b>39,764</b>	<b>41,000</b>

The former Soviet weapons complex is oversized and in need of resources, making it a dangerous target for terrorists. Roughly half of the 75,000 scientists currently employed by Russia, for example, are needed for stewardship work. The remaining 35,000 under-employed nuclear experts represent a knowledge base that terrorist groups and proliferant countries could target for clandestine nuclear programs. Moreover, if left in place within the complex, these personnel create a surge capacity that would allow Russia to resume weapons work at any moment. RTI complements Russian efforts to reduce its WMD complex and enables it to reduce its workforce through technology commercialization and support for commercial development.

The extent to which WMD expertise is less subject to adverse migration can be measured in four ways. The cumulative number of former Soviet weapons scientists, engineers and technicians that RTI employs in non-weapons commercial work indicates a real reduction in the WMD workforce as that expertise is transitioned to well-paying civilian jobs, as well as models of success for host governments to follow. RTI's end goal is to create 15,000 civilian jobs outside the WMD complex by 2030. The cumulative number of technologies commercialized or businesses created is an indicator of the self-sustainability of those civilian jobs after RTI exits. RTI has an intermediate goal of creating 60 new technologies or businesses by 2015 to support sustainable job creation targets. RTI has established downsizing targets for 2 weapons assembly facilities, 2 plutonium production facilities, and 2 weapons design institutes that represent the highest priority in Russian workforce reduction and facility closure plans. One hundred percent of downsizing targets will be met by 2015, including those in support of the Elimination of Weapons Grade Plutonium Program. The efficiency of these activities is measured by the percentage of non-US Government contributions obtained in support of RTI activities. RTI will achieve matching contribution in the amount of 100% of project funds by 2008, and will maintain that percentage through program completion.

<b>Total, Russian Transition Initiatives</b> .....	<b>39,081</b>	<b>39,764</b>	<b>41,000</b>
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## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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- **Russian Transition Initiatives**

Increase will enable the program to expand engagement in weapons institutes..... + 1,236

**Total Funding Change, Russian Transition Initiatives** ..... + 1,236

# HEU Transparency Implementation

## Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
HEU Transparency Implementation					
HEU Transparency Implementation.....	17,118	17,894	20,950	+ 3,056	+ 17.1%
Total, HEU Transparency Implementation.....	17,118	17,894	20,950	+ 3,056	+ 17.1%

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
HEU Transparency Implementation.....	20,950	21,212	21,000	20,000	20,000	103,162

## Description

Provide assurance that the LEU being purchased under the 1993 U.S. /Russian HEU Purchase Agreement is derived from HEU extracted from dismantled Russian nuclear weapons, by developing and implementing mutually agreeable transparency measures that the 500 MT of HEU covered by the Agreement is permanently down blended and eliminated from Russian inventory.

### Benefits to Program Goal 02.41.00.00 HEU Transparency

The HEU Transparency program annually monitors the conversion and processing of 30 metric tons (MT) of weapons-grade HEU into approximately 900 MT of LEU at 4 Russian Processing facilities. This LEU is then delivered to the U.S. Enrichment Corporation for conversion into commercial power reactor fuel elements. These transparency operations should continue through 2013 when the 500 MT of HEU will be completely converted.

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
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There were no related targets.

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Number of Blend-Down Monitoring Systems operational and the annual percent of operation during the HEU blend-down process.	One Blend-Down Monitoring System (BDMS) at the Ural Electrochemical Integrated Plant (UEIP). Annual percent of operation was 92%. A second BDMS at the Electro Chemical Plant (ECP) became operational in March 2003.	Two Blend-Down Monitoring Systems (One at UEIP and one at the Electro Chemical Plant [ECP] in Zelenogorsk). Annual percent of operation targeted for 94%.	Three Blend-Down Monitoring Systems (UEIP, ECP, the Siberian Chemical Combine [SchE] in Seversk). Annual percent of operation targeted for 95%.	Three Blend-Down Monitoring Systems (UEIP, ECP, and SchE). Annual percent of operation targeted for 95%.	Three Blend-Down Monitoring Systems (UEIP, ECP, and SchE). Annual percent of operation targeted for 95%.	Three Blend-Down Monitoring Systems (UEIP, ECP, and SchE). Annual percent of operation targeted for 95%.	Three Blend-Down Monitoring Systems (UEIP, ECP, and SchE). Annual percent of operation targeted for 95%.	2013, for the 500 Metric Tons associated with the HEU Purchase Agreement.
Percentage completed of the 24 annually allowed Special Monitoring Visits (SMVs) to the four Russian HEU-to-LEU processing facilities to monitor 30 MT per year of HEU converted to LEU.	Conduct 22 or 92% of the allowed 24 monitoring visits to Russian facilities. Only 18 were budgeted in favor of resources to build a second continuous Blend-Down	Conduct 22 or 92% of 24 allowed monitoring visits to Russian facilities.	Conduct 100% of 24 allowed monitoring visits to Russian facilities.	Conduct 100% of 24 allowed monitoring visits to Russian facilities.	Conduct 100% of 24 allowed monitoring visits to Russian facilities.	Conduct 100% of 24 allowed monitoring visits to Russian facilities.	Conduct 100% of 24 allowed monitoring visits to Russian facilities.	2013, for the 500 Metric Tons associated with the HEU Purchase Agreement.

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
<p>Percentage of the year that the on-site Transparency Monitoring Office (TMO) is staffed at the Ural Electrochemical Integrated Plant.</p>	<p>Monitoring System. UEIP TMO was staffed and operating for 35 weeks of the 50 weeks, or 70%, of the related plant operation cycle.</p>	<p>Target TMO coverage of plant operating schedule at 75%.</p>	<p>Target TMO coverage of plant operating schedule at 76%.</p>	<p>Target TMO coverage of plant operating schedule at 77%.</p>	<p>Target TMO coverage of plant operating schedule at 78%.</p>	<p>Target TMO coverage of plant operating schedule at 79%.</p>	<p>. Target TMO coverage of plant operating schedule at 80%.</p>	<p>2013, for the 500 Metric Tons associated with the HEU Purchase Agreement.</p>

## Detailed Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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<b>HEU Transparency Implementation.....</b>	<b>17,118</b>	<b>17,894</b>	<b>20,950</b>
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Annually monitor the conversion of 30 metric tons (MT) of weapons-grade HEU into approximately 900 MT of LEU at 4 Russian Processing facilities to assure that the LEU being purchased under the HEU Purchase agreement is derived from dismantled nuclear weapons. Develop and perform mutually agreeable (US/RF) transparency measures, including:

Conduct 18 Special Monitoring Visits (SMVs) in FY03, 22 in FY04, and 24 in FY05, to the 4 Russian facilities. The 24 visits require approximately 180 technical monitors. SMV's are the primary source of transparency data and are the only way to retrieve Blend Down Monitoring System (BDMS) output reports. Provide permanent monitoring in Russia by staffing the Transparency Monitoring Office in Novouralsk, Russia with 14 technical experts performing bimonthly rotations allowing daily access to the Ural Electrochemical Integrated Plant (UEIP) processing and down blending operations.

Maintain the installed BDMS equipment that provides continuous and independent measurements of HEU uranium hexafluoride (UF<sub>6</sub>) down blending into LEU-UF<sub>6</sub> at blend-points in two dilution facilities (UEIP and Electro Chemical Plant, ECP) in FY 2003. Complete fabrication of BDMS equipment for SChE in FY 2004, with installation scheduled for FY2005. Procure, replace, and dispose of radioactive sources (Co-57 and Cf -252) critical to the BDMS operations for each plant. The Co-57 sources have a 3/4 year half-life, which consequently requires annual replacement and BDMS equipment re-calibration. The Cf-252 sources require replacement every two years.

Also in FY05, plan and prepare retrofit/replacement of the BDMS system at UEIP which was built in 1996 and is experiencing hardware and software obsolescence issues.

Maintain portable Non Destructive Assay (NDA) instruments shipped to Russian sites for U.S. monitor use. In FY2004, complete the delivery of improved portable NDA instruments to replace the original NDA units built and shipped in 1997.

Conduct annual inventory of natural uranium feedstock in storage cylinders at Russian facilities, which were supplied by U.S. Enrichment Corp. (USEC) for the equivalent Russian natural uranium in the LEU purchased.

Reimburse Russian facilities for costs of goods and services provided to U.S. monitors, such as escorts outside controlled areas, translators, and transportation assistance. Provide planning, logistical support and coordination with MinAtom for monitoring activities. Train monitors in both technical and procedural requirements. Compile, archive and analyze all transparency monitoring data, especially BDMS output reports. Prepare monthly, annual, and ad hoc reports on HEU processing and HEU to LEU conversion rates and quantities. Maintain Worker Health and Safety with personnel radiation dosimetry and bio-assay program covering all monitors traveling to Russia. Assure the occupational safety of U.S. monitors working in Russia and update the Program Health and Safety plan, as needed.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Accommodate Russian monitoring in the U.S. by maintaining a Permanent Presence Office (PPO) at Paducah, KY, for Russian monitors. Provide logistical and security assistance to RF monitoring teams monitoring operations at U.S. facilities. Compile and provide LEU accountability documents to MinAtom per negotiated transparency agreements. Provide interpreters, translators, logistical and technical support, as necessary, for Transparency Review Committee and other negotiating sessions in Russia and elsewhere.

<b>Total, HEU Transparency Implementation .....</b>	<b>17,118</b>	<b>17,894</b>	<b>20,950</b>
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## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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- **HEU Transparency Implementation**

Increase reflects the costs to upgrade the obsolete Blend Down Monitoring System at the Ural Electrochemical Integrated Plant (UEIP) that was fabricated in 1996, and the increase from 22 to the fully allowable 24 Special Monitoring Visits (SMVs) to the four Russian HEU processing facilities.....

+ 3,056

**Total Funding Change, HEU Transparency Implementation.....**

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+ 3,056

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# Elimination of Weapons Grade Plutonium Production

## Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Elimination of Weapons Grade Plutonium Production					
Seversk Pu Production Elimination.....	32,339	48,300	39,500	- 8,800	- 18.2%
Zheleznogorsk Pu Production Elimination.....	15,000	15,000	9,597	- 5,403	- 36.0%
Plutonium Production Reactor (PPR) Safety.....	200	0	0	0	+ 0.0%
Technical Support Activities.....	1,682	1,735	1,000	- 735	- 42.4%
Subtotal, EWGPP.....	49,221	65,035	50,097	- 14,938	- 23.0%
Less DOD funding transfer a .....	-200	0	0	0	0
Total, Elimination of Weapons Grade Plutonium Production.....	49,021	65,035 <sup>b</sup>	50,097	- 14,938	- 23.0%

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FYNSP Total
Elimination of Weapons Grade Plutonium Production.....	50,097 <sup>c</sup>	56,000	59,497	60,339	66,862	292,795

<sup>a</sup> Of the \$74.0 million transferred from DOD in FY03, \$0.2M is considered re-appropriated in the current-year and \$73.8 million is prior-year balances. Up to \$17.0 million of the prior-year balances is being applied to the PPR safety upgrades.

<sup>b</sup> \$15,300,000 reappropriated in FY 2004 from unobligated balances expiring in FY 2003 transferred from DoD in accordance with the National Defense Authorization Act of FY 2004.

<sup>c</sup> Excludes unobligated balances associated with \$74,000,000 transferred from Department of Defense.

## **Description**

The EWGPP program reduces the threat of nuclear terrorism by facilitating shutdown of the three remaining weapons-grade plutonium production reactors in the Russian Federation through: (1) construction of a new fossil-fuel (coal) plant at Zheleznogorsk; (2) refurbishment of an existing fossil-fuel (coal) power plant at Seversk; and (3) execution of a nuclear safety upgrades project to improve reactor safety pending shutdown of the reactors.

## **Benefits to Program Goal 02.42.00.00 Elimination of Weapons-Grade Plutonium Production**

Within the Elimination of Weapons-Grade Plutonium Production program, four subprograms each make unique contributions to Program Goal 02.42.00.00. The Seversk Plutonium Production Elimination Project subprogram facilitates the shut down of two weapons-grade plutonium production reactors by refurbishing an existing 1950s fossil-fueled facility. The Zheleznogorsk Plutonium Production Elimination Project subprogram facilitates the shut down of one weapons-grade plutonium production reactors by providing a replacement fossil-fueled facility. The Plutonium Production Reactor Safety subprogram consists of short-term safety upgrades to the three plutonium production reactors and was an integral part of the original Plutonium Production Reactor Shutdown Agreement and the associated Implementing Agreement. The Technical Support Activities subprogram provides resources for crosscutting efforts, such as project reviews and reporting, contract administration, intergovernmental contract negotiation support, general laboratory technical support, quality assurance, foreign logistical support, and other communications products and services.

## **Program Assessment Rating Tool (PART)**

As a result of the FY2005 OMB PART review of EWGPP, OMB recognized the program for having very good, solid, and tangible performance measures to effectively guide and monitor program progress. However, because the EWGPP program was recently transferred to DOE/NNSA from DoD, it is relatively new for DOE/NNSA and has not had a chance to develop a track record of results. Therefore, OMB assigned a rating of "Results not demonstrated."

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
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There were no related targets.

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
<p>Percentage of progress towards constructing a fossil plant in Seversk facilitating shut down of two weapons-grade plutonium production reactors. (EFFICIENCY MEASURE)</p> <p>* Based on pre-conceptual design feasibility study.</p>	Completed 1% toward the construction of a fossil plant in Seversk (increasing the total to 1% complete towards shutting down two plutonium production reactors by 2008)*.	Completed an additional 15% toward the construction of a fossil plant in Seversk (increasing the total to 16% complete towards shutting down two plutonium production reactors by 2008)*.	Completed an additional 32% toward the construction of a fossil plant in Seversk (increasing the total to 48% complete towards shutting down two plutonium production reactors by 2008)*.	Completed an additional 27% toward the construction of a fossil plant in Seversk (increasing the total to 75% complete towards shutting down two plutonium production reactors by 2008)*.	Completed an additional 19% toward the construction of a fossil plant in Seversk (increasing the total to 94% complete towards shutting down two plutonium production reactors by 2008)*.	Completed an additional 6% toward the construction of a fossil plant in Seversk (increasing the total to 100% complete towards shutting down two plutonium production reactors by 2008)*.		2008.
<p>Percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating shut down of one weapons-grade plutonium production reactor.(EFFICIENCY MEASURE)</p> <p>* Based on pre-conceptual design feasibility study.</p>	Completed 0.5% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 0.5% complete towards shutting down one plutonium production reactor by 2011)*.	Completed 2.5% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 3% complete towards shutting down one plutonium production reactor by 2011)*.	Completed 10% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 13% complete towards shutting down one plutonium production reactor by 2011)*.	Completed 16% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 27% complete towards shutting down one plutonium production reactor by 2011)*.	Completed 18% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 44% complete towards shutting down one plutonium production reactor by 2011)*.	Completed 20% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 62% complete towards shutting down one plutonium production reactor by 2011)*.	Completed 20% toward the construction of a fossil plant in Zheleznogorsk (increasing the total to 82% complete towards shutting down one plutonium production reactor by 2011)*.	2011.

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
<p>Percentage of progress towards completing interim safety upgrades to the three operating Russian plutonium production reactors. (EFFICIENCY MEASURE)</p> <p>* Based on pre-conceptual design feasibility study.</p>	Complete 5% toward completion of needed safety upgrades (increasing the total to 5% complete towards reducing the risk of accidents for the duration of the reactors operation project will be complete by 2006)*	Complete 9% toward completion of needed safety upgrades (increasing the total to 14% complete towards reducing the risk of accidents for the duration of the reactors operation project will be complete by 2006)*	Complete 35% toward completion of needed safety upgrades (increasing the total to 49% complete towards reducing the risk of accidents for the duration of the reactors operation project will be complete by 2006)*	Complete 51% toward completion of needed safety upgrades (increasing the total to 100% complete towards reducing the risk of accidents for the duration of the reactors operation project will be complete by 2006)*				2006.
Amount of Russian Federation weapons-grade plutonium production eliminated annually, and cumulatively, from the 1.2 Metric Tons per year baseline.	0 Metric Tons annually, and cumulatively eliminated.	0 Metric Tons annually, and cumulatively eliminated.	0 Metric Tons annually, and cumulatively eliminated.	0 Metric Tons annually, and cumulatively eliminated.	0 Metric Tons annually, and cumulatively eliminated.	0 Metric Tons annually, and cumulatively eliminated.	0.8 Metric Tons annually, and 0.8 MT cumulatively eliminated.	1.2 Metric Tons eliminated annually in 2012

## Detailed Justification

(dollars in thousands)

	FY 2003	FY 2004	FY 2005
<b>Seversk Plutonium Production Elimination.....</b>	<b>32,339</b>	<b>48,300</b>	<b>39,500</b>

The Seversk Plutonium Production Elimination Project facilitates the shut down of two weapons-grade plutonium production reactors by refurbishing an existing 1950s fossil-fueled facility. The Russian Federation began upgrades in 1978 to the fossil fuel facility but funding problems, soon thereafter, caused difficulties from that point forward. The U.S. plan is to build on those efforts.

In FY 2003, negotiations were concluded and revisions to the master U.S./R.F agreement, which covered the previous core-conversion approach to plutonium production elimination, were finalized. An intergovernmental EWGPP Implementation Agreement and site access arrangements were completed. The program established management, contracting, implementation and oversight mechanisms for both U.S. and R.F. contractors. The program received conditional approval of Critical Decision 0, approve mission need, on December 30, 2002, and resolution of all CD-0 issues on March 21, 2003. The acquisition strategy was to select an U.S. integrating contractor from the Defense Threat Reduction Agency, Cooperative Threat Reduction Integrating Contract (CTRIC) that will interface with a R.F. integrating contractor that will subcontract to the Russian Federation workers. The U.S. integrating contractor will verify work performed. The project awarded a task order under the CTRIC contract on August 6, 2003, to Washington Group International. Efforts include performing the site survey and assessment, initiating a detailed cost and schedule baseline, and negotiating Statement of Work, costs and schedule with the Russian Federation Integrating Contractor.

In FY 2004, Critical Decision reviews for CD-1 (preliminary baseline), and CD-3A (long lead time procurements) is scheduled for the end of the second quarter. CD-2 (performance baseline) will be completed early in the fourth quarter. This will allow final design and long-lead procurement to commence. CD-3, approve start of construction, is scheduled for the fourth quarter. This will allow refurbishment of the Seversk Thermal Heat and Electricity Plant (TETs) to begin with tasks at the new boiler unit, one turbine generator, the new fuel conveying system, and two boiler units. Specific tasks include: begin the working design of the new boiler unit; begin acquisition of equipment for the new boiler unit; begin the working design of the turbine generator, begin acquisition of equipment for the turbine generator; begin installation of the new fuel conveying system; and begin refurbishment of two boiler units.

In FY 2005, the project will continue work at the new boiler unit, the first turbine generator, the new fuel conveying system, and two boiler units, and will initiate work at the second turbine generator, at two more boiler units, on the auxiliary equipment, and the auxiliary structures. For the new boiler unit specific tasks will include: complete the working design; complete acquisition of equipment and materials; and begin construction and installation. For the first turbine generator specific tasks will include: complete working design; complete acquisition of equipment and materials; begin construction and installation; and begin and complete dismantling of existing equipment. For the second turbine generator specific tasks will include: begin working design; begin acquisition of equipment and materials; and begin dismantling of existing equipment. ~~Continue~~ Installation of the fuel conveying system will continue, as will refurbishment of the first two boiler units. Work will begin on

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**FY 2005 Congressional Budget**

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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refurbishment of the second two boiler units. For the auxiliary equipment (such as turbine cooling water pumps) specific tasks will include: begin and complete working design; begin acquisition of equipment and materials; and begin construction. Begin auxiliary structures task by beginning the construction of the Fuel and Lubrication Storage Depot.

The FY 2005 relative decrease largely reflects reappropriation of \$15.3 million in FY 2004 of expired unobligated balances that expired at the end of FY 2003. The \$15.3 million was part of the \$74 million in prior year balances transferred to DOE along with the EWGPP program upon passage of the FY 2003 National Defense Authorization Act. FY 2005 funding provides for the Seversk project to maintain its 2008 completion schedule.

<b>Total, Seversk Plutonium Production Elimination.....</b>	<b>32,339</b>	<b>33,000</b>	<b>39,500</b>
<b>Zheleznogorsk Plutonium Production Elimination .....</b>	<b>15,000</b>	<b>15,000</b>	<b>9,597</b>

The Zheleznogorsk Plutonium Production Elimination Project facilitates the shut down of one weapons-grade plutonium production reactors by providing a replacement fossil-fueled facility.

In FY 2003, negotiations were concluded and revisions to the master U.S./R.F agreement, which covered the previous core-conversion approach to plutonium production elimination, were finalized. An intergovernmental EWGPP Implementation Agreement and site access arrangements were completed. The program established management, contracting, implementation and oversight mechanisms for both U.S. and R.F. contractors. The program received conditional approval of Critical Decision 0, approve mission need, on December 30, 2002, and resolution of all CD-0 issues on March 21, 2003. The acquisition strategy was to select an U.S. integrating contractor from the Defense Threat Reduction Agency, Cooperative Threat Reduction Integrating Contract (CTRIC) that will interface with a R.F. integrating contractor that will subcontract to the Russian Federation workers. The U.S. integrating contractor will verify work performed. The project awarded a task order under the CTRIC contract on August 1, 2003 to Raytheon Technical Services Company.

In FY 2004, the site will be evaluated to determine usefulness of existing buildings and structures. The project will complete the preliminary design and preliminary site details, obtain Russian regulatory approval, and initiate detailed design activities for the Zheleznogorsk Thermal Heat and Electricity Plant (TETs). Critical Decision 1, preliminary baseline, is scheduled for the end of the third quarter and Critical Decision 2, performance baseline, is scheduled for the ~~forth~~ second quarter FY 2005.

In FY 2005, the project will continue detailed design and initiate construction. The construction includes foundations, buildings, structures, and plant infrastructure. Long lead procurements will start including boilers and other large equipment. The U.S. integrating contractor will provide over-site while monitoring schedule and cost compliance from the Moscow-based Program Management Office and the established field office in the Krasznayarsk region of southern Siberia. A thorough design review will be conducted with particular focus applied to both limiting construction scope to the statement of objectives and the application of value engineering practices. The Russian integrating contractor, Rosatomstroi will release a series of competitive tenders to pre-qualified Russian general

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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contractors, material and equipment suppliers. The subcontract selection process will be based on both technical competence and overall cost. A thorough cost analysis will be performed to ensure compliance with GAO policies and to ensure best value practices. A formalized risk mitigation plan will be finalized and implemented during FY 2005. Also during FY 2005, a detailed plan will be written to provide linkage between construction milestones for the power plant and the shutdown of the reactor.

FY 2005 decrease to Zheleznogorsk reflects the higher funding priority of Seversk project, which has a shorter overall schedule and where two of the three plutonium reactors are located. Zheleznogorsk funding is adequate to maintain the 2011 completion schedule.

	FY 2003	FY 2004	FY 2005
<b>Total, Zheleznogorsk Plutonium Production Elimination .....</b>	<b>15,000</b>	<b>15,000</b>	<b>9,597</b>
<b>Plutonium Production Reactor Safety .....</b>	<b>200</b>	<b>0</b>	<b>0</b>

This element consists of short-term safety upgrades to the three plutonium production reactors and was an integral part of the original Plutonium Production Reactor Shutdown Agreement and the associated Implementing Agreement. Both the U.S. and the Russian Federation (RF) agree that these reactors have serious safety deficiencies. U.S. safety assistance is in the best interest of the U.S. as it supports energy security with relation to our country's nearly 20% dependence on nuclear power and because U.S. funding and technical expertise support will allow urgent safety upgrades to be implemented much more quickly than if the RF were to undertake them, as the RF with its constrained financial resources may not have been able to undertake them.

The three plutonium production reactors were designed in the 1950s, built in the 1960s, and began operation in 1964 or 1965. The shutdown of these reactors is a national security and nonproliferation goal. The current approach to shut down these reactors and cease plutonium production, is to supply alternative heat and electricity for the surrounding communities from fossil-fuel power plants. However, the reactors will continue to operate to provide heat and electricity for the local populations until the fossil fuel plants can be brought on-line. Recognizing that these reactors have safety deficiencies in the areas of design, equipment, materials, and training, they are considered to be the three highest safety risk reactors in the world. Efforts to jointly address appropriate and urgent safety upgrades, without extending the operating life of these reactors, are being conducted.

EWGPP Implementing Agreement has been concluded and Access Arrangements for nuclear safety site access have been negotiated and are in final concurrence, but not yet signed. \$21 million, including \$17 million in FY 2003, utilizing prior-year funding transferred from DOD, fully funds the program efforts. However due to scheduling concerns mainly related to site Access Arrangements, nuclear safety upgrade projects that cannot be implemented within the desired time frame will not be pursued and available funding will be used to accelerate the Zheleznogorsk project efforts. Safety upgrade projects for include: Emergency Cooling Modernization; Reactivity Control and Monitoring; Control and Protection System; Emergency Electrical Power Supply; Improved Fire Protection for Emergency Electrical Power Supply; Emergency Communications; Elimination of Iron Shot; Graphite Stack Stabilization; Strain Gauge Monitoring; Emergency Cooling Analysis; Safety Analysis Report; Probabilistic Safety

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Assessment; Accident Mitigation Manual; Experimental Fuel Rupture Testing; Computer Codes; and Passive Safety Protection Development. The Plutonium

Production Reactor Safety Project will be completed two years after signing the initial contracts with the RF.

On August 7, 2003, the project received Critical Decision-1 approval for Preliminary Baseline Range and approval for CD-3A, to perform long-lead time procurements. This project previously received conditional approval of Critical Decision 0, approve mission need, on December 30, 2002, as part of the broader EWGPP program.

In FY 2004, the Department will continue all the subprojects started in FY 2003. Completion of the associated projects will occur within 2-years from signing of initial contracts due to the long lead-time of some of the equipment. All upgrades are planned for completion by FY 2006.

<b>Total, Plutonium Production Reactor Safety .....</b>	<b>200</b>	<b>0</b>	<b>0</b>
<b>Technical Support Activities .....</b>	<b>1,682</b>	<b>1,735</b>	<b>1,000</b>

Provide resources for crosscutting efforts, such as project reviews and reporting, contract administration, intergovernmental contract negotiation support, general laboratory technical support, quality assurance, foreign logistical support, and other communications products and services. Also provides—the necessary supporting technical and engineering expertise and independent analyses, and cross-cutting project management system support.

Initial start up efforts also include support for an independent review of alternative acquisition strategies, for development of an acquisition strategy, selection of the U.S. Integrating Contractor (IC), and establishment and support of Project Management certification and training for the Russian Federation integrating contractor, Rosatomstroy. FY 2005 decrease reflects reduction of support requirements associated with program start-up activities.

<b>Total, Technical Support Activities .....</b>	<b>1,682</b>	<b>1,735</b>	<b>1,000</b>
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## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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- **Seversk Plutonium Production Elimination**

The FY 2005 relative decrease largely reflects reappropriation of \$15.3 million in FY 2004 of expired unobligated balances that expired at the end of FY 2003. The \$15.3 million was part of the \$74 million in prior year balances transferred to DOE along with the EWGPP program upon passage of the FY 2003 National Defense Authorization Act. ....	-8,800
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- **Zheleznogorsk Plutonium Production Elimination**

Decrease to Zheleznogorsk reflects the higher funding priority of Seversk project, which has a shorter overall schedule and where two of the three plutonium reactors are located. Zheleznogorsk funding is adequate to maintain the 2011 completion schedule.....	- 5,403
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- **Technical Support Activities**

Decrease reflects reduction of support requirements associated with program start-up activities.....	- 735
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<b>Total Funding Change, Elimination of Weapons Grade Plutonium Production ....</b>	-14, 938
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# Fissile Materials Disposition

## Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Operations and Maintenance (O&M)					
U.S. Plutonium Disposition.....	93,800	70,100	47,900	- 22,200	- 31.7%
U.S. Uranium Disposition <sup>a</sup> .....	81,372	92,640	95,500	+ 2,860	+ 3.1%
Supporting Activities.....	21,923	29,955	41,300	+ 11,345	+ 37.9%
Subtotal, O&M.....	197,095	192,695	184,700	- 7,995	- 4.1%
Construction					
99-D-141, Pit Disassembly and Conversion Facility <sup>d</sup> .....	34,775	13,520	32,300	+ 18,780	+ 138.9%
99-D-143, Mixed Oxide Fuel Fabrication Facility <sup>b</sup> .....	92,401	399,628	368,000	- 31,628	- 7.9%
01-D-407, HEU Blend Down Project <sup>c</sup> .....	23,476	0	0	0	0.0%
Subtotal, Construction.....	150,652	413,148	400,300	- 12,848	- 3.1%
Total, U.S. Surplus FMD.....	347,747	605,843	585,000	- 20,843	- 3.4%
Russian Materials					
Disposition <sup>e</sup> .....	97,781	46,975	64,000	+ 17,025	+ 36.2%
Use of Prior Year Balances.....	-64,000	0	0	0	0.0%
Total, Fissile Materials Disposition.....	381,528	652,818	649,000	- 3,818	- 0.6%

<sup>a</sup> Excess FY 2003 operating funds in the amount of \$7,650,000 are proposed to be reprogrammed from the HEU Blend Down Project to support the Pit Disassembly and Conversion Facility (PDCF).

<sup>b</sup> FY 2004 construction funds in the amount of \$11,405,000 are proposed to be reprogrammed from the MOX Fuel Fabrication Facility Project to the Pit Disassembly and Conversion Facility (PDCF). This reduces the FY 2004 amount for the Mixed Oxide Fuel Fabrication Facility (MOX) from \$399,628,000 to \$388,223,000.

<sup>c</sup> Excess FY 2003 construction funds in the amount of \$18,340,920 are proposed to be reprogrammed from the HEU Blend Down Project to the Pit Disassembly and Conversion Facility (PDCF) and Mixed Oxide Fuel Fabrication Facility (MOX) Russianization.

<sup>d</sup> \$29,000,000 is proposed to be reprogrammed to the Pit Disassembly and Conversion Facility construction project which increases the FY 2004 amount from \$13,520,000 to \$42,520,000.

<sup>e</sup> \$8,395,920 is proposed to be reprogrammed to the Russian Materials Disposition program, which increases the FY 2004 amount from \$46,975,000 to \$55,370,920.

## FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
Fissile Materials						
Disposition.....	649,000	661,000	673,000	685,000	697,000	3,365,000

## FY 2003 Execution

(dollars in thousands)

	FY 2003 Approp	General Reduction	Rescission	Supplement	Reprogram- ming	Comp Adjustment	Current FY 2003 Comparable
Fissile Materials							
Disposition.....	384,000	0	- 2,472	0	0	0	381,528

## Description

Eliminate surplus Russian plutonium and surplus U.S. plutonium and HEU.

### Benefits to Program Goal 02.47.00.00 Fissile Materials Disposition

Within the Fissile Materials Disposition program, four key areas each make unique contributions to Program Goal 02.47.00.00. Two of the four areas, U.S. Plutonium Disposition and Russian Materials Disposition, are coordinated efforts to eliminate 68 metric tons of U.S. and Russian surplus weapons-grade plutonium, in accordance with a September 2000 U.S.-Russia Plutonium Management and Disposition Agreement and Congressional direction to conduct both disposition programs (U.S. and Russia) in parallel. The U.S. Uranium Disposition subprogram objective, the third key area, is to make the 174 metric tons of the U.S. HEU that have been declared surplus non-weapons-usable, primarily by down-blending it to low-enriched uranium (LEU). To the extent practical, the program seeks to recover the economic value of the material by using the resulting LEU as reactor fuel. Three separate disposition projects (Off-Specification HEU Blend-down, Transfer to USEC, and Research Reactor Fuels) are being implemented today, and additional projects are being planned. The Construction subprogram, the final key area, is responsible for building the facilities needed to accomplish the Fissile Materials Disposition mission. These facilities include the Pit Disassembly and Conversion Facility and the Mixed Oxide Fuel Fabrication Facility. The HEU Blend Down Facility construction was completed in FY 2003.

## Annual Performance Results and Targets

FY 2000 Results	FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.	Developed a plan for U.S. and Russian plutonium disposition that is politically, fiscally, and technically feasible, and obtain White House approval. (MET GOAL)	Complete Title II (detailed) design of the Mixed Oxide Fuel Fabrication Facility for the disposition of excess US weapons-grade plutonium, and commence down blending of off-specification highly enriched uranium at the Savannah River Site. (MET LESS THAN 80% OF TARGET)

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Percentage of the design and construction of the Pit Disassembly and Conversion Facility (PDCF) completed	Completed 60% of the detailed design of the U.S. Pit Disassembly and Conversion Facility.	Complete 85% of the detailed design of the U.S. Pit Disassembly and Conversion Facility.	Complete 100% of the detailed design of the U.S. Pit Disassembly and Conversion Facility. Begin design of PDCF Waste Solidification Building. Accomplish all site preparation activities, including site clearing, grading, installation of utilities and installation of infrastructure support.	Begin construction of the U.S. Pit Disassembly and Conversion Facility WSB. Award construction management contract for WSB.	* Continue construction of the U.S. Pit Disassembly and Conversion Facility WSB.	* Continue construction of the U.S. Pit Disassembly and Conversion Facility WSB. Award construction management contract for PDCF complex.	*Complete construction of U.S. Pit Disassembly & Conversion Facility WSB. Start Construction of PDCF complex.	EOY FY 2013
Percentage of the design and construction of the MOX Fuel Fabrication Facility completed.	Completed 75% of the detailed design of the U.S. MOX Fuel Fabrication Facility.	Complete the last 25% of the U.S. MOX Fuel Fabrication Facility detailed design (total of 100% complete).	* Begin site preparation and construction of the U.S. MOX facility and initiate procurement of long lead equipment.	*Continue the construction of the U.S. MOX Fuel Fabrication Facility.	*Continue the construction of the U.S. MOX Fuel Fabrication Facility.	*Continue the construction of the U.S. MOX Fuel Fabrication Facility.	*Complete the construction of the U.S. MOX Fuel Fabrication Facility	FY 2009

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Amount of HEU shipped to the United States Enrichment Corporation (USEC) for down-blending. (EFFICIENCY MEASURE)	Processed the equivalent of 11MT @40% of surplus HEU for shipment to USEC.	Ship an additional 11MT of surplus HEU to USEC for down-blending to LEU. A grand total of 45MT has been shipped.	Complete U.S. 50 MT HEU shipments to USEC. Begin shipments of compensation HEU to USEC.	Complete shipments of compensation HEU to USEC.	N/A	N/A	N/A	FY 2006
Amount of off-specification HEU down-blended.	Completed capital improvements at SRS for off-specification HEU down-blending and deliver resulting LEU and surplus HEU to TVA (equivalent to ~2.4MT of HEU).	Down-blend off-specification HEU at SRS and deliver resulting LEU and surplus HEU to TVA (equivalent to ~9.0MT of HEU for a cumulative total of 12.7 MT).	Down-blend off-specification at SRS and deliver resulting LEU and surplus HEU to TVA (equivalent to ~9.0MT of HEU for a cumulative total of 21.7 MT).	Down-blend off-specification HEU at SRS and deliver resulting LEU and surplus HEU to TVA (equivalent to ~6.0MT of HEU for a cumulative total of 27.7 MT).	Complete U.S. HEU/LEU shipments to TVA.	N/A	N/A	FY 2007
Russianize the design and construct the MOX Fuel Fabrication Facility in Russia.	Finalized decisions on the technical path forward for disposing of surplus Russian weapon-grade plutonium.  Began and completed 10% of the Russianization of U.S. MOX facility design.	Complete 60% of the Russianization of the design.  Begin characterization of Russian MOX site.	Complete 100% Russianization of the U.S. MOX Fuel Fabrication Facility.  Complete 100% characterization of Russian MOX site.  Begin site preparation and construction of the Russian MOX Fuel Fabrication Facility.	Complete 40% of the construction of the Russian MOX Fuel Fabrication Facility.	Complete 80% construction of the Russian MOX Fuel Fabrication Facility.	Complete 100% construction of the Russian MOX Fuel Fabrication Facility.		FY 2008

\* Uncertainties associated with the international contributions to the Russian program together with Congressional requirements for parallel progress in both nations make estimation of key schedule milestones inappropriate at this time. The targets in 2004 and beyond assume the issue of liability will be resolved by April 1, 2004.

## Detailed Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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### U.S. Plutonium Disposition

DOE is responsible for disposing of 34 metric tons of U.S. surplus weapons grade plutonium, in accordance with a September 2000 U.S.-Russia Plutonium Management and Disposition Agreement and Congressional direction to conduct both disposition programs (U.S. and Russia) in parallel. Two key facilities will be built at the Savannah River Site: a Pit Disassembly and Conversion Facility, which will primarily disassemble nuclear weapons pits and convert the resulting plutonium metal to an oxide form, and a MOX Fuel Fabrication Facility which will mix the plutonium oxide with depleted uranium oxide to produce mixed oxide (MOX) fuel for subsequent irradiation in existing domestic reactors.

Technical work on the design and licensing of the U.S. plutonium disposition facilities to be located at the Savannah River Site (SRS) has progressed to the point that the DOE is ready to start construction of the Mixed Oxide Fuel Fabrication Facility in May of FY 2005. Equipment procurement will be initiated in FY 2005. However, the Congressional requirement that both the U.S. and Russian program proceed in parallel may impact this schedule (see section dealing with the Russian Fissile Material Disposition).

<b>Reactor-Based Technologies .....</b>	<b>57,400</b>	<b>36,750</b>	<b>38,600</b>
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Reactor Based Technologies activities include work necessary to convert weapons grade plutonium oxide into finished MOX fuel assemblies to be irradiated to the spent fuel standard in commercial reactors.

As part of fuel qualification activities, continue the implementation of the Lead Assembly (LA) work, including initiation of fuel fabrication and completion of the fabrication and insertion of lead assemblies into a mission reactor. Continue fuel transportation and packaging activities, including submitting certification documents to the Nuclear Regulatory Commission (NRC). Develop information and responses to NRC questions to assure NRC approval of the operating license for the MOX FFF, continue modifications to the commercial nuclear reactors, complete irradiation of last test specimens, and perform the bulk of post-irradiation examination of all the test specimens. Begin operations planning activities in support of the MOX FFF, including recruiting, training, manual and procedure development, and personnel costs.

*The increase in FY 2005 relative to FY 2004 is due to the increased costs for expansion of operational support levels as the design effort matures, partially offset by the decreased costs relating to the completion of the fabrication and insertion of lead assemblies into a mission reactor.*

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Pit Disassembly and Conversion**..... **35,000**      **33,350**      **9,300**

A demonstration system, Automated Recovery and Integrated Extraction System (ARIES), is currently operating at LANL to demonstrate the technology and the capability to disassemble various pit types. Complete hot acceptance testing for integrated demonstration of pit disassembly technology in the ARIES system and limited demonstration of the ARIES technology. Continue development of Highly Enriched Uranium decontamination, material characterization, hydride/dehydride, packaging system, non-destructive assay (NDA), and automation.

*The decrease is primarily due to reduction of integrated demonstration activities at LANL.*

**Immobilization and Associated Processing** ..... **1,400**      **0**      **0**

Completed closeout activities associated with the Plutonium Immobilization Project in FY 2003.

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**Total, U.S. Plutonium Disposition** ..... **93,800**      **70,100**      **47,900**

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### U.S. Uranium Disposition

**Highly Enriched Uranium**..... **81,372**      **92,640**      **95,500**

The objective of the surplus Highly Enriched Uranium (HEU) Disposition Program is to make the 174 metric tons of the U.S. HEU that have been declared surplus non-weapons-usable, primarily by down-blending it to LEU. To the extent practical, the program seeks to recover the economic value of the material by using the resulting LEU as reactor fuel. Three separate disposition projects (Off-Specification HEU Blend-down, Transfer to USEC, and Research Reactor Fuels) are being implemented today, and additional projects are being planned.

- Off-Specification HEU Blend Down Project: Continue final processing, down-blending, and LEU loading operations at SRS for shipments to Nuclear Fuel Services (NFS) for eventual use in Tennessee Valley Authority (TVA) nuclear reactors; HEU alloy shipments from SRS to NFS; and HEU metal and alloy shipments from Y-12 to NFS.
- Program Management, Inventory Management, Technical Support and Special Studies: Continue surplus HEU planning, project management, HEU disposition technical support and special studies, and inventory management.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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- Shipping Containers: Receive certification for ES-2100 shipping package containing HEU oxide contents and procure additional containers and/or container components suitable for HEU oxide contents in August 2003. Develop the design and submit the license application for the ES-3100 container in FY 2004. Receive ES-3100 certification and procure production units in FY 2005.
- USEC 50 MT Transfer Project: Continue shipping surplus HEU (equivalent of 11 MT @ 40% enrichment level) from the Y-12 Plant to USEC for down blending to commercially usable LEU.
- Unallocated Material Planning, Packaging, Shipment, and Disposition: Complete preparations for packaging and shipment of Idaho National Engineering and Environmental Laboratory (INEEL) off-specification HEU (i.e., denitrator oxide). Continue preparations for other unallocated material projects.

*The increase is due to increased work-scope related to the off-specification HEU Blend Down Project, including TVA off-specification project integration activities, additional Y-12 HEU shipments, increased SRS down-blending and LEU and HEU shipment operations, laboratory analyses of product material, payments to TVA for Uranium/Aluminum ingot processing, and vendor waste returns. The increase is also due to unallocated material efforts, including preparations for packaging, shipment, and disposition of unallocated materials.*

*Note: FY 2003 operating funds in the amount of \$7,650,000 are proposed for reprogramming from the HEU Blend Down Project, 01-D-407.*

<b>Total, U.S. Uranium.....</b>	<b>81,372</b>	<b>92,640</b>	<b>95,500</b>
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**Supporting Activities**

<b>Surplus Plutonium Storage .....</b>	<b>9,800</b>	<b>17,305</b>	<b>27,900</b>
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Surplus Plutonium Storage provides safe storage configurations for surplus plutonium at the Pantex Plant and LANL until the materials are moved to Savannah River Site (SRS) for disposition. Funded activities include surveillance and maintenance operations, radiation safety support and training, and thermal monitoring. The new surplus nuclear weapon pit shipping container will be used to ship surplus pits from the Pantex Plant to the planned Pit Disassembly and Conversion Facility (PDCF) at SRS.

In FY 2005, continue storing surplus plutonium at the Pantex Plant and LANL. Continue to package surplus pits for shipment from the Pantex Plant to LANL for the ARIES demonstration system (the pits are needed as feed material to validate equipment for the PDCF). Begin certifying and fabricating, the new surplus pit shipping containers.

*The increase is due to starting the testing, certification, and fabrication of the new surplus pit storage shipping containers.*

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Surplus HEU Storage** ..... **6,000**      **6,000**      **6,000**

In FY 2001 operating costs associated with storing 85 MT of surplus HEU residing at the Y-12 Plant were transferred from DP to the OFMD program. Storage requirements will continue until the material is moved to the disposition (blending) site (begun in FY 2000 and estimated to end in FY 2020). Storage operations include planning, providing and maintaining storage facilities, limited repackaging of material as necessary for safety, and surveillance for surplus HEU materials and facilities.

For FY 2005, continue to store 85 MT of surplus HEU at the Y-12 Plant.

**NEPA**..... **1,223**      **750**      **1,500**

NEPA activities include preparing and reviewing Environmental Assessments (EA), EISs and supplemental NEPA analyses for fissile material storage and disposition activities. In addition, NEPA efforts include preparing supplements and amended RODs required to support changes to the U.S. program.

In FY 2005, the existing environmental analyses will need to be updated because detailed designs for the plutonium facilities have advanced significantly.

**Common Technologies and Integration**..... **4,900**      **5,900**      **5,900**

In September 2000, the U.S. and Russia signed the Plutonium Management and Disposition Agreement (PMDA), obligating the parties to each dispose of 34 MT of plutonium withdrawn from their respective defense programs. The PMDA requires that the parties agree in writing to Monitoring and Inspection (M&I) procedures that would provide confidence that each party is meeting its obligations under the Agreement. Reaching such an agreement requires detailed technical analysis and policy level negotiations among the U.S., Russia and the IAEA.

Support U.S. participation in government-to-government technical negotiations with Russia to develop a detailed monitoring and inspection regime, which will be implemented at plutonium disposition facilities in both countries. Support development of guidance to U.S. design engineers on monitoring and inspection specifications, which need to be included in the design of the two plutonium facilities. The Agreement requires that a monitoring and inspection regime must be completed in writing prior to beginning construction of industrial scale disposition facilities in the Russian Federation. Support other efforts common to both the MOX FFF and PDCF continues in FY 2005, such as program level engineering and analysis.

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**Total, Supporting Activities** ..... **21,923**      **29,955**      **41,300**

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(dollars in thousands)

FY 2003	FY 2004	FY 2005
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## Construction

**99-D-141, Pit Disassembly and Conversion Facility .... 34,775 13,520 32,300**

The Pit Disassembly & Conversion portion of the Pit Disassembly & Conversion Facility (PDCF) project is a complex consisting of a hardened building (that will contain the plutonium processes) and conventional buildings and structures (which will house support personnel, systems, and equipment). The plutonium processing building will be a material access area of approximately 115,000 square feet and house the following key systems: pit shipping, receiving, assay and storage; pit plutonium metal extraction and conversion to oxide; plutonium oxide packaging, assay, storage, and shipment.

The Waste Solidification Building, located on the same site, is a 45,800 square feet, single story structure with a high bay made up of a combination of hardened (concrete) and conventional steel structures. The building houses waste treatment and cementation equipment.

*The increase is due to beginning the detailed design of the Waste Solidification Building, long lead procurement and site clearing for the Pit Disassembly & Facility at SRS.*

Note: \$29,000,000 is proposed to be reprogrammed to the Pit Disassembly and Conversion Facility construction project which increases the FY 2004 amount from \$13,520,000 to \$42,520,000.

The design cost for the PDCF has increased as a result of new scope and requirements, unanticipated additional work to complete the design, and schedule extensions caused by late process design information. This is partially related to the new need to reflect a self-contained waste processing capability.

**99-D-143, Mixed Oxide Fuel Fabrication Facility ..... 92,401 399,628 368,000**

A Mixed Oxide Fuel Fabrication Facility (MOX FFF) will provide the U.S. with the capability to convert plutonium oxide derived from surplus weapons grade plutonium stocks to MOX fuel suitable for use in the U.S. commercial nuclear reactors. Subsequent disposal of the spent fuel will be carried out in accordance with the Nuclear Waste Policy Act. A contract was awarded to a private consortium (Duke Engineering Services, COGEMA, Inc. and Stone & Webster (DCS) on March 22, 1999). The contract requires DCS to design a MOX FFF to be built at a DOE site (SRS) and to be licensed by the Nuclear Regulatory Commission. Options built into the contract allow for construction and operation of the MOX facility.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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*Because the start of construction has slipped from FY 2004 to FY 2005, some monies destined for expenditure during FY 2004 will not be spent until FY 2005. This enabled the reduction of the funding requirement in FY 2005.*

Note: FY 2004 construction funds in the amount of \$11,405,000 are proposed to be reprogrammed from the MOX Fuel Fabrication Facility Project, 99-D-143, which reduces the FY 2004 amount from \$399,628,000 to \$388,223,000.

**01-D-407, Highly Enriched Uranium (HEU)..... 23,476 0 0**

In an aftermath of the Cold War, significant quantities of weapons-usable highly enriched uranium (HEU) have become surplus to national defense needs both in the U.S. and Russia. The Department issued a Record of Decision (ROD) on the Disposition of Surplus HEU Final Environmental Impact Statement (EIS) in July 1996. The ROD sets forth DOE’s decision to disposition surplus HEU by blending it down to low-enriched uranium (LEU) and recovering its economic value by using it as fuel in power reactor, where practicable. The 174 MT of surplus HEU includes a quantity of “off specification” HEU that is a product of DOE uranium reprocessing operations.

This project was completed in FY 2003 and experienced a cost under-run because of accelerated work schedule, changes in design philosophy, elimination of redundant security requirements, recycling of equipment, a proactive/aggressive design/construction team, and fewer equipment replacements than anticipated.

Note: FY 2003 construction funds in the amount of \$18,340,920 are proposed to be reprogrammed from the HEU Blend Down Project, 01-D-407.

<b>Total, Construction.....</b>	<b>150,652</b>	<b>413,148</b>	<b>400,300</b>
<b>Total, U.S. Surplus Material Disposition.....</b>	<b>347,747</b>	<b>605,843</b>	<b>585,000</b>

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Russian Fissile Materials Disposition**

**Russian Plutonium Disposition (funds spent in Russia)**

The 1998 U.S.-Russia Joint Scientific and Technical Cooperation Agreement, which provided limited liability protection for technical work (pre-construction) in support of plutonium disposition, expired in July 2003. Senior officials in both countries are now working to develop satisfactory liability provisions for the September 2000 U.S.-Russia Plutonium Management and Disposition Agreement. This Agreement covers design, construction and operation of facilities required for plutonium disposition.

Given that preliminary site characterization work in Russia will not start until the spring of 2004 and the U.S. and Russia must exchange detailed technical engineering data to Russianize the design of the MOX Facility, the start of construction in both countries will now begin in FY 2005.

As specified in the U.S.-Russia Plutonium Management and Disposition Agreement, funding from new budget authority continues the work initiated in FY 2002 and 2003. As soon as the U.S. and Russia resolve the liability issues and inform Congress of the revised path forward, the available prior year balances mandated for work in Russia as specified will be obligated.

The Plutonium Conversion and MOX Fuel Fabrication activities and budget, which appeared under this heading in previous years, have been consolidated and placed in a new task entitled "Implementation of MOX FFF Design". Given that Russia has accepted the offer of the design of the U.S.MOX Facility prepared by Duke Engineering Services, COGEMA, Inc. and Stone & Webster (DCS), this task includes both a Russian and a U.S. component.

<b>VVER-1000 Reactors</b> .....	<b>1,700</b>	<b>2,500</b>	<b>3,500</b>
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This effort involves modifying Russian VVER-1000 power reactors to utilize MOX fuel. FY 2005 efforts include: develop reactor physics data for insertion of MOX fuel lead test assemblies. Complete the MOX core design and design for reactor modifications for the lead test assemblies. Upgrade the VVER-1000 safety basis and submit MOX fuel licensing documents to GAN. Obtain licenses for experimental fuel and prepare for the insertion of the lead test assemblies.

*The increase will be used to support the modifications to the VVER-1000 reactors for use of MOX, and preparation of licensing documents.*

<b>BN-600 Reactor</b> .....	<b>1,300</b>	<b>2,500</b>	<b>3,500</b>
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This effort involves converting the BN-600 fast neutron breeder reactor into a net burner of plutonium. FY 2005 efforts include: completing the BN-600 uranium core with reflector/shield safety analyses and submit the licensing package to GAN for approval of the blanket replacement. Complete the design upgrade of photo-neutron source and control/shutdown rods and other plant modifications. Fabricate reflector/shield components.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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*The increase will be used to support the modifications to the BN-600 reactor and preparation of licensing documents.*

<b>Licensing and Regulation/Other Program Support ....</b>	<b>850</b>	<b>2,000</b>	<b>2,800</b>
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This involves the development of the licensing process for the plutonium disposition program in Russia. FY 2005 efforts include: complete the 12 high priority regulations needed for licensing plutonium disposition activities. Accomplish expert reviews of license applications for: MOX fuel fabrication facility construction, VVER-1000 lead test assemblies, and BN-600 hybrid MOX core.

*The increase is due to reviews of license applications.*

<b>Packaging, Transportation, and Storage .....</b>	<b>1,150</b>	<b>1,500</b>	<b>2,100</b>
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This effort is to assess existing Russian infrastructure and define needs for packaging, storage and transportation of plutonium containing materials and spent MOX fuel, and waste treatment and disposal required to implement plutonium disposition in Russia. FY 2005 efforts include: complete design and commence modification of plutonium shipping containers and shipping casks to meet current regulations. Commence upgrade and re-certification of shipping casks for VVER-1000 and BN-600 new MOX fuel. Complete waste treatment building construction drawings, obtain construction license, commence construction and issue purchase orders for major equipment with long lead times. Commence technical and economic feasibility study for MOX dry spent fuel storage facility.

*The increase is due to modification and certification of shipping containers and shipping casks, preparation of waste treatment facility licensing documents and mobilization to start construction.*

<b>Implementation of MOX Fuel Fabrication Facility Design .....</b>	<b>8,260</b>	<b>15,000</b>	<b>20,600</b>
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In FY 2003, the Russians agreed to utilize the design of the enhanced U.S. MOX Fuel Fabrication Facility (FFF) in Russia. The Russian use of the U.S. design will help to ensure parallelism between the two programs, save money and time by avoiding the need to design Russian facilities for MOX fuel fabrication separately, produce cost savings from procuring items of similar design for both programs, and provide for greater material security. TVEL manages the Russian nuclear fuel industry, and has been appointed by MINATOM to lead the Russian MOX fuel effort. To streamline the Russian plutonium disposition program and realize efficiency from the involvement of Russian fuel industry manager TVEL, the program has been restructured to consolidate the previously separate Russian Plutonium Disposition activities involving plutonium conversion and MOX fuel fabrication into one new Russian task and one new U.S. support task, each titled: Implement the MOX Fuel Fabrication

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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Facility. TVEL and DCS, the US MOX FFF designer, are responsible for “Russianizing” the detailed design of the U.S. facility so that it conforms to Russian regulations and is adapted to local site conditions. FY 2005 activities include: completing “Russianization” of the MOX FFF design, initiating construction of the MOX FFF and issuing purchase orders for major equipment with long lead times. Continue the design of the MOX FFF training facility.

*The increase is due to the progression from site preparation to beginning of construction of the Russian MOX FFF. (Total funding for the construction will be predominantly provided by international contributors and unobligated balances from the FY 1999 Supplemental Appropriation for the Russian plutonium disposition program).*

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<b>Total, Russian Plutonium Disposition.....</b>	<b>13,260</b>	<b>23,500</b>	<b>32,500</b>
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**U.S. Design, Engineering, and Support (funds spent in the U.S.)**

<b>U.S. Technical Support.....</b>	<b>9,900</b>	<b>8,875</b>	<b>9,000</b>
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Continue to provide technical support and oversight, as directed, of research and development activities for plutonium disposition in Russia. Activities for FY 2005 include: verify results of Russian physics codes for insertion of MOX fuel lead test assemblies. Review safety analyses for reactor operation with MOX fuel. Check the designs and cost estimates for reactor modifications and the waste treatment building. Assure redesign and certification of plutonium shipping containers and MOX fuel shipping casks. Complete post irradiation examination of MOX test bundles at the Canadian Chalk River research reactor. Manage the MOX FFF design and technology transfer between DCS and TVEL. Perform reviews, as required, of other Russian designs and work products. The Nuclear Regulatory Commission will support the Russian nuclear regulator GAN in the formulation of licensing documents and conduct licensing reviews of Russian draft regulations supported by the U.S. as well as provide training and licensing support to GAN.

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<b>Total, U.S. Design, Engineering Support.....</b>	<b>9,900</b>	<b>8,875</b>	<b>9,000</b>
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<b>Implementation of MOX Fuel Fabrication Facility Design.....</b>	<b>8,621</b>	<b>13,600</b>	<b>21,500</b>
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With the Russian agreement in FY 2003 to apply the US MOX Fuel Fabrication Facility design to Russia and the MINATOM decision to appoint TVEL (the organization managing the Russian nuclear fuel industry) to lead the Russian MOX fuel effort, the program has been restructured to consolidate all fuel production activities. The previous separate activities of conversion and fuel production have been consolidated into this new U.S. support task: Implement the MOX Fuel Fabrication Facility. The US MOX FFF designer, DCS (a consortium of Duke, Cogema, Stone & Webster) has been tasked to transfer the design to TVEL and provide technical support to “Russianize” the MOX FFF design so that

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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it conforms to Russian regulations and is adapted to local site conditions. DCS will also provide technical assistance in the development of a conversion process. In FY 2005: Adapt the U.S. MOX FFF design to Russian standards and site conditions, translate design documents into Russian, and complete the transfer of the U.S. design to Russia.

*This increase is due to continuing the Russianization of the U.S. design to support construction of the Russian MOX FFF.*

Note: \$8,395,920 is proposed to be reprogrammed to the Russian Materials Disposition program, which increases the FY 2004 amount from \$46,975,000 to \$55,370,920.

**Mandated Russian Surplus Plutonium Dispositions**

<b>(funds spent in Russia) .....</b>	<b>64,000</b>	<b>0</b>	<b>0</b>
<b>Advanced Reactor Technology .....</b>	<b>2,000</b>	<b>1,000</b>	<b>1,000</b>

The plutonium fueled Gas Turbine – Modular Helium Reactor (GTMHR) is being developed in Russia as a potential option for expanding the surplus weapon-grade plutonium disposition capacity above the initial 34 MT. Research, development and testing of GTMHR fuel and nuclear reactor components will be performed by various Russian organizations to verify technical aspects of the design. In FY 2005: Continue minimal work in Russia to continue fabrication of test fuel at the Bench Scale Fuel Fabrication Facility at Bochvar.

<b>Subtotal, Russian Surplus Fissile Materials Disposition .....</b>	<b>97,781</b>	<b>46,975</b>	<b>64,000</b>
<b>Less Use of Prior-Year Balances <sup>a</sup> .....</b>	<b>-64,000</b>	<b>0</b>	<b>0</b>
<b>Total, Russian Surplus Fissile Materials Disposition ..</b>	<b>33,781</b>	<b>46,975</b>	<b>64,000</b>
<b>Total, Fissile Materials Disposition .....</b>	<b>381,528</b>	<b>652,818</b>	<b>649,000</b>

<sup>a</sup> Includes \$64,000,000 appropriated in the FY 1999 Supplemental Appropriation for the Russian Plutonium Disposition program (\$200,000,000). These balances plus remaining balances will be spent in the Russian Federation in accordance with a detailed program execution plan to be provided to Congress.

## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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**U.S. Surplus Fissile Materials Disposition**

**U.S. Plutonium Disposition**

▪ **Reactor-Based Technologies**

The increase is due to expansion of operational support levels as the design effort matures, partially offset by the decreased costs relating to the completion of the fabrication and insertion of lead assemblies into a mission reactor..... + 1,850

▪ **Pit Disassembly and Conversion**

The decrease is primarily due to completion of the hot acceptance testing for integrated demonstration at LANL ..... - 24,050

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**Total, U.S. Plutonium Disposition** ..... - 22,200

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**U.S. Uranium Disposition**

▪ **Highly Enriched Uranium (HEU)**

The increase is due to increased work-scope related to the off-specification HEU Blend Down Project, including TVA off-specification project integration activities, additional Y-12 HEU shipments, increased SRS down-blending and LEU and HEU shipment operations, laboratory analyses of product material, payments to TVA for Uranium/Aluminum ingot processing, and vendor waste returns. The increase is also due to unallocated material efforts, including preparations for packaging, shipment, and disposition of unallocated materials ..... + 2,860

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**Total, U.S. Uranium Disposition**..... + 2,860

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▪ **Supporting Activities**

Surplus Plutonium Storage

The increase is due to starting the testing, certification, and fabrication of the new surplus pit storage shipping containers. .... + 10,595

FY 2005 vs. FY 2004 (\$000)
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▪ **NEPA**

In FY 2005, the existing environmental analyses will need to be updated because detailed designs for the plutonium facilities have advanced significantly ..... + 750

**Total, Supporting Activities** ..... + 11,345

**Subtotal, U.S. Surplus Fissile Materials Disposition** ..... - 7,995

**Total, U.S. Plutonium Disposition (O&M)** ..... - 10,855

**Total, U.S. Uranium Disposition(O&M)**..... + 2,860

▪ **Construction**

99-D-141 Pit Disassembly and Conversion, SRS. The increase is due to beginning the detailed design of the Waste Solidification Building, long lead procurement and site clearing for the Pit Disassembly & Facility at SRS ..... + 18,780

99-D-143 Mixed Oxide Fuel Fabrication Facility, Because the start of construction has slipped from FY 2004 to FY 2005, some monies destined for expenditure during FY 2004 will not be spent until FY 2005. This enabled the reduction of the funding requirement in FY 2005 ..... - 31,628

**Total, U.S. Surplus Materials Disposition, Construction** ..... - 12,848

**Total, U.S. Plutonium Disposition** ..... - 23,703

**Total, U.S. HEU Disposition**..... + 2,860

**Total, U.S. Surplus Fissile Materials Disposition**..... - 20,843

FY 2005 vs. FY 2004 (\$000)
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**Russian Surplus Fissile Materials Disposition**

**Russian Fissile Materials Disposition**

**Russian Plutonium Disposition (funds spent in Russia)**

▪ **VVER-1000 Reactors**

The increase will be used to support the modifications to the VVER-1000 reactors for use of MOX, and preparation of licensing documents..... + 1,000

▪ **BN-600 Reactor**

The increase will be used to support the modifications to the BN-600 reactor and preparation of licensing documents ..... + 1,000

▪ **Licensing and Regulation/Other Program Support**

The increase is due to reviews of license applications ..... + 800

▪ **Packaging, Transportation, and Storage**

The increase is due to modification and certification of shipping containers and shipping casks, and preparation of waste treatment facility licensing documents and mobilization to start construction..... + 600

▪ **Implement MOX Fuel Fabrication Facility (FFF) Design**

The increase is due to the progression from site prep to beginning of construction of the Russian MOX FFF. (Total funding for the construction will be predominantly provided by international contributors and unobligated balances from the FY 1999 Supplemental Appropriation for the Russian plutonium disposition program)..... + 5,600

▪ **U.S. Design, Engineering, & Support (funds spent in the U.S.)**

Implementation of MOX Fuel Fabrication Facility (FFF) Design (funds spent in the U.S.) ..... + 125

The increase is due to the increasingly detailed Russian adaptation of the US MOX FFF ..... + 7,900

**Total, Russian Surplus Fissile Materials Disposition** ..... + 17,025

**Total Funding Change, Fissile Materials Disposition**..... **- 3,818**

## Capital Operating Expenses and Construction Summary

### Capital Operating Expenses

(Dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Capital Equipment .....	0	0	3,900	+ 3,900	100.0%
<b>Total, Capital Operating Expenses.....</b>	<b>0</b>	<b>0</b>	<b>3,900</b>	<b>+ 3,900</b>	<b>100.0%</b>

### Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2003	FY 2004	FY 2005	FY 2005 Over Target	Unappropriated Balance
99-D-141, Pit Disassembly Conversion Facility ....	TBD	58,707	34,775	13,520 <sup>a</sup>	32,300	0	TBD
99-D-143, MOX Fuel Fabrication Facility.....	TBD	66,318	92,401	399,628 <sup>b</sup>	368,000	0	TBD
01-D-407, Highly Enriched Uranium (HEU) Blend Down Project.....	80,226	TBD	20,476 <sup>c</sup>	0	0	0	0
<b>Total, Construction.....</b>			<b>150,652</b>	<b>413,148</b>	<b>400,300</b>	<b>0</b>	

<sup>a</sup> \$29,000,000 is proposed to be reprogrammed to the Pit Disassembly and Conversion Facility construction project which increases the FY 2004 amount from \$13,520,000 to \$42,520,000.

<sup>b</sup> FY 2004 construction funds in the amount of \$11,405,000 are proposed to be reprogrammed from the MOX Fuel Fabrication Facility Project to the Pit Disassembly and Conversion Facility (PDCF). This reduces the FY 2004 amount for the Mixed Oxide Fuel Fabrication Facility (MOX) from \$399,628,000 to \$338,223,000.

<sup>c</sup> Excess FY 2003 construction funds in the amount of \$18,340,920 are proposed to be reprogrammed from the HEU Blend Down Project to the Pit Disassembly and Conversion Facility (PDCF) and Mixed Oxide Fuel Fabrication Facility (MOX) Russianization.

## **99-D-141, Pit Disassembly and Conversion Facility Savannah River Site, Aiken, South Carolina**

### **Significant Changes**

- The title of this project has been changed because design and construction activities are included within this line item in addition to Title I&II as the original project title implied. Therefore, the reference to Title I&II design has been removed.
- Design Cost for the Pit Disassembly and Conversion (99-D-141-01) has increased from \$116,800,000 to \$160,200,000 as a result of new scope and requirements, unanticipated additional work to complete the design, schedule extensions caused by late process design information, and to provide for additional contingency.
- The Project Performance Baseline for the Pit Disassembly and Conversion Facility (PDCF) will be established in FY 2004 instead of 3Q FY 2003.
- The scope of services for Construction Management that previously appeared in Section 6 of the FY 2004 Data Sheet has been reassigned as a part of the Design Task. The scope of services encompasses constructability reviews to ensure a high confidence in the constructability of the PDCF design.
- The Waste Solidification Building (WSB) facility has been added to this project as an outcome to the requirements and design of the Pit Disassembly and Conversion Facility (PDCF).

## 1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2000 Budget Request (A-E and technical design only).....	2Q 1999	4Q 2001	2Q 2001	4Q 2004	a	a
FY 2001 Budget Request (Preliminary Estimate).....	3Q 1999	1Q 2002	1Q 2002	3Q 2005	a	a
FY 2002 Budget Request (Preliminary Estimate).....	3Q 1999	TBD	TBD	TBD	a	a
FY 2003 Budget Request (Preliminary Estimate).....	3Q 1999	1Q 2004	TBD	TBD	a	a
FY 2004 Budget Request (Preliminary Estimate <sup>c</sup> ).....	3Q 1999	2Q 2004	TBD <sup>b</sup>	TBD <sup>b</sup>	TBD <sup>a</sup>	TBD <sup>a</sup>
FY 2005 Budget Request (Current Estimate).....	3Q 1999	4Q 2005	2Q 2005 <sup>b</sup>	TBD <sup>d</sup>	TBD <sup>d</sup>	TBD <sup>d</sup>

<sup>a</sup> Total Estimated Cost (TEC) and Total Project Cost (TPC) estimates will be determined when the Project Performance Baseline is established.

<sup>b</sup> *The Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River Site* dated February 15, 2002, cites a Physical Construction Start date of FY 2006, and a Physical Construction Completion date of FY 2009 these dates will be reviewed in the FY2004 Report to Congress.

<sup>c</sup> The FY2004 Budget Request was inadvertently shown as "Performance Baseline" instead of Preliminary Estimate.

<sup>d</sup> Plutonium Disposition Program adjustments for FY 2005 and outyears will impact cost and schedule of the PDCF project. Physical construction complete, TEC, and TPC estimates will be determined when Project Performance Baseline is established

## 2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design/Construction			
1999	20,000	20,000	211
2000	18,751	18,751	13,449
2001	19,956	19,956	17,834
2002	11,000	11,000	22,377
2003	34,657 <sup>a</sup>	34,657 <sup>a</sup>	42,662
2004	13,520 <sup>b</sup>	13,520	20,427
2004	29,000 <sup>c</sup>	29,000	29,000
2005	32,300	32,300	33,368
2006	35,400	35,400	35,518
2007	60,000	60,000	60,000
2008	129,000	129,000	129,000
2009	130,000	130,000	130,000

## 3. Project Description, Justification and Scope

### Pit Disassembly and Conversion Facility (PDCF):

This project supports the NNSA strategic goal to detect, prevent, and reverse the proliferation of weapons of mass destruction and implements the NNSA strategy to protect or eliminate weapon-usable nuclear material. This project is comprised of two subprojects; 99-D-141-01, Pit Disassembly and Conversion Facility and 99-D-141-02, Waste Solidification Building. The Pit Disassembly and Conversion Facility (PDCF) Project provides the capability to convert weapons-grade surplus plutonium metal and the plutonium in surplus pits (nuclear weapons) to a form that can be fabricated into MOX for irradiation in United States commercial nuclear reactors. The plutonium contained in the irradiated MOX fuel is considered to be non-weapons-usable. The Waste Solidification Building provides the capability to treat waste from the Pit Disassembly and Conversion Subproject and the MOX FFF for ultimate disposal. Details of each Subproject are provided.

### Subproject 01-Pit Disassembly and Conversion

The PDCF is a complex consisting of a hardened building (that will contain the plutonium processes) and conventional buildings and structures (which will house support personnel, systems, and equipment). The

<sup>a</sup> The original appropriation of \$35,000,000 was reduced by \$118,000 for use of prior year for the FY 2004 rescission included in P.L. 108-7 and \$225,000 for the FY 2004 rescission included in P.L. 108-7.

<sup>b</sup> The FY 2004 appropriated amount has not been adjusted for the FY 2004 Congressional Omnibus Appropriations Bill rescission of .59 percent.

<sup>c</sup> \$29,000,000 is proposed to be reprogrammed to the PDCF project which increases the FY 1004 amount from \$13,520,000 to \$42,520,000.

plutonium processing building will be a material access area of approximately 115,000 square feet and house the following key systems: pit shipment, receiving, assay and storage; pit plutonium metal extraction and conversion to oxide; and plutonium oxide packaging, assay, storage, and shipment. Also included are facilities for recovery, decontamination, and declassification of other special nuclear material and non-special nuclear material resulting from pit disassembly. The conventional buildings and structures, which do not contain any radioactive materials, requiring approximately 50,000 square feet, will house offices, change rooms, a central control station, waste treatment, packaging, storage, and shipment systems. The Plutonium Processing Building (PPB) is equipped with lag storage for incoming pit materials and storage for finished oxide. The facility is planned to be operational for 7 1/2 years after which it is expected to be decontaminated and decommissioned over a 3- to 4-year period.

The project consists of the following: design and construction of the buildings and structures; design, procurement, installation, testing, and start-up of equipment to disassemble pits and convert the plutonium from pits to oxide form; and associated supporting equipment, components, and systems. The facility will be constructed consistent with Nuclear Regulatory Commission (NRC) licensing standards but will not be licensed by the NRC.

**Project Milestones:**

FY1999:	Initiate Design	3Q
FY2005:	Complete Design	4Q
	Initiate Physical Construction	2Q <sup>a</sup>
FY2013:	Complete Physical Construction	TBD <sup>b</sup>

**Waste Solidification Building (WSB):**

**Subproject 02- Waste Solidification Building**

The Waste Solidification Building (WSB) scope consists of design, construction, procurement, installation, and startup testing of structures and equipment. The WSB is a non-reactor nuclear facility that will process radioactive liquid waste streams from the PDCF and MOX FFF into a solid form for ultimate disposal. The radioactive liquid wastes are composed of one high activity and two low activity streams. The high activity stream contains significant amounts of americium that is removed from the plutonium oxide during purification in the MOX FFF.

The WSB is to be constructed adjacent to the PDCF on the PDCF project site. The building is a 45,800 sq. foot, single story structure with a high bay made up of a combination of hardened (concrete) and conventional steel structures. A concrete-cell configuration is provided to process the high activity waste stream through the building. The conventional steel structure is composed of steel siding on structural steel members houses the low activity processes and support services. In addition, a material handling/storage pad is provided to store solid wastes produced in the WSB pending shipment. The complete facility consists of 3,600 sq. feet of hardened structure, 23,000 sq. feet of conventional structure and a 23,000 sq. foot material handling/storage pad. The major pieces of process equipment are tanks, evaporators, and cementation equipment.

**Project Milestones: <sup>a</sup>**

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<sup>b</sup> Amounts and schedules to be determined when the performance baseline is established.

FY 2005: Initiate Design TBD  
 Initiate Physical Construction 2Q

TBD: Complete Design TBD

FY2009: Complete Physical Construction TBD

#### 4. Details of Cost Estimate <sup>a</sup>

	(dollars in thousands)	
	Current Estimate	Previous Estimate
<b><u>Subproject 01-Pit Disassembly and Conversion</u></b>		
Preliminary and Final Design Costs (Design, Drawing, and Specification) .....	107,300	116,800
Design Management Cost at 22% of above costs.....	33,300	116,800
Total Design Phase .....	140,600	TBD
Contingencies at approximately 12% of above costs .....	19,600	TBD
Design Phase .....	160,200	TBD
Construction and Procurement.....	TBD	TBD
Total Agency Requirement .....	TBD	TBD
Total Design Costs .....	160,200	TBD
Total Agency Requirement (Design) .....	160,200	TBD
<b><u>Subproject 02-Waste Solidification Building</u></b>		
Preliminary and Final Design Costs (Design, Drawing, and Specification) .....	18,300	N/A
Design Management Cost at 7% of TEC costs .....	1,800	N/A
Project Management Cost at 10% of TEC costs .....	2,600	TBD
Total, Design Phase .....	22,700	TBD
Contingencies at approximately 11.7% of above costs .....	3,000	TBD
Design Phase .....	25,700	TBD
Total Agency Requirement .....	25,700	TBD
Construction Management .....	TBD	TBD
Total Agency Requirement .....	25,700	TBD

<sup>a</sup> Amounts and schedules to be determined when the performance baseline is established.

## 5. Method of Performance

A cost plus fixed-fee contract for preliminary design and a cost plus award-fee contract for detailed design have been awarded for the PDCF. The procurement strategy includes an option for construction inspection services (Title III) for which a decision will be made during the Title II design phase. A purchase order for procurement of long-lead equipment fabrication will be issued approximately 1 to 2 years prior to start of construction.

The WSB design service is procured through the Savannah River M&O contract. A purchase order for procurement of long-lead equipment will be issued approximately one year prior to start of construction.

It is anticipated that a fixed-price construction contract will be awarded on the basis of competitive bidding.

## 6. Schedule of Project Funding <sup>a b</sup>

### PDCF Project Costs

(dollars in thousands)

	Prior Years	FY 2003	FY 2004	FY 2005	Outyears	Total
Design Costs						
Design.....	53,727	36,562	46,227	23,685	0	160,200
Total Design (Federal and Non-Federal)....	53,727	36,562	46,227	23,685	0	160,200
Construction and Procurement.....	0	0	0	1,500	TBD	TBD
PDCF Total TEC .....	53,727	36,562	46,227	25,185	TBD	TBD
Other Project Costs .....	130,300	31,600	33,500	16,300	TBD	TBD
<b>Total Project Costs .....</b>	<b>184,027</b>	<b>68,161</b>	<b>79,727</b>	<b>41,485</b>	<b>TBD</b>	<b>TBD</b>

### WSB Project Costs

(dollars in thousands)

	Prior Years	FY 2003	FY 2004	FY 2005	Outyears	Total
Design Costs						
Design.....	0	6,100	3,200	8,183	8,217	25,700
Total Design (Federal and Non-Federal)....	0	6,100	3,200	8,183	8,217	25,700
Construction Management .....	0	0	0	0	TBD	TBD
Construction and Procurement.....	0	0	0	0	TBD	TBD
WSB Total TEC .....	0	6,100	3,200	8,183	TBD	TBD
Total, Other Project Costs	0	0	TBD	TBD	TBD	TBD
<b>Total Project Costs .....</b>	<b>0</b>	<b>6,100</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>

<sup>a</sup> Amounts to be determined when the performance baseline is established.

<sup>b</sup> The Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River Site City a total operating cost of \$718.2 Million without contingency and in FY 2001 dollars. For an operating period of 7.5 years and a contingency of 5%, the annual facility operating cost would be \$100.5 Million in FY 2001 dollars.

## 7. Related Annual Funding Requirements <sup>a</sup><sup>b</sup>

(FY 2009 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs .....	TBD	TBD
Annual facility maintenance/repair costs .....	TBD	TBD
Programmatic operating expenses directly related to this facility .....	TBD	TBD
Utility costs .....	TBD	TBD
Total related annual funding (operating from FY 2009 through FY 2035) .....	TBD	TBD

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<sup>a</sup> These figures are projections and will be determined when the performance baseline is established.

<sup>b</sup> The Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River Site City a total operating cost of \$718.2 Million without contingency and in FY 2001 dollars. For an operating period of 7.5 years and a contingency of 5%, the annual facility operating cost would be \$100.5 Million in FY 2001 dollars.



# 99-D-143, Mixed Oxide Fuel Fabrication Facility, Savannah River Site, Aiken, South Carolina

## Significant Changes

The schedule for starting construction of Mixed Oxide Fuel Fabrication Facilities (MOX FFF) in the U.S. and Russia has been adjusted to allow time for resolution of issues regarding Russian tax exemptions and liability. Given the political realities and impacts of these issues, the earliest possible date that construction can begin on the two facilities is May 2005. Despite this delay in the start of construction, the NNSA has structured the program to minimize adverse impacts. The overall program and project costs will be updated in the Program's annual report to Congress.

This schedule adjustment will allow the U.S. to transfer the domestic MOX FFF design to Russia for use in processing Russian surplus plutonium. This approach was proposed to the Russians in April 2002 and accepted in December 2002. It eliminates the 2 to 3 years of time required for Russia to develop their own MOX facility design, and will, ultimately, minimize the cost and schedule of both programs. It will also allow the Congressional requirements for parallel progress in the U.S. and Russia to be met.

### 1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2000 Budget Request (A-E and technical design only)	2Q 1999	4Q 2001	1Q 2002	4Q 2005	a	a
FY 2001 Budget Request (Preliminary Estimate) .....	2Q 1999	3Q 2002	4Q 2002	1Q 2006	a	a
FY 2002 Budget Request (Preliminary Estimate) .....	2Q 1999	4Q 2002	2Q 2003	1Q 2007	a	a
FY 2003 Budget Request (Preliminary Estimate) .....	2Q 1999	4Q 2003	2Q 2004	4Q 2007	a	a
FY 2004 Budget Request (Preliminary Estimate) .....	2Q 1999	1Q 2004	2Q 2004 <sup>b</sup>	4Q 2007 <sup>b</sup>	1,622,000 <sup>a</sup>	1,842,000 <sup>a</sup>
FY 2005 Budget Request (Current Estimate) .....	2Q 1999	3Q 2004	3Q 2005 <sup>b</sup>	2Q 2009 <sup>b</sup>	TBD <sup>ab</sup>	TBD <sup>a</sup>

<sup>a</sup> Total Estimate Cost (TEC) and Total Project Cost (TPC) estimates will be updated when the Project Performance Baseline is established in FY 2004.

<sup>b</sup> *The Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River Site* dated February 12, 2002, cites a Physical Construction Start date of FY2004, a Physical Construction Completion date of FY 2007, and the first fabrication of MOX fuel in FY2008. These dates will be revised in the 2004 report to Congress.

## 2. Financial Schedule <sup>a</sup>

(Dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs <sup>b c</sup>
1999	28,000	9,600	2,545
2000	12,375	30,775	33,512
2001	25,943	25,943	29,938
2002	65,993	65,993	52,513
2003	92,088 <sup>d</sup>	92,088 <sup>d</sup>	81,709
2004	399,628 <sup>e</sup>	399,628 <sup>e</sup>	100,000
2004	(11,405) <sup>f g</sup>	(11,405) <sup>f</sup>	(11,405) <sup>f</sup>
2005	368,000	368,000	368,000
2006	330,000	330,000	472,125
2007	214,000	214,000	320,313
2008	140,000	140,000	172,362
2009	90,000	90,000	121,010

## 3. Project Description, Justification and Scope

### Description and Scope

The MOX FFF will provide the U.S. with the capability to convert plutonium oxide derived from surplus weapons grade plutonium stocks to MOX fuel suitable for use in U.S. commercial nuclear reactors. Subsequent disposal of the spent fuel will be carried out in accordance with the Nuclear Waste Policy Act. A contract was awarded to a private consortium (Duke Engineering Services, COGEMA, Inc. and Stone

<sup>a</sup> As a result of recent budget adjustments made by the Administration, this Budget reflects detailed program changes based on budget numbers not yet developed. Therefore, all outyear cost numbers are preliminary estimates. The program will be undergoing an intensive replanning effort based on these changes.

<sup>b</sup> The full amounts of the obligations are needed in order to place on contracts for construction services and plant equipment.

<sup>c</sup> Cost beyond FY2003 are projections and updated estimates will be provided in June 2004.

<sup>d</sup> The original appropriation amount of \$ 92,687,000 was reduced by FY 2003 Recision amount of \$599,000 to \$92,088,000.

<sup>e</sup> The original appropriation amount of \$402,000,000 was reduced by FY 2004 Recision amount of \$2,372,000 to \$399,628,000.

<sup>f</sup> A total of \$11,405,000 is proposed to be reallocated to project 99-D-141, Pit Disassembly and Conversion Facility, Savannah River Site, Aiken, South Carolina, as part of a reprogramming action.

<sup>g</sup> The FY 2004 appropriated amount has not been adjusted for the FY 2004 Congressional Omnibus Appropriations Bill rescission amount of .59 percent.

& Webster (DCS) on March 22, 1999 for the design of a MOX FFF to be built at the DOE Savannah River Site (SRS) and licensed by the Nuclear Regulatory Commission.

The MOX FFF will produce completed MOX fuel assemblies for use in existing domestic, commercial nuclear power reactors. The MOX FFF will be designed to receive and process 3.5 MT per year of plutonium powder from the Pit Disassembly and Conversion Facility (PDCF) and other selected inventories of weapon-grade plutonium oxide available within the DOE complex and accommodate about two-years storage for the incoming plutonium powder. The MOX FFF is capable of expanding throughput to 4 MT per year to meet provisions in the Russian agreement. The facility's operating life is expected to be approximately 12 years.

Design of the MOX FFF is based on processes and facilities currently being successfully operated in Europe, specifically the MELOX and La Hague facilities in France. The MOX fuel fabrication design will replicate the automated MELOX equipment and facility design and will include lessons learned from operations and maintenance experiences. The MOX FFF will be designed and built to meet U.S. conventions, codes, standards, and regulatory requirements (Americanization process). After completing its mission, the facility will be deactivated, decontaminated, and decommissioned over a three- to four-year period.

The MOX FFF will require approximately 366,000 square feet to perform all material processing and fabrication operations to produce MOX fuel. Specific MOX FFF operations include the following: aqueous polishing (to purify plutonium before fabrication into fuel); blending and milling; pelletizing; sintering; grinding; fuel rod fabrication; fuel bundle assembly; storage of feed material, pellets, and fuel assemblies; a laboratory; and space for use by International Atomic Energy Agency (IAEA). The facility also requires 120,000 square feet of structures adjacent to the MOX process areas for secure shipping and receiving, material receipt, utilities, and technical support.

### **Cost and Schedule**

The TEC for the MOX FFF is TBD due to FY 05 budget changes. These changes require a revision to the overall cost and schedule estimates for the MOX FFF. Cost and schedule estimates in this Data Sheet are preliminary. The revised cost and schedule will be completed by June 2004.

The overall process and facility design (also known as base design) is 75% complete as of September 1, 2003. Title I (preliminary) design began in mid FY 1999 and was completed in December 2000. Title II (detailed design) began in January 2001 and will be completed in 2004. The Title II design has taken longer than planned due to scope changes to accommodate impure plutonium previously destined for immobilization and delays dictated by the Russian program. In order to maintain project schedule and reflect industry experience, glove box and equipment design efforts were initiated in FY 2002.

### **FY 2004 and FY 2005 Description of Activities**

The main FY 2004 activities include completing the base design of the MOX FFF and continuing the manufacturing design activities of the process equipment units. In the base design, the structural design will be completed to develop construction bid packages to support construction commencement in May 2005. The remaining design packages (mechanical, electrical, etc.) will also be completed in FY 2004 to

support the construction schedule in FY 2005 and beyond. Construction planning will fully commence in FY 2004 with the finalizing of Construction Management Plans.

For FY 2005, the initial suite of construction work packages will be issued to support the schedule and site preparation activities and will include land clearing and grading, temporary road construction, and establishment of temporary construction services. Procurement of the MOX FFF structural subcontract will begin in 2<sup>nd</sup> quarter FY 2005 with award in the third quarter. Initial mobilization and material procurement will begin in FY 2005 with MOX FFF building excavation scheduled in early FY 2006.

The FY 2005 construction TEC activities will also cover finalization of manufacturing design and continuation of software design for process equipment. Initiation of long lead equipment procurement and equipment fabrication will commence.

#### 4. Details of Cost Estimate <sup>a</sup>

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications) .....	163,300	153,300
Contingencies (4.7% of TEC) .....	8,000	18,018
Total, Design Phase (TBD% of TEC) .....	171,300	171,318
Construction Phase		
Improvements to Land .....	TBD	N/A
Buildings .....	TBD	N/A
Other Structures .....	TBD	N/A
Utilities .....	TBD	N/A
Standard Equipment .....	TBD	N/A
FY03 Procurment Engineering and Site Preparation .....	TBD	53,993
FY04 Procurment Engineering and Site Preparation .....	TBD	74,000
FY03 Physical Construction and Long Lead Procurments .....	TBD	328,000
Removal less salvage .....	TBD	N/A
Inspection, design and project liaison, testing, checkout and and acceptance (0.0% of TEC) .....	TBD	N/A
Construction Management (0.0% of TEC) .....	TBD	N/A
Project Management (0.0x% of TEC) .....	TBD	N/A
Total, Construction Costs (72.7% of TEC) .....	0	455,993
Contingencies.....	TBD	N/A
Design Phase (0.0% of TEC) .....	TBD	N/A
Construction Phase (0.0x% of TEC) .....	TBD	N/A
Total, Contingencies (0.0% of TEC) .....	0	0
Total, Line Item Costs (TEC) .....	171,300	627,311

<sup>a</sup> Amounts and schedules to be finalized by June 2004.

## **5. Method of Performance**

The procurement strategy for the MOX FFF includes a base contract and three subsequent phases. The first step was completed on March 22, 1999 when DOE awarded a base contract to DCS to provide MOX fuel fabrication and irradiation services. This base contract includes the design and licensing of the MOX FFF, fuel qualification activities, and reactor license modifications.

Sequential contract phases include general construction (Phase 1), plant operations (Phase 2), and facility deactivation (Phase 3). In FY 02, DOE modified its contracting strategy to segment Phase I into three options of work. Option 1A is the effort associated with procurement engineering, basic ordering agreements, and the related project management support functions that are not already included in the base contract. Option 1B is the effort associated with the construction of the MOX FFF, where construction is defined as all procurement, equipment fabrication, actual construction and construction management services for the MOX FFF, support structures and related infrastructure, installation checks and testing conducted as part of the turnover of the construction efforts to an operating or startup team; and project management functions associated with these efforts. Option 1C is the effort associated with start-up of the MOX FFF.

It is expected that an incentive contract with DCS will be the most appropriate and cost beneficial instrument for the construction work. Actual physical construction will be through fixed-price subcontracts to the extent practical, with a cost-type contract for construction management services. Under an umbrella prime contract that will be incentivized, the MOX FFF will be Government-owned and contractor-operated. It is expected that during the facility operating phase of the consortium contract, facility operating costs will be partially offset by the value of the MOX fuel, which will displace the low-enriched uranium (LEU) fuel that utility companies would have otherwise purchased.

## 6. Schedule of Project Funding <sup>a</sup>

	Prior Years	FY 2003	FY 2004	FY 2005	Outyears	Total
Design Cost						
Design .....	118,509	53,508	.			171,318
Total Design (Federal and Non-Federal).....	118,509	53,508				171,318
Procurement Engineering and Site Preparation .....	0	28,514	100,000	49,000	TBD	TBD
Construction, procurement, and cold startup .....	0	0	0	331,000	TBD <sup>b</sup>	TBD
Total Agency Requirement (Design, Procurement Engineering, long lead Procurement, Physical Construction) .....	118,509	82,022	100,000	380,000	TBD	TBD
Other Project Costs (Licensing, Technical support, Cold startup) .....	0	0	0	0	TBD	TBD
Total Project Cost.....	TBD	TBD	TBD	TBD	TBD	TBD

## 7. Related Annual Funding Requirements

(Dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs .....	100,500 <sup>c</sup>	N/A

<sup>a</sup> As a result of recent budget adjustments made by the Administration. The program will be undergoing an intensive replanning effort to develop accurate cost projections for FY 2006 and the outyears.

<sup>b</sup> These figures are projections and will be determined when the performance baseline is established June 2004.

<sup>c</sup> Operating costs taken from FY2002 *Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River* (to be updated in the 2004 Report to Congress).

## Off-Site Source Recovery Project

### Funding Schedule by Activity

(dollars in thousands)

	FY 2003	FY 2004	FY 2005	\$ Change	% Change
Off-Site Source Recovery Project					
Domestic Sealed Sources.....	2,172	1,961	5,600	+ 3,639	+ 185.6%

### FYNSP Schedule

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total
Off-Site Source Recovery Project.....	5,600	8,750	8,803	8,861	8,920	40,934

### Description

The program recovers excess and unwanted sealed sources on a priority basis, determined by the U.S. Nuclear Regulatory Commission in consultation with the Department of Energy, to reduce and ultimately eliminate the risk these sources pose to homeland security by their possible use in a radiological dispersal device. The Off Site Source Recovery (OSRP) reduces this risk by removing excess and unwanted sources from non-Department of Energy sites and placing these sources in storage at Department of Energy facilities.

#### **Benefits to Program Goal 02.62.00.00 Off-Site Source Recovery**

The Off-Site Source Recovery program contributes to achieving Program Goal 02.62.00.00 by (1) recovering Greater-Than-Class-C (GTCC) sealed sources from the Nuclear Regulatory Commission licensees and storing those sources pending disposal; (2) recovering Department of Energy - owned sources which are in the possession of domestic U.S. licensees through loan-lease or other mechanisms where there is no longer a mechanism for the return and acceptance of these sources by the program that originally provided the sources; and (3) accepting and storing pending disposition Department of Energy sealed sources which are of the same types being recovered from non-Department of Energy licensees. This activity occurs on a much smaller scale than commercial recovery operations.

## Annual Performance Results and Targets

Performance Indicators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Endpoint Target Date
Cumulative number of excess and unwanted sealed sources recovered.	Recovered approximately 7,000 sealed sources	Recover approximately 8,500 sealed sources	Recover approximately 10,000 sealed sources	Recover approximately 12,200 sealed sources	Recover approximately 14,400 sealed sources	Recover approximately 16,600 sealed sources	Recover approximately 18,800 sealed sources	Recover approximately 21,000 sealed sources by 2010.
Cumulative number of Department of Energy – owned loan-lease plutonium-239 beryllium sources recovered.	Developing storage infrastructure for high attractiveness level sources.	Recover 250 DOE-owned Pu-239 sources. Begin disposal at WIPP.	Recover 400 DOE-owned plutonium 239 sources. Continue disposal at WIPP.					Total number by 2010
Annual ratio of sources recovered in a year over the number of known excess sources at the beginning of that year Risk Reduction Efficiency Factor (RREF). The goal is to recover more sources in a year than were known at the beginning, for an RREF > 1 (EFFICIENCY MEASURE)	RREF=0.67	RREF=0.8	RREF=0.9	RREF=1	RREF=1.1	RREF=1.2	RREF=1.3	2010, RREF=1.4

## Detailed Program Justification

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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<b>Off-Site Source Recovery Project .....</b>	<b>2,172</b>	<b>1,961</b>	<b>5,600</b>
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The (OSRP) recovers and stores excess and unwanted sealed sources to reduce the threat of such sources being used in radiological dispersal devices. The (OSRP) and the Department of Energy have worked closely to assist the U.S. Nuclear Regulatory Commission (NRC) to develop a source recovery prioritization. Sources that can be classified as defense waste are disposed of at the Waste Isolation Pilot Plant (WIPP). The scope of the OSRP is primarily domestic U.S. sources in the possession of licensees, where such sources exceed the limits for commercial disposal. Sources that exceed the limits for commercial disposal are considered Greater Than Class C (GTCC) and are a Department of Energy responsibility for disposal under Public Law 99-240.

The Office of Environmental Management (EM) and the National Nuclear Security Administration (NNSA) have agreed to transfer management responsibility for the (OSRP) from EM to NNSA. The responsibilities of the OSRP that are to be transferred to NNSA include the removal and storage of excess radioactive sealed sources. These activities are consistent with the mission of NNSA to enhance nuclear security.

OSRP shall continue, under NNSA, to recover (GTCC) sealed sources from the NRC licensees and store those sources pending disposal. NNSA will have program responsibility for recovery and interim storage of these sources. The Office of Environment, Safety and Health (EH) and the Office of Civilian Radioactive Waste Management (RW) have the responsibility to make a Department of Energy decision on GTCC waste disposition.

The program recovers excess and unwanted sources possessed by state and (NRC) licensees. The licensees determine when such sources are excess to their needs and are therefore unwanted. The OSRP is informed by licensees registering their sources with OSRP that the sources are excess and unwanted and need to be recovered. The number and type of sources that will become excess and unwanted in the future cannot be known or predicted with any great degree of accuracy. The location of sources needing recovery, the ability of the licensee to participate and assist in the recovery process, and the conditions under which sources must be recovered all vary with each recovery.

The OSRP also recovers Department of Energy - owned sources in the possession of domestic U.S. licensees through loan-lease or other mechanisms where there is no longer a mechanism for the return and acceptance of these sources by the program that originally provided the sources. The OSRP also provides a very limited internal service to Department of Energy sites by accepting and storing Department of Energy sealed sources that are of the same types being recovered from non-Department of Energy licensees.

(dollars in thousands)

FY 2003	FY 2004	FY 2005
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**Recovery** - The majority of the cost of the OSRP falls under recovery operations. This includes staff time, collecting information on sources, planning recovery, procuring specially shielded drums, and the actual travel to the recovery location, packaging, and transportation of the sources. Recovery operations take place at the Los Alamos National Laboratory (LANL), including the registration of licensees having excess and unwanted GTCC sources and the scheduling of the recovery of those sources. In FY 2005 an estimated 1,500 sources will be recovered.

Sources will be recovered in a variety of ways. Licensees with only a few sources may self-ship their sources to the OSRP or to a designated consolidation point, where they are combined with other recovered sources, packaged optimally, and placed in storage at LANL. Licensees unable to self-ship will be identified, and the OSRP will go to a number of such sites in a geographic area to packages and ship those sources to LANL or a consolidation point. Finally, for licensees with enough sources to fill one or more drums, LANL will send a team to package the sources and perform all applicable security and quality control checks, allowing these full drums to go directly to storage at LANL with no further processing or need to reopen the packaging, saving significant cost and worker exposure. The OSRP procures specially shielded drums and other field equipment necessary to recover sources in a variety of conditions at licensee’s facilities.

**Storage and Disposal** - The OSRP stores sources at LANL with security commensurate with the isotope type. Defense-origin actinides are sent from LANL to WIPP for disposal. Currently, all the identified plutonium-239 sources requiring recovery are owned by the Department of Energy and have been formally determined to be defense waste. All such sources will be recovered, placed into interim storage, and disposed of at WIPP. Department of Energy –owned defense americium-241 and plutonium-238 sources can also be disposed of at WIPP. Sources which are owned by licensees, or come from non-defense Department of Energy facilities cannot be disposed of at this time. When the Department makes the necessary determinations for the disposal of GTCC waste, which is beyond the scope of the OSRP program, those sources will be disposed of in accordance with that determination.

In FY 2005, the OSRP will be beginning the recovery of cesium-137 and strontium-90 sources in addition to these other activities. For cesium-137 and strontium-90, there are very few such sources relative to transuranic sources, but each source is of very high activity.

Once the Department of Energy determines and implements a mechanism for GTCC waste disposal, and in particular for GTCC sealed sources, the OSRP will be phased out and replaced by a mechanism that allows possessors of GTCC sources to interface with the disposal site and provide for a more direct disposal of GTCC sources. The responsibility to conduct an appropriate review and analysis under the National Environmental Policy Act for the disposal of GTCC waste has been assigned to the Department’s Office of Environment, Safety, and Health.

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<b>Total, Off-Site Source Recovery Project.....</b>	<b>2,172</b>	<b>1,961</b>	<b>5,600</b>
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## Explanation of Funding Changes

FY 2005 vs. FY 2004 (\$000)
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▪ **Off-Site Source Recovery Project**

Increase is due to the needed acceleration of this program's recovery of these excess and unwanted sources and to eliminate the risk that these sources pose to homeland security .....

+ 3,639

**Total Funding Change, Off-Site Source Recovery Project .....**

**+ 3,639**

