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Energy and Water Development Appropriations for Defense Nuclear Nonproliferation: In Brief

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Budget Structure

The Defense Nuclear Nonproliferation (DNN) programs were reorganized starting with the FY2016 request. There are now two main mission areas under the DNN appropriation: the Defense Nuclear Nonproliferation Program and the Nuclear Counterterrorism and Incident Response Program (NCTIR). NCTIR was previously funded under Weapons Activities. According to the FY2016 budget justification, "These transfers align all NNSA funding to prevent, counter, and respond to nuclear proliferation and terrorism in one appropriation."

The DNN Program is divided into four functional areas, plus a funding line for Nonproliferation Construction:

- **Materials Management and Minimization (M3)** conducts activities to reduce and, where possible, eliminate stockpiles of weapons-useable material around the world. Major activities include conversion of reactors that use highly enriched uranium (useable for weapons) to low enriched uranium, removal and consolidation of nuclear material stockpiles, and disposition of excess nuclear materials.
- **Global Material Security** has three major program elements: international nuclear security, radiological security, and nuclear smuggling detection. Activities toward achieving those goals include the provision of equipment and training, workshops and exercises, and collaboration with international organizations.
- **Nonproliferation and Arms Control** implements programs that aim to strengthen international nuclear safeguards, control the spread of dual-use technologies and expertise, and verify nuclear reductions and compliance with treaties and agreements, according to the FY2018 justification. This program conducts reviews of nuclear export applications and technology transfer authorizations.
- **DNN R&D** advances nuclear detection and nuclear forensics technologies. This includes both proliferation detection and nuclear detonation detection.
- The **Nonproliferation Construction** program consists of the Mixed-Oxide (MOX) Fuel Fabrication Facility (MFFF), which is being built in South Carolina to convert surplus weapons plutonium into nuclear reactor fuel. Like the FY2017 request, the FY2018 request proposes that this construction project be terminated and replaced with a different disposal method.

The Nuclear Counterterrorism and Incident Response Program (NCTIR) evaluates nuclear and radiological threats and develops emergency preparedness plans, including organizing scientific teams to provide rapid response to nuclear or radiological incidents or accidents worldwide.

Table 1. DOE Defense Nuclear Nonproliferation Appropriation, FY2016-FY2018

($ thousands)

	FY2016 Enacted	FY2017 Request	FY2017 Omnibus	FY2018 Request
Material Management and Minimization	311,584	341,094	288,350	332,0094
Global Material Security	426,751	337,108	367,108	337,108
Nonproliferation and Arms Control	126,703	124,703	124,703	129,703
Defense Nuclear Nonproliferation R&D	419,333	393,922	469,750	446,095
Nonproliferation Construction	345,000	270,000	335,000	279,000
Legacy Contractor Pensions	94,617	83,208	83,208	40,950
Nuclear Counterterrorism	234,390	271,881	271,881	277,360
Subtotal	1,958,378	1,821,916	1,902,000	1,842,310
Use of Prior Year Balances	-21,576	0	0	0
Rescission of Prior Year Balances	0	-14,000	-19,128	-49,000
Total	1,940,302	1,807,916	1,882,872	1,793,310

Source: Department of Energy Fiscal Year 2017 and 2018 Congressional Budget Requests, Volume 1; P.L. 114-100, S.Rept. 114-236, Explanatory Statement for the FY17 Energy and Water Appropriations.

FY2018 Request

The FY2018 request for DNN appropriations totals $1.79 billion. The budget justification says that this decrease is due to the use of prior-year balances.

The biggest proposed decreases compared to the FY2017 appropriations are in the Global Material Security (-$30 million)—to reduce prior year carryover balances—and the Nonproliferation Construction (-$56 million) accounts—due to the proposed termination of MFFF construction. A new line item of a proposed $9 million was added under Nonproliferation Construction for the dilute and dispose strategy. The FY2018 request for Nonproliferation R&D is larger than the FY2017 request, but the FY2018 request amount is a (-$23 million) decrease from FY2017 appropriations.

An increase of approximately $44 million (compared to the FY2017 appropriations) was requested for the M3 account. The proposed activities include an increase for the HEU Reactor Conversion program using prior-year uncosted balances primarily from the U.S. plutonium disposition program. An increase was proposed for all subprograms under the Nuclear

Counterterrorism account, with the largest for the Emergency Response subprogram, as in the FY2017 request.

FY2017 Funding

The Senate Report to the FY2017 Energy and Water Appropriations bill (S.Rept. 114-236) said that the committee "is concerned that there is disconnect between real-world threats and the planned work in nonproliferation." The report directs the NNSA to provide a report that prioritizes threats by mid-June 2017. The Senate recommended funding the full budget request but proposed moving $20 million from the Material Management and Minimization account into Global Material Security and Defense Nuclear Nonproliferation Research and Development accounts.

The House Appropriations Committee (H.Rept. 114-532) recommended the full budget request. The committee report recommended that an additional $20 million be spent on international nuclear security projects within the Global Material Security account. It also recommended an additional $14 million to develop alternative funds for high-performance research reactors, and moving this program to the Nonproliferation R&D account. The committee recommended the same funding for the MOX Fuel Fabrication Facility as in FY2016, $340 million, or $70 million above the request. It also prohibits the use of this funding to put the facility in cold standby. After a series of continuing resolutions, the FY2017 omnibus bill (P.L. 115-31) was passed in May 2017.

Issues for Congress

U.S. Plutonium Disposition

The FY2018 budget justification requests funds related to the U.S. plutonium disposition program in the M3 Material Disposition subprogram and the Nonproliferation Construction accounts. The goal of this program is disposal of 34 metric tons of U.S. surplus weapons plutonium by converting it into fuel for commercial power reactors.[1] The U.S. facility for this purpose was to be MFFF, under construction at the DOE Savannah River site in South Carolina. The MFFF, which would make fuel for nuclear reactors out of surplus weapons plutonium, has faced sharply escalating construction and operation cost estimates, and the Obama Administration proposed to terminate it in FY2017. Instead, a Dilute and Dispose (D&D) program for this material is now in a preconceptual design phase. In late FY2017, the conceptual design phase began, and was expected to cost "between $3 and $5 million," according to the FY2017 congressional budget justification. The costs of the FY2018 request for this subprogram (M3 Material Disposition) reflect the use of prior year uncosted balances and the start of the D&D design activities.

In FY2015 and FY2016, Congress appropriated $345 million for the Mixed Oxide Fuel Fabrication Facility project (the same as the FY2016 request, but higher than the FY2015 request). The recommendation provided funding to sustain the current pace of construction on the MOX facility in FY2016 and included a provision that prohibits the use of MOX funding to place the project in cold standby. The House Appropriations Committee's summary of the Energy and Water portion of the FY2017 omnibus bill says that it includes $335 million for the MOX Fuel

[1] For more details, see CRS Report R43125, *Mixed-Oxide Fuel Fabrication Plant and Plutonium Disposition: Management and Policy Issues*, by (name redacted) and (name redacted) .

Fabrication Facility: "to help fulfill the international commitment by the U.S. to operate a Mixed Oxide (MOX) Fuel Fabrication Facility to dispose of surplus plutonium."

Cooperation with the Russian Federation[2]

In December 2014, the Russian Federation informed the United States that no new cooperative nonproliferation projects would be approved, but existing projects could continue until their expiration. Russia will continue to fund and carry out the removal and repatriation to Russia of highly enriched uranium fuel from Russian-origin research reactors worldwide, a joint program with the United States. Verification of plutonium shut-down and HEU and plutonium disposition plans would also continue. However, cooperation was to end on other cooperative projects such as fissile material security sustainability programs that ensure continued use and upgrades to physical security and border control systems. Then, following the Russian takeover of Crimea in April 2014, the Department of Energy further restricted cooperation with the Russian Federation, and Congress specifically prohibited new projects.

The FY2015 House Appropriations Committee report said that no new cooperative nonproliferation programs with the Russian Federation could be funded, and directed DOE to report to Congress on whether ongoing and new nuclear security programs with Russia are addressing U.S. national security goals. The FY2015 Consolidated Appropriations Act did not include requested funding for NNSA Global Material Security programs in Russia.

The FY2016 DNN budget request did not request any funds for specific projects in the Russian Federation but says, "Given the size of Russia's material stockpiles, GMS will continue to look for partnership opportunities with Russia, on the general assumption that each side shall independently bear its costs related to cooperative activities."

The FY2016 appropriations provided "no new funds to enter into contracts and agreements with Russia in fiscal year 2016," but did provide a waiver. H.Rept. 114-91 said that:

> The recommendation provides no new funds for projects in Russia and the Committee awaits submission of a Secretarial waiver for nonproliferation work with the Russian Federation should such activities be determined to be in the national security interest by the Secretary of Energy. The Committee continues to view the NNSA's programs as important for reducing international dangers to U.S. national security posed by the proliferation of nuclear technologies to other nation states and the threat of nuclear terrorism, rather than focused on domestic security activities that are the responsibility of other agencies.

The FY2017 NDAA contained similar provisions. In the FY2017 request, no new funds for projects with Russia were proposed; $21.5 million of the prior-year funding from FY2016 Russia-related nonproliferation activities will be used in FY2017 for other DNN activities, according to the budget request.

On October 3, 2016, Russian President Vladimir Putin issued a decree suspending participation in a bilateral U.S.-Russia weapons plutonium disposal agreement (the 2000 Plutonium Management and Disposition Agreement, or PMDA). The next day, Russia suspended participation in a 2013 cooperative agreement on nuclear- and energy-related research and terminated a third from 2010 on exploring options for converting research reactors from weapons-usable fuel.

[2] See also, "The Future of Cooperation with Russia" in CRS Report R43143, *The Evolution of Cooperative Threat Reduction: Issues for Congress*, by (name redacted) and (name redacted) .

Continuing activities with Russia (that do not require payments to Russia) include monitoring visits in Russia under the U.S.-Russia Plutonium Production Reactor Agreement, removal of Russian-origin material from third countries, and hosting Russian monitoring visits to U.S. nuclear fuel fabrication facilities under the 1993 HEU Purchase Agreement.

Prior Years

For FY2015, the Administration requested $1,555.2 million for Defense Nuclear Nonproliferation programs and Congress appropriated $1,641.4 million. After rescissions and use of prior-year funds, the total appropriated was $1,616.4 million. The bill directed the use of prior-year balances from the Russian Fissile Material Disposition subaccount and did not fund the request for international material protection work in Russia. Overall, the FY2015 request included reductions in virtually all nonproliferation programs, in particular the U.S. plutonium disposition program (see below). Both the House bill and the Senate Appropriations Subcommittee increased funding for these programs.

Prior to the FY2016 reorganization, the DNN programs included five subprograms. Appropriations from FY2013 to FY2015 can be viewed in **Table 2**.

Table 2. DOE Defense Nuclear Nonproliferation Programs FY2013-FY2015

($ millions)

Program	FY2013 Approp.	FY2014 Approp.	FY2015 Approp.
Defense Nuclear Nonproliferation Research and Development (formerly Nonproliferation and Verification R&D)	420.5	398.8	393.4
Nonproliferation and International Security	143.1	128.7	141.4
International Materials Protection and Control (IMPC)	527.9	419.6	270.9
Fissile Materials Disposition	663.8	526.1	430.0
Global Threat Reduction Initiative	$462.9	$442.1	$325.8
Legacy Contractor Pensions	51.4	93.7	102.9
Rescissions and Use of Prior Year Funds	-32.2	-55.0	-47.7
Total	**2,237.4**	**1,954.0**	**1,616.4**

Source: FY2015 budget request; H.Rept. 113-486; Senate Appropriations Committee; P.L. 113-235; Explanatory Statement; Congressional Record Vol. 160, No.151, December 11, 2014.

Notes: Numbers may not add due to rounding. Negative numbers denote appropriations offsets.

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