Department of Energy Budget Request for FY 2008 - Nuclear Non-Proliferation Highlights

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The President released his budget request for federal agencies on February 5, 2006. Following is the summary of the relevant nuclear non-proliferation programs included in the Department of Energy's budget request:

The funding for many of the important programs that secure nuclear weapon-usable material in the former Soviet Union states and other countries has been either only slightly increased (Global Threat Reduction Initiative), either remains relatively constant or is decreased compared to the FY 2007 funding request and the FY2007 continuing resolution. The programs that have requested the greatest increase in funding for FY2008 are the Advanced Fuel Cycle Initiative pursuant to the Global Nuclear Energy Partnership (AFCI currently researches and develops processes that extract plutonium and other elements from nuclear waste for reuse in fast reactor fuel), the Reliable Replacement Warhead (that proposes to design and develop a new type of nuclear weapon), and the Pit Manufacturing and Certification Campaign.

The total funding for relevant Nuclear Nonproliferation programs under the FY2008 budget request is $1,683,339,000 (compared to $1,631,151,000 in FY06).

Securing, Disposing of, or Monitoring of Fissile Material

International Nuclear Material Protection & Cooperation: $371 million (approximately $100 million-decrease from $472.7 million appropriated in the FY2007 continuing resolution and a decrease compared to FY06 appropriations of $422.7 million and the FY2007 budget request of $413.2 million)

DOE has explained the decrease as a result of the completion of certain upgrades. In contrast, the continuing resolution provided a $50 million-increase over FY06 funding (which was $59.5 million over the FY2007 budget request). According to *Securing the Bomb 2006* (Project on Managing the Atom at Harvard University), by the end of FY2005, rapid security upgrades had been completed on 64% of buildings containing fissile material in the former Soviet Union.

This program secures fissile material, nuclear warheads, and expertise in Russia and other states of the former Soviet Union. It contains funding for implementing measures agreed to at the Bratislava meetings in February 2005 where Presidents Bush and Putin "agreed to a number of nuclear security initiatives to accelerate Russian-U.S. cooperative efforts."

Much of the funding in this program, $119.3 million, will go towards the Second Line of Defense and the Megaports initiatives to install monitoring systems on Russian borders and at major ports worldwide, including the Port of Hong Kong in FY2008, in an attempt to monitor potential smuggling of nuclear material. Securing ports worldwide has been one of the Administration's chief priorities on non-proliferation, and a significant portion of the funding under International Nuclear Materials Protection and Cooperation had been allocated for this purpose in recent years. However, funding for this subprogram has also been

decreased this year (-$4.7 million compared to the FY2007 budget request of $124 million). Projected funding in the outyears show increases between FY2009 to FY 2012 from $217.7 million to $249.6 million.

The International Nuclear Materials Protection and Cooperation program — and specifically securing material at the source — are important to prevent smuggling of nuclear material. Given the limited funds, the likelihood of successfully securing or disposing of the material at the site of origin is greater than successfully tracking and intercepting the material if it is diverted.

Global Threat Reduction Initiative (GTRI): $119.6 million (up from $115.5 million appropriated in the continuing resolution which itself was an increase compared to the FY06 appropriation of $97 million and the FY2007 budget request of $106.8 million).

This request is a small increase over FY2007 appropriations and will be used to "accelerate high value near term threat reduction components" of the program.

- This program secures vulnerable nuclear material around the world, by providing for: the conversion of research reactor cores using high-enriched uranium to low-enriched uranium ($31.2 million) (Reduced Enrichment for Research Test Reactors – RERTR)
- DOE is completing the test for the higher-density LEU fuel but these tests have failed to yield the expected results and the high-density fuel must likely be redeveloped.
- for the return US-origin research reactor spent fuel ($4.2 million)
- for the return to Russia of Russian-origin highly-enriched uranium ($31 million)
- for US radiological threat reduction which includes securing US radiological sources in the United States and providing for the return of US-origin radiological sources from overseas to reduce the threat of dirty bomb material being stolen or diverted ($13.2 million)
- for international radiological threat reduction which includes securing orphan international radiological sources to reduce the risk of dirty bomb material being vulnerable to theft or diversion ($6 million – a third of the funding request compared to FY2007 request of $18.3 million and four times less that FY2006 request of $23.9 million) – DOE has explained this significant decrease in funding as a result of this subprogram being of low priority.
- for safe and secure storage of plutonium in spent fuel from a fast breeder reactor in Kazakhstan ($31.7 million) – this increase in funds from the $3.9 FY2007 request reflects DOE's plan to complete 50% of transportation/storage cask production that will enable the transportation of the fuel to either Semipalatinsk in Kazakhstan or possibly (depending on the outcome of discussions) to Russia. This assistance is part of a 1997 US agreement with Kazakhstan; the fuel is currently in storage containers but the United States had promised to transport the material as part of the agreement.
- for identifying emerging threats and securing gap material which includes securing materials not covered by the other programs such as separated plutonium and non-US and non-Russian-origin HEU ($1.7 million). This funding is low considering the amount of material that should be taken into account and secured, which is currently not taken into consideration under existing programs.

Russian Plutonium Disposition: $0 (down from $34.2 million appropriated in the FY2007 continuing resolution and FY2007 budget request $34.7 million)

The reason for no funding request in FY2008 is that the prior year's funding was not spent and will be carried over to FY2008. Failure to make progress is due to liability disagreements between the United States and Russia about implementing the plutonium disposition. Despite announcements that the liability disagreements had been resolved, no further progress has been made on nearing completion of this project. This program has operated in conjunction with plans for the US MOX facility and has been delayed in the past.

Elimination of Russian Weapon-Grade Plutonium Production: $181.6 million (compared to $174.4 million appropriated in FY 2006 and FY2007 budget request of $206.7 million)

This funding was provided for shutting down the plutonium producing reactor at Seversk (completion planned for December 2008) and at Zheleznogorsk (completion planned for December 2010). The funding assists Russia to shut down and replace these two plutonium-producing power plants by modernizing and building fossil fuel power plants to provide the needed electricity and heat.

Non-Proliferation and International Security: **$124.8 million** (up from $74 million provided in the FY2007 continuing resolution and a decrease from the FY2007 budget request of $127.4 million)

As of FY2007, this program includes funding ($20.2 million in FY2008 request down from $28.1 million in FY2007 request) for redirecting former nuclear weapon scientists in countries of the former Soviet Union, Libya and Iraq (now the Global Initiatives for Proliferation Prevention, and previously under the Nuclear Cities Initiative which was terminated). Most of the requested funding will go to states of the former Soviet Union. According to *Securing the Bomb 2006*, by the end of FY2005 85% of key nuclear weapons scientists were given short-term grants but only 35% of excess weapons scientists/workers were provided sustainable civilian work.

(The increase in funding request from FY2006 to FY2007 and FY2008 reflects a reorganization of programs and of activities that were previously included under other programs.)

Non-Proliferation and International Security more generally includes supporting export control measures and giving technical and policy advice during treaty and agreement negotiations. It also supports progress on other transparency measures, such as those related to HEU conversion to LEU.

Nonproliferation and Verification Research and Development: $265.3 million (a decrease from the $318.8 million provided in FY2007 continuing resolution and from the FY2007 request of $268.9 million)

This program includes proliferation detection, explosion monitoring, treaty monitoring and other activities. It also includes funding for supporting the development of the Global Nuclear Energy Partnership (GNEP) (including safeguards, proliferation risk assessments, and concept development).

US Highly-Enriched Uranium (HEU) Conversion: $66.8 million (a decrease from $91.5 million provided in the FY2007 continuing resolution and the FY2007 budget request of $86.9 million).

This funding provides for the blend-down of surplus US highly-enriched uranium (HEU) to low-enriched uranium (LEU). The removal and down-blending of HEU will enable the decommissioning of the Y-12 facility. This program also downblends HEU to LEU for use in foreign research reactor fuel as part of the RERTR program and ships HEU metal for use on the Tennessee Valley Authority nuclear reactors.

US HEU Conversion is part of the US Surplus Fissile Materials Disposition.

MOX Fuel Fabrication Facility Construction: **$393.8 million** (up from stipulation in FY2007 continuing resolution of $0 until August 1, 2007, and compared to $241.6 million in FY06 and FY2007 budget request $368.2 million)

The Mixed Oxide (MOX) facility is to be built at Savannah River Site, SC to convert US warhead plutonium to mixed oxide (MOX) fuel for consumption in two commercial reactors.

The US MOX program is linked to the construction of a MOX facility in Russia. Liability disagreements (related to liability of US workers and contractors) have caused significant delays in this program in Russia, which in turn resulted in delays in the US program and unspent appropriations from previous years. DOE anticipates needing additional equipment for construction of the MOX facility and is preparing to award construction contracts for support buildings in late FY2008. In recent years, skepticism has characterized the House Energy & Water Appropriations' view of this program while the program enjoys strong support from Sen. Pete Domenici in the Senate.

This program is part of the US Surplus Fissile Materials Disposition.

Commercial Spent Fuel Reprocessing and Transmutation

Spent Fuel Reprocessing and the Global Nuclear Energy Partnership (GNEP) (including Advanced Fuel Cycle Initiative): **$405 million** (up from $121 million under the FY2007 continuing resolution which provided $80 million and an additional $41 million provided to the overall Energy Supply & Conservation account; and up from the FY2007 budget request of $250 million)

The Administration is requesting $405 million, more than triple the funding received in FY 2007 and almost double the FY2007 request. Most of the funding —$395 million— would be applied to the Advanced Fuel Cycle Initiative within Nuclear Energy which conducts research and development on reprocessing (separating plutonium and actinides from spent fuel) and transmutation (using the separated material as fuel in fast reactors). The funding will support acceleration of reprocessing plans and preparation for building reprocessing and fast reactor demonstration facilities. Since unveiling the program a year ago, DOE has proposed at least four different version of its plan to reprocess spent fuel.

The funding will also be used for collaboration with countries that reprocess (including Japan). The other $10 million comes from the Program Direction account within Nuclear Energy (for salaries) and from the NNSA Non-Proliferation and International Security account (for safeguards work related to the proposed demonstration facilities, and for supporting collaboration with other reprocessing countries).

DOE unveiled its Global Nuclear Energy Partnership at its FY2007 budget release, claiming the program would help minimize nuclear waste, decrease the proliferation risk, and allow the significant expansion of nuclear energy globally. GNEP is increasingly being presented as one of the Administration's main non-proliferation even though it would produce material that could be used or readily adapted for use in nuclear weapons. By seeking significant funding and resources for GNEP, DOE is also shifting focus away from non-proliferation programs including securing nuclear weapon-grade material at the source in Russia and former Soviet Union states. This initiative reverses a thirty-year policy of refraining from US commercial spent fuel reprocessing because of proliferation and economic considerations. While GNEP also envisions creating an international fuel bank to limit the proliferation of uranium enrichment technology, almost all funding for GNEP-related programs is marked for reprocessing and transmutation.

Last year, the House Energy & Water Appropriations Committee cut the funding by more than half, to $120 million. Skepticism from key lawmakers including the House Energy & Water Committee's Reps. Peter Visclosky (D-IN) and David Hobson (R-OH) about DOE's proposed plan led to the proposed cut in funding (ultimately, the FY2007 continuing resolution provided added $41 million to the Energy Supply & Conservation account bringing the funding that could be used for reprocessing to this $120 million level). In the Senate, Sen. Pete Domenici (R-NM) is a strong supporter of the program.

Weapons Activities

Complex 2030: No funds are allocated specifically just for Complex 2030. Instead implementation actions that contribute to the Complex 2030 plan are incorporated into existing program requests. Several programs received increased funding to reflect the priorities of Complex 2030. The DOE budget states that "Additional out year funding associated with the Complex 2030 initiative is still under evaluation and is not addressed in this budget request."

Complex 2030 proposes to overhaul the nuclear weapons complex by modernizing the complex, consolidating fissile material at fewer locations, and investing in the development of new nuclear weapons. DOE estimates that Complex 2030 will cost $150 billion over 25 years (excluding the cost of future decommissioning and environmental remediation).

The programs that are part of the Complex 2030 plan include: Directed Stockpile Work (DSW), Campaigns, Readiness in Technical Base and Facilities (RTBF), and Secure Transportation Asset.

The Directed Stockpile Work (DSW): $1.45 million (up from $1.3 billion in FY2007 continuing resolution and FY2007 budget request of $1.4 billion)

This program conducts, maintains and refurbishes nuclear warheads so "that the nuclear warheads and bombs in the United States nuclear weapons stockpile are safe, secure, and reliable." This program includes the Reliable Replacement Warhead (RRW) program (to design and develop a new type of nuclear weapon), Life Extension Programs (LEPs) (to extend the life of two nuclear weapon types, the B61 and the W76), Stockpile Systems (which ensures that the weapon types in the stockpile are safe and reliable), Weapons Dismantlement and Disposition (which fulfills the US commitment to retire and dismantling/disposing of retired weapons and weapon components), and Stockpile Services(which contributes to research, development and production support capabilities). The NNSA is laying the foundation for shifting its focus from the Life Extension program to the RRW program.

Pit Manufacturing and Certification Campaign: **$281.2 million** (up from the $238.7 million appropriated in the FY2007 CR and FY2007 budget request of $237.6 million)

This program is aimed at making and certifying W88 pits by FY2007. In addition, it provides the capability to manufacture replacement pits other than the W88 and to improve manufacturing processes. It is an interim pit manufacturing capability that is being re-established at Los Alamos National Laboratories. It also includes the Consolidated Plutonium Center project.

The increase in funding reflects an "accelerated development of pit technology to support legacy pit types or Reliable Replacement (RRW) pit manufacture and other Project Costs for the Consolidated Plutonium Center project." Several of the activities for which funding was denied previously by Congress are now being pursued as part of the Complex 2030 plan.

Modern Pit Facility: $0 (neither the FY2007 nor the FY2008 budget request included any funds. Congress did not fund the FY06 request)

Last year, DOE was waiting to request funding for such activities until it established a plan for the infrastructure and obtained the results of the plutonium aging studies, suggesting that the money would be requested in the FY2008 budget. While the National Laboratories study noted that the plutonium pits would be reliable for at least another 85 years, the Department of Energy is continuing to push for its $150 billion Complex 2030 plan and the Reliable Replacement Warhead program to build a new generation of nuclear weapons. Several of the activities proposed for the Modern Pit Facility are being addressed under the Complex 2030 proposal.

National Ignition Facility: $10.1 million (down from the $140.5 million appropriated in FY2007 continuing resolution and the FY2007 budget request: $111.4 million)

The NIF Project located at Lawrence Livermore National Laboratories is a stadium-sized 192-beam facility containing the world's largest laser. The laser experiments to "create and measure extreme conditions of temperature, pressure, and radiation, including thermonuclear burn conditions; approaching those in a nuclear explosion, and conduct weapons-related research in these environments" will assist scientists to validate computer models that predict age-related effects on the US nuclear stockpile. The first experiments at the NIF are expected in FY2010. The decrease in funding is a result of the completion of the NIF expected in 2009, nine years after work began. No construction funding requests are projected in the outyears after FY2008.

Reliable Replacement Warhead (RRW) program: $118.8 million (up from $24.8 million appropriated in FY2007 continuing resolution and FY2007 budget request of $27.7 million)

The RRW funding request is almost five times the amount requested in FY 2007 and appropriated in FY2006 and FY 2007. The $118.8 million total request includes a request of $88.8 million in the NNSA budget request and a request of $30 million in the Department of Defense budget request (request detailed in the Navy Research Development Test & Evaluation R-2 budget document). For the first time, part of the RRW funding is being requested in the DOD budget request, in addition to the NNSA budget request.

The significant increase in funds reflects DOE's plan to start the next development phase (phase 2A design definition and cost study) as the Nuclear Weapons Council (NWC) approved the study of possible RRW designs. The initial design proposal competition from the Los Alamos and Livermore National Nuclear Laboratories resulted in the National Nuclear Security Administration deciding to combine elements of the two designs. The 18-month study was to redesign the W76. The next phase, pending a NWC decision, will be engineering and production development, reflected in the increased outyears projected funding.

The stated goal of the RRW program is to decrease the chances of a need to return to testing and to increase the reliability of the arsenal. In 2006 both Senate and House Committees supported funding increases to the RRW program. However, undermining a significant reason for the proposal to design and develop new nuclear weapons, a report by the National Laboratories released in December 2006 stated that the plutonium pits would remain safe and reliable for at least 85 years, confirming that the existing stockpile remains safe and reliable.

The projected out year funding for the RRW in the NNSA budget request and in the DOD budget request is:

	FY2009	FY2010	FY2011	FY2012
Projected funding request	$99.8 million (NNSA) + $50 million (Navy)	$109.2 million (NNSA) $0 (DOD)	$167.4 million (NNSA) $0 (DOD	$179.9 million (NNSA) $0 (DOD)

The RRW program is part of the Directed Stockpile Work (DSW) within NNSA.

Robust Nuclear Earth Penetrator (RNEP): ($0) DOE did not request any money for the Robust Nuclear Earth Penetrator (RNEP) for FY2007 or FY2008. In 2006, NNSA stated that it had no intent of asking for any funding for the RNEP research in the next five years. Congress, and notably the House Energy & Water Appropriations Subcommittee chaired by Rep. Hobson, had cut all funding for nuclear bunker buster research in FY05 and FY06.

Life Extension Program (LEP): **$238.7 million** (down from $317.7 million appropriated in the FY2007 continuing resolution and FY2007 budget request of $312.7 million)

NNSA has justified this decrease in funding as a result of the W80 LEP being terminated.

Stockpile Services: **$720.8 million** (up from $669.7 appropriated in the FY2007 continuing resolution and FY2007 budget request of $669.4 million)

This increase in funding reflects the cost of producing components for two LEPs added to the cost of implementing the Complex 2030 plan.

Weapons Dismantlement and Disposition: $52.25 million (down from $59.4 million in FY2007 continuing resolution and FY2007 budget request of $75 million)

The funding provides for dismantlement, characterization of components, and disposal of retired warheads at Pantex. The Weapons Dismantlement and Disposition program is part of the Directed Stockpile Work.

Test Site Readiness: $0 (down from the $19.8 million appropriated in the FY2007 continuing resolution and from the FY2007 budget request of $14.8 million)

In FY2007, test site readiness was being reviewed and new approaches to test readiness are being examined. No funding is requested for FY 2008, but will resume in FY2009. The projected funding from FY2009 to FY2012 includes $11 million for each year. The Center for Arms Control and Non-Proliferation has not yet been able to ascertain why the funding for FY2008 was zeroed out.

(Previously, DOE sought increased funding to reduce the test readiness to 18 months at the Nevada Test Site in FY 2005 and FY 2006 but Congress has refused to allow a reduction in time from 24 months to 18 months.) Test Site Readiness funding is used for maintaining the readiness of personnel, equipment and infrastructure to be able to prepare and resume underground testing, if mandated, within 24 months.

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