U.S. DEPARTMENT OF ENERGY

Excess Uranium Inventory Management Plan

Report to Congress
July 2013

United States Department of Energy
Washington, DC 20585

Message from the Secretary

The Department of Energy is submitting a report required by section 312(c) of the Consolidated Appropriations Act, 2012 (Public Law 112-74, div B, tit. III), concerning an update to the Department's 2008 Excess Uranium Inventory Management Plan.

This report is a revised Excess Uranium Inventory Management Plan, containing updated information regarding the Department's excess uranium inventories and its plans for the material contained in those inventories.

This report is being provided to the following members of Congress:

- **The Honorable Barbara Mikulski**

Chairwoman, Senate Committee on Appropriations

- **The Honorable Richard C. Shelby**

Ranking Member, Senate Committee on Appropriations

- **The Honorable Harold Rogers**

Chairman, House Committee on Appropriations

- **The Honorable Nita M. Lowey**

Ranking Member, House Committee on Appropriations

- **The Honorable Dianne Feinstein**

Chairman, Subcommittee on Energy and Water Development
Senate Committee on Appropriations

- **The Honorable Lamar Alexander**

Ranking Member, Subcommittee on Energy and Water Development
Senate Committee on Appropriations

- **The Honorable Rodney P. Frelinghuysen**

Chairman, Subcommittee on Energy and Water Development
House Committee on Appropriations

- **The Honorable Marcy Kaptur**

Ranking Member, Subcommittee on Energy and Water Development
House Committee on Appropriations

- **The Honorable Ron Wyden**

Chairman, Senate Committee on Energy and Natural Resources

- **The Honorable Lisa Murkowski**

Ranking Member, Senate Committee on Energy and Natural Resources

- **The Honorable Al Franken**

Chairman, Subcommittee on Energy
Senate Committee on Energy and Natural Resources

- **The Honorable James E. Risch**

Ranking Member, Subcommittee on Energy
Senate Committee on Energy and Natural Resources

- **The Honorable Fred Upton**

Chairman, House Committee on Energy and Commerce

- **The Honorable Henry Waxman**

Ranking Member, House Committee on Energy and Commerce

- **The Honorable Ed Whitfield**

Chairman, Subcommittee on Energy and Power
House Committee on Energy and Commerce

- **The Honorable Bobby L. Rush**

Ranking Member, Subcommittee on Energy and Power
House Committee on Energy and Commerce

Sincerely,

Ernest J. Moniz

Executive Summary

The Department of Energy (DOE) holds inventories of uranium in various forms and qualities, including highly enriched uranium (HEU), low-enriched uranium (LEU), natural uranium (NU), and depleted uranium (DU), that are currently held as excess and not dedicated to U.S. national security missions. Much of this uranium has potential value that could play a role in achieving vital DOE programmatic missions.

The Office of Nuclear Energy, the Office of Environmental Management, and the National Nuclear Security Administration (NNSA) are the organizations within DOE that coordinate the management of these excess uranium inventories. On December 16, 2008, DOE issued its Excess Uranium Inventory Management Plan (2008 Plan), setting forth possible uses for these inventories. This updated Excess Uranium Inventory Management Plan (2013 Plan) replaces the 2008 Plan and reflects updated and evolving information, programs, and mission needs, including additions to and deletions from the inventory and changes to DOE's uranium management strategy.

The 2013 Plan identifies uranium inventories that have entered the commercial uranium market since the issuance of the 2008 Plan, as well as transactions that are ongoing or being considered by DOE through Calendar Year (CY) 2018. The 2013 Plan's objectives include providing current information and enhanced transparency to the general public and interested stakeholders regarding the management of DOE's potentially marketable uranium. The planned and prospective sales or transfers of uranium into the commercial market identified in 2013 Plan reflect current and reasonably foreseeable DOE mission needs. The ongoing strategies, plans, and prospective actions in this Plan are not commitments to specific activities on the part of DOE beyond those that have already been contracted nor are they restrictions on actions that may be required in the future as a result of changing conditions, and all future actions will follow applicable legal requirements. DOE anticipates periodically updating the Plan, as necessary, to reflect new and evolving information, policies, and programs.

The Department complies with the requirement in Section 3112(d) of the United States Enrichment Corporation (USEC) Privatization Act, when applicable, to ensure that prior to covered sales or transfers of natural or enriched uranium, the Secretary of Energy determines that those transfers will not have an adverse material impact on the domestic uranium mining, conversion, or enrichment industry (Secretarial Determination).

Several Secretarial Determinations have been made in advance of sales or transfers of uranium undertaken by DOE since 2008 to further programmatic interests. Each determination found that the introduction of a specified quantity of DOE excess uranium into the commercial market would not have an adverse material impact on the covered domestic industries. A Secretarial Determination for the sale or transfer of natural or enriched uranium, issued May 15, 2012 (May 2012 Determination), covers transfers that are planned or under consideration by the

Department through 2021.[1] The May 2012 Determination specifically considered the potential impact on the domestic uranium market from the following potential transactions:

1. Up to 9,082 metric tons uranium (MTU) of DU transferred to Energy Northwest (ENW) in CYs 2012 and 2013, which would be followed immediately by enrichment to LEU (equivalent to 482 MTU). ENW would use a portion of the LEU to fuel its power reactor. The remaining LEU would be sold as LEU, or in its component parts as NU and separative work units, to the Tennessee Valley Authority as part of a commercial transaction to support future power generation and tritium production from 2013 through 2030, thereby serving national security purposes.

2. Up to 2,400 MTU per year of NU transferred to DOE contractors for cleanup services at gaseous diffusion plant sites (at Paducah, Kentucky, or Portsmouth, Ohio). These would take place in quarterly transfers of up to 600 MTU for the period 2012 through 2021.

3. Up to 400 MTU NU equivalent per year contained in LEU transferred to NNSA contractors for down-blending HEU to LEU for the period 2012 through 2020.

The May 2012 Determination addresses the market impact of transferring specific quantities and types of DOE's excess uranium inventories through 2021. Under Section 312(a) of the Consolidated Appropriations Act, 2012, determinations by the Secretary pursuant to Section 3112(d)(2)(B) of the USEC Privatization Act remain valid for only two calendar years from the date of issuance. Thus, the Department anticipates revisiting the potential market impact for transfers of uranium, covered under Section 3112(d)(2)(B) of the USEC Privatization Act, every two years if it seeks to continue the covered transfers.

[1] A more recent Secretarial Determination, dated March 15, 2013, covers a one-time transaction whereby DOE provided USEC with 47.6 MTU of LEU and received in return from USEC the value of the 299,000 SWU, the enrichment component of the LEU, which was applied to the government cost share in the 2012 Cooperative Agreement Between DOE, USEC, and ACD Concerning the American Centrifuge Cascade Demonstration Test Program, and approximately 409 MTU of the natural uranium equivalent to the feed component of the LEU.

EXCESS URANIUM INVENTORY MANAGEMENT PLAN

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ACRONYMS

AFS	Assured Fuel Supply
CY	calendar year
DOE	Department of Energy
DU	depleted uranium
DUF_4	depleted uranium tetrafluoride
DUF_6	depleted uranium hexafluoride
EM	Office of Environmental Management
ENW	Energy Northwest
FY	fiscal year
GDP	Gaseous Diffusion Plant
HEU	highly enriched uranium
LEU	low-enriched uranium
MOX	mixed oxide
MT	metric tons
MTU	metric tons uranium
NNSA	National Nuclear Security Administration
NU	natural uranium
SWU	separative work unit
TVA	Tennessee Valley Authority
UF_4	uranium tetrafluoride
UF_6	uranium hexafluoride
UO_2	uranium oxide
USEC	United States Enrichment Corporation

I. LEGISLATIVE LANGUAGE

This report responds to legislative language set forth in Consolidated Appropriations Act, 2012 (Public Law 112-74, div. B, tit. III), Section 312 (c), wherein it is stated:

> *"(c) Not later than June 30, 2012, the Secretary shall submit to the House and Senate Committees on Appropriations a revised excess uranium inventory management plan for fiscal years 2013 through 2018."*

II. INTRODUCTION

Uranium Inventory Management Principles and Objectives

This Excess Uranium Inventory Management Plan (2013 Plan) seeks to provide the public and interested stakeholders more specific information and enhanced transparency regarding Department of Energy (DOE) management of potentially marketable uranium inventories. The Office of Nuclear Energy, the Office of Environmental Management (EM), and the National Nuclear Security Administration (NNSA) are the organizations within DOE that coordinate the management of these inventories, which exist in the forms of highly enriched uranium (HEU), low-enriched uranium (LEU), natural uranium (NU) in the form of uranium hexafluoride (UF_6), and depleted uranium hexafluoride (DUF_6). The Department has prepared the 2013 Plan to replace the *Department of Energy Excess Uranium Inventory Management Plan* (DOE 2008; hereinafter referred to as the 2008 Plan) and to reflect updated and evolving information, programs, and mission needs since the 2008 Plan was issued. The 2013 Plan identifies uranium inventories that have entered the uranium market since the 2008 Plan and those anticipated to potentially enter the market through the end of Calendar Year (CY) 2018. Among the changes described in the 2013 Plan are additions to and deletions from the inventory and changes to DOE's uranium management strategy.

On December 16, 2008, the Department released the 2008 Plan, providing information about transactions planned or under consideration by the Department for the disposition of its excess uranium consistent. The Department is committed to managing excess inventories in a manner that:

1. Is consistent with all applicable legal requirements,

2. Maintains sufficient uranium inventories to meet the current and reasonably foreseeable needs of DOE missions,

3. Undertakes transactions involving non-U.S. Government entities in a transparent and competitive manner, and

4. Is consistent with and supportive of the maintenance of a strong domestic uranium industry.

The 2008 Plan included reference to a Departmental guideline that, as a general matter, the introduction into the domestic market of uranium from Departmental inventories in amounts that do not exceed 10 percent of the total annual fuel requirements of all nuclear power plants should not have an adverse material impact on the domestic uranium mining, conversion, or enrichment industry.[2] The 2008 Plan noted that the Department might introduce into the domestic market, in any given year, less than that amount, or, in some years for certain special purposes such as the provision of initial core loads for new reactors, more than that amount. Based on experience gained since issuance of the 2008 Plan[3], including in particular the market impact analysis that supported the May 15, 2012 Secretarial Determination (the May 2012 Determination), the Department has determined that it can meet its statutory and policy objectives in regard to DOE uranium sales or transfers without an established guideline. In addition, as discussed below, decisions to introduce uranium into the market pursuant to section 3112(d) must be reviewed every two years. Accordingly, the 10 percent guideline will no longer be used.

The Department remains committed to the maintenance of a strong domestic uranium industry and will conduct uranium transactions, where applicable, in accordance with Section 3112(d) of the United States Enrichment Corporation (USEC) Privatization Act (Public Law 104-134), which states that sales or transfers of natural or LEU from DOE's stockpile must meet the following criteria:

1. The President determines the material is not necessary for national security needs;

2. The Secretary determines that the sale of the material will not have an adverse material impact on the domestic uranium mining, conversion, or enrichment industry, taking into account the sales of uranium under the Russian HEU Agreement, and the Suspension Agreement; and

3. The price paid to the Secretary will not be less than the fair market value of the material.

Section 3112(d) of the USEC Privatization Act only covers transfers of natural or enriched uranium, but the Department also considers and analyzes the potential market impacts of transactions involving DUF_6 and structures those transactions to mitigate any significant impact on the domestic uranium mining, conversion, or enrichment industry.

Further, Section 312(a) of the Consolidated Appropriations Act, 2012 provides that all determinations pursuant to Section 3112(d)(2)(B) are only valid for two calendar years. Thus, the Department will revisit its analyses of market impacts and issue new Determinations every

[2] Even with this guideline, any transfer subject to section 3112(d) of the USEC Privatization Act still underwent a market impact analysis to ensure there was no adverse material impact.

[3] Subsequent to issuance of the 2008 Plan, in 2009 the Department issued its "Finding of No Significant Impact: Disposition of DOE Excess Depleted Uranium, Natural Uranium, and Low Enriched Uranium." 74 Fed. Reg. 31420 (July 1, 2009); DOE/EA-1607. In the mitigation action plan (MAP) of that finding, DOE determined that any potentially significant impacts on the domestic uranium industry from the sale or transfer of depleted uranium could addressed by conducting a market impact analysis similar to those conducted in accordance with section 3112(d) and, if necessary, adjusting sales or transfers to avoid or mitigate any potentially significant impacts.

two years for transfers covered under Section 3112(d) if it seeks to continue the covered transactions. As in the past, the Department's analysis of potential market impacts under Section 3112(d) will account for all Departmental uranium sales or transfers into the market in the relevant period – including any that may fall outside of Section 3112(d) – to determine potential market impacts. Taken together, these legal requirements and actions by the Department protect the interests of the domestic uranium industry in an effective and reasonable manner while providing the Department with the necessary flexibility to meet its programmatic needs and responsibilities. Lastly, any updates to the 2013 Plan, May 2012 Determination, or any subsequent Secretarial Determinations required by Section 312(a) of Consolidated Appropriations Act, 2012, would provide the public and the domestic uranium industry with information and transparency regarding the Department's planned uranium sales or transfers.

Changing Departmental priorities may require changes to plans or schedules for sale or transfer of uranium that cannot be anticipated at this time. This includes the possibility that uranium that is now directed to national security needs might be declared to be excess and, conversely, that uranium now considered to be excess might be redirected to national security needs. Although the focus of this Plan includes those transactions being considered by the Department through CY 2018, the final disposition of DOE's excess uranium inventories could take at least 20 years when all inventories are considered.

The May 2012 Determination (Appendix A) effectively sets forth uranium transfers being considered during the time span of this Plan. Any additional transfers will be evaluated separately using the same requirements described in this Plan.[4] The May 2012 Determination specifically considered the following potential transfers:

1. Up to 9,082 metric tons uranium (MTU) of DUF_6 to Energy Northwest (ENW) in CYs 2012 and 2013, which would be immediately followed by enrichment to LEU equivalent to 482 MTU, with ENW utilizing a portion of the LEU for fueling the nuclear power reactor it operates. The remaining LEU would be sold as LEU or, in its component parts, as NU and separative work units (SWUs) to the Tennessee Valley Authority (TVA) as part of a commercial transaction to support future power generation and tritium production from 2013 through 2030, thereby serving national security purposes.

2. Up to 2,400 MTU per year of NU to DOE contractors as compensation for cleanup services at the Gaseous Diffusion Plant (GDP) sites at Paducah, Kentucky, or Portsmouth, Ohio, in quarterly transfers of up to 600 MTU for the period 2012 through 2021.

3. Up to 400 MTU NU equivalent per year contained in LEU transferred to NNSA contractors for down-blending HEU to LEU for the period 2012 through 2020.

[4] A more recent Secretarial Determination, dated March 15, 2013, covering a one-time transaction resulting in the transfer of 299,000 SWU, the enrichment component of 47.6 MTU of LEU, is described below.

DOE Uranium Inventories as of December 31, 2012

The scope of this Plan covers DOE uranium currently held as excess in various forms and qualities, including HEU, LEU, NU, and high-assay DUF_6 (defined for purposes of this Plan as DUF_6 with an assay greater than 0.34% ^{235}U but less than 0.711% ^{235}U[5]) that have the potential to enter the commercial uranium market. (For purposes of this report, the term "uranium inventory" means that uranium currently held by DOE as excess and not dedicated to national security missions.) Table 1 summarizes the Department's uranium inventory as of December 31, 2012.

Table 1. Overview of Uranium Inventories Included in the 2013 Plan, as of December 31, 2012

Inventory	Enrichment Level	MTU	NU Equivalent Million lbs. U_3O_8	NU Equivalent MTU
Unallocated Uranium Derived from U.S. HEU Inventory	HEU/LEU	18.0	8.8	3,394†
Allocated Uranium Derived from U.S. HEU Inventory	HEU/LEU	11.4	5.4	2,077†
LEU	LEU	47.6	1.1	409
U.S.-Origin NU as UF_6	NU	5,234	13.6	5,234
Russian-Origin NU as UF_6	NU	7,705	20.0	7,705
Off-spec LEU as UF_6	LEU	1,106	4.9	1,876
Off-spec Non-UF_6	NU/LEU	221	1.6	600
DUF_6*	DU	114,000	65-90	25,000-35,000

† The NU equivalent shown for HEU is the equivalent NU within the LEU derived from this HEU, most of which will be retained by DOE in the timeframe under consideration herein. This table includes LEU down-blended from HEU and HEU that is to be down-blended or that is in the process of being down-blended.

* DUF_6 quantity is based on uranium inventories with assays greater than 0.34% ^{235}U but less than 0.711% ^{235}U. The amount of NU equivalent is subject to many variables, and a large range has been shown to reflect this uncertainty. DOE has additional DUF_6 inventory that is equal to or less than 0.34% ^{235}U that is not reported in this Table.

Changes from 2008 Plan

Table 2 represents annual snapshots of the Department's uranium inventory, as published in the 2008 Plan (through Fiscal Year [FY] 2008), and at the end of CYs 2009, 2010, and 2011. The

[5] Additional DUF_6 inventory below 0.34% ^{235}U that may be considered for entry into the commercial uranium market.

changes within each inventory class reflect updated information and evolving programmatic mission needs.

Table 2. Overview of Annual Uranium Inventory Levels (FY 2008, end CYs 2009-2011)

Inventory	Enrichment Level	2008 Plan MTU (FY 2008)	CY 2009 MTU	CY 2010 MTU	CY 2011 MTU
Unallocated Uranium Derived from U.S. HEU	HEU/LEU	67.6	44.0	34.3	20.4
Allocated Uranium Derived from U.S. HEU	HEU/LEU	47.7	22.0	18.0	13.4
LEU added in CY 2012*	LEU	0	0	0	0
U.S.-Origin NU as UF_6**	NU	5,156	5,137	5,137	5,195
Russian-Origin NU as UF_6	NU	12,440	12,238	11,317	9,715
Off-spec LEU as UF_6	LEU	NA	1,104	1,106	1,106
Off-spec Non-UF_6	DU/NU/LEU	4,461.0	3,133	2,099	221
DUF_6***	DU	75,300	123,000	123,000	123,000

*The LEU was added to DOE's inventory in CY 2012 as shown in Table 1.

** The volume of U.S.-origin NU as UF_6 has increased slightly since the 2008 Plan by taking into account additional uranium contained in certain cylinders received in exchange from USEC for DOE NU cylinders previously not listed in the 2008 Plan due to being rejected cylinders.

*** DUF_6 at 0.35% ^{235}U in 2008 Plan; subsequent volume of DUF_6 is at 0.34% ^{235}U. All DUF_6 is less than 0.711% ^{235}U. There is additional available DUF_6 inventory that is equal to or less than 0.34%^{235}U that is not reported in this Table.

Transactions that have taken place since the 2008 Plan include:

- Quarterly transfers of Russian-origin NU in exchange for accelerated cleanup services at the Portsmouth GDP site at Piketon, Ohio, covered by a November 10, 2009 Secretarial Determination, totaled 1,123 MTU through the end of CY 2010.

- Continued quarterly transfers of Russian-origin NU, covered by a March 2, 2011 Secretarial Determination to fund continued accelerated cleanup activities at Portsmouth, totaled 1,600 MTU during CY 2011. An additional 1,601 MTU of Russian-origin NU was transferred during CY 2012 for cleanup activities.

- NNSA continued the down-blending of allocated HEU to meet the Department's nonproliferation objectives. Specifically, NNSA down-blended all of the 17 MTU of HEU under the American Assured Fuel Supply (AFS) project; 6 MTU of the 12 MTU HEU under its mixed uranium and plutonium oxide (MOX) backup LEU project; and all of the off-

specification (off-spec) HEU under the TVA Off-specification Fuel and H-Canyon EU Disposition programs. Since 2008 NNSA also increased the allocation of HEU to meet research reactor LEU requirements by nearly 17 MTU (this LEU, at 19.75% ^{235}U, is not considered part of the commercial market). The quantity of HEU that NNSA plans to down-blend also decreased due to a reduction in the amount of HEU coming from the Naval Reactors program for down-blending, and a decrease in the amount of off-spec HEU planned for processing through the H-Canyon at Savannah River.

- DOE entered into an agreement with ENW in May 2012 to transfer DUF_6 to ENW as part of a series of interrelated agreements also referred to as the Depleted Uranium (DU) Enrichment Project. The agreement provides that DOE will transfer 9,082 MTU of DUF_6 to ENW by April 30, 2013.

- DOE added 47.6 metric tons (MT) of LEU to its inventory in early 2012. This LEU resulted from DOE's March 13, 2012 procurement of approximately 299,000 SWU from USEC. DOE provided USEC with 409 MT of Russian-origin NU as feedstock for the enrichment, took title to, and eventual disposal responsibility for, a quantity of USEC's DU tails as payment for the SWU, and received the 47.6 MT of LEU in return. In March 2013, DOE transferred 299,000 SWU (the enrichment component of this LEU) to USEC and American Centrifuge Demonstration, LLC (ACD, a USEC subsidiary) as part of the government cost share in the 2012 Cooperative Agreement Between DOE, USEC, and ACD Concerning the American Centrifuge Cascade Demonstration Test Program. After a March 15, 2013 Secretarial Determination that the transfer of the SWU component of the LEU would not have an adverse material impact on the domestic uranium mining, conversion, or enrichment industry, DOE provided USEC with the LEU and received in return from USEC the value of the SWU component of the LEU, which was applied to the cooperative agreement, and approximately 409 MTU of the natural uranium equivalent to the feed component of the LEU.

The following events have also led to adjustments to the quantities of material in the Department's inventories that would require further processing, or that have been determined to be waste after evaluation:

- In the 2008 Plan, DOE reported approximately 4,461 MTU of off-spec material at the Portsmouth GDP site. EM determined that selling certain off-spec non-UF_6 uranium was not feasible and disposed of a significant amount of this material at the Nevada National Security Site during FY 2010. DOE also sold 1,183 MTU of depleted uranium tetrafluoride (DUF_4) for fluorine extraction. This material is still at DOE pending transfer to the commercial customer. The DUF_4 will not result in any uranium entering into the nuclear fuel cycle market. The DU product will be disposed of by the processor after commercial fluorine extraction. The remaining inventory is approximately 221 MTU, about 31 MTU of which has some potential commercial interest.

- In the 2008 Plan, DOE included cylinders of DUF_6 with an assay between 0.35% ^{235}U and 0.711% ^{235}U. Further review of the inventory revealed a significant amount of material

slightly below the 0.35% ^{235}U assay, which could have potential economic value if commercially enriched. The Department has added this quantity to its reported DUF_6 inventory. The Department also has additional DUF_6 inventory below 0.34%^{235}U, which may be considered for entry into the market. This decision would be based on several factors including, but not limited to, the impact on the uranium market and the economic viability of the DUF_6.

- DOE has approximately 1,106 MTU of off-spec LEU as UF_6 in storage, referenced in unspecified amounts in the 2008 Plan. DOE has since quantified the amount of this material, not previously considered to have marketable value, and included in the 2013 Plan for completeness and its potential for commercial use. Specifically, 929 MTU of the off-spec LEU is out of specification for ^{236}U, 3.5 MTU of the off-spec LEU was recovered from cleanup activities at the Portsmouth GDP, and the balance of the off-spec LEU includes various contaminants.

III. DETAILED DESCRIPTION OF URANIUM INVENTORIES

Uranium Originating from U.S. HEU

The allocated and unallocated inventories in this Plan include the inventories of LEU that have been derived from U.S. HEU inventories. In the 2008 Plan, 47.7 MTU of surplus U.S.-origin HEU was identified as allocated to specific disposition projects, and another 67.6 MTU of HEU was considered unallocated. As of December 31, 2012, DOE held 11.4 MTU of surplus HEU remaining in active disposition programs, and approximately 18.0 MTU of unallocated surplus HEU. The difference reflects both down-blending from the end of FY 2008 through December 31, 2012; allocation of 5 MTU of HEU to a follow-on to the MOX Backup LEU Inventory Program; and the reallocation of significant quantities of surplus HEU to activities that will not impact uranium markets (i.e., research reactor and naval reactor fuel supplies).

Table 3 summarizes the inventories as of the end of the FY 2008 Plan and through December 31, 2012. These inventories are explained more fully in Section IV.

U.S.-Origin NU as UF_6

As of December 31, 2012, DOE had an inventory of 5,234 MTU of U.S.-origin NU remaining from its former uranium enrichment activities. The volume of U.S.-origin NU as UF_6 has increased slightly since the 2008 Plan (5,137 MTU) due to an exchange of damaged NU cylinders with USEC during the return of the Portsmouth site. The DOE NU provided was previously evaluated as damaged cylinders and not listed as usable NU.

Russian-Origin NU as UF_6

In 1999, DOE and the Russian Federation entered into the "Agreement between the U.S. DOE and the Ministry of the Russian Federation for Atomic Energy Concerning the Transfer of Source Material to the Russian Federation," which obligated DOE to purchase approximately 11,000 MTU of NU as UF_6 from Russia. DOE purchased this uranium for $325 million, as directed by Public Law 105-277. This Russian-origin NU meets commercial nuclear fuel specifications. This material was added to DOE's existing inventory of approximately 1,079 MTU of Russian-origin NU acquired to facilitate the HEU Purchase Agreement with the Russian Federation and 361 MTU already in inventory. Through March 2011, 1,473 MTU of this material was transferred to USEC in exchange for services on accelerated cleanup work at the Portsmouth GDP. An additional, 1,250 MTU of NU was transferred to EM's cleanup contractor in exchange for services at the Portsmouth GDP site through December 31, 2011, with subsequent transfers (1,601 MTU) continuing through December 31, 2012. In March 2012, DOE procured 299,000 SWU from USEC and received 47.6 MT of U.S.-origin LEU by providing 409 MT of Russian-origin NU as feed.

Table 4 contains a summary of inventories of U.S.-and Russian-origin NU as UF_6.

Table 3. Allocated and Unallocated Uranium from HEU
(2008 Plan [end of FY 2008] and December 31, 2012 [end CY 2012])

Inventory	Enrichment Level	2008 Plan MTU	End CY 2011 MTU	End CY 2012 MTU	End CY 2012 Equivalent Million lbs. U_3O_8	End CY 2012 NU Equivalent MTU
Unallocated	HEU/LEU	67.6	20.4	18.0	8.8	3,394
Allocated to Specific Disposition Projects	HEU/LEU	47.7	13.4	11.4	5.4	2,077
Total		**115.3**	**33.8**	**29.4**	**14.2**	**5,471**

Note: The NU equivalent shown for HEU is the equivalent NU within the LEU derived from this HEU, most of which will be retained by DOE during the timeframe considered in this Plan. This table includes LEU down-blended from HEU and HEU that is to be down-blended or that is in the process of being down-blended.

Table 4. DOE Inventories of U.S. and Russian Origin Natural Uranium as UF_6
(2008 Plan [end of FY 2008] and December 31, 2012 [end CY 2012])

Inventory	Enrichment Level	2008 Plan MTU	End CY 2011 MTU	End CY 2012 MTU	End CY 2012 Equivalent Million lbs. U_3O_8	End CY 2012 NU Equivalent MTU
U.S. Origin	NU	5,156	5,195	5,234	13.6	5,234
Russian Origin	NU	12,440	9,715	7,705	20	7,705
Total NU		**17,596**	**14,910**	**12,939**	**33.6**	**12,939**

Off-spec Non-UF_6 Material and Off-spec UF_6

In the 2008 Plan, DOE reported approximately 4,461 MTU of off-spec material of various enrichments stored at the Portsmouth GDP site. A significant portion of this inventory (3,058 MTU) was dispositioned, 1,183 MTU was uranium tetrafluoride (UF_4) that was sold in October 2010 for recovery of fluorine, with a uranium oxide (UO_2) by-product to be disposed of as waste. Of the remaining 221 MTU of off-spec material, 31 MTU are currently being considered for commercial exchange or transfer on the international market (see Table 5, which summarizes off-spec uranium inventories).

DOE has identified approximately 1,106 MTU of off-spec LEU as UF_6 (1,876 MTU NU equivalent) in its inventory that were referenced in unspecified amounts in the 2008 Plan. This LEU is slightly enriched up to approximately 2% ^{235}U and may have value as feed and SWUs for further enrichment. Included in this amount is approximately 3.5 MTU NU equivalent of LEU that EM has recovered during ongoing cleanup activities at the Portsmouth GDP. The off-spec LEU also includes 929 MTU that contains ^{236}U above the specifications for commercial nuclear fuel. The remainder of the material having various level of contamination was not previously considered to have marketable value but are now included in the 2013 Plan to recognize potential commercial marketability and to provide for transparency.

Depleted Uranium as UF_6

Approximately 123,000 MTU of the Department's inventory of approximately 510,000 MT of DUF_6 at the end of CY 2011 is believed to have potential economic value for enrichment to NU levels or higher. This material is commonly referred to as high-assay tails. DOE has expanded the quantity of tails that could have potential economic value to include a large number of cylinders that contain inventories slightly below the 0.35% ^{235}U assay that are also potentially attractive for enrichment depending on tradeoffs between the market price of uranium and the cost of enrichment services. The 123,000 MTU at the end of CY 2011 includes uranium tails greater than 0.34% ^{235}U assay. As noted previously, the Department also has additional DUF_6 inventory below 0.34%^{235}U, which may be considered for entry into the market. This decision would be based on several factors including, but not limited to, the impact on the uranium market and the economic viability of the DUF_6. On May 15, 2012, DOE announced plans to transfer 9,082 MT of the higher-assay DUF_6 to ENW as part of a multi-party agreement that would produce U.S.-origin LEU that could be used for the production of tritium for national security purposes. In addition, the continued operation of the Paducah GDP to produce the LEU provided an extra year for the Department to plan for the eventual decommissioning and cleanup of the plant site. These transfers will reduce DUF_6 inventories to around 114,000 MTU after the transaction is completed.

Other non-technical and financial considerations (e.g., cylinder condition, potential contaminants in the DUF_6 from historical recycling that may make it unattractive for enrichment, and transportation issues) must be included as part of any initiative for enriching DUF_6. Approximately half of the high-assay DUF_6 is located at the Paducah site.

Table 6 contains a summary of DOE's DUF_6 inventories that are considered to have potential economic value.

Table 5. Off-specification Uranium
(2008 Plan [end of FY 2008] and December 31, 2012 [end CY 2012])

Inventory	Enrichment Level	2008 Plan MTU	End CY 2011 MTU	End CY 2012 MTU	End CY 2012 Equivalent Million lbs. U_3O_8	End CY 2012 NU Equivalent MTU
Off-spec Non-UF_6	DU/NU/LEU	4,461	221	221	1.6	600
Off-spec UF_6	LEU	Not specified	1,106	1,106	4.9	1,876

Table 6. DUF_6 Considered to Have Potential Economic Value
(2008 Plan [end of FY 2008] and December 31, 2012 [end CY 2012])

Inventory	Enrichment Level	2008 Plan MTU	End CY 2011 MTU	End CY 2012 MTU	End CY 2012 Equivalent Million lbs. U_3O_8	End CY 2012 NU Equivalent MTU
DUF_6†	DU	75,300*	123,000**	114,000**	65-90	25,000-35,000

† DOE did not describe the variables and assumptions used to arrive at the final NU equivalent for DUF_6 in the 2008 Plan. The amount of NU equivalent is subject to many variables, and a large range has been shown to reflect this uncertainty.

* Considers DUF_6 above .35% potentially recoverable.

**Considers DUF_6 above .34% potentially recoverable.

Low-enriched Uranium

In March, 2012, the Department entered into an agreement with USEC whereby it procured approximately 299,000 SWU from USEC and provided USEC with approximately 409 MTU of Russian-origin NU from the DOE inventory as feedstock. USEC exchanged the Russian-origin NU with U.S.-origin NU in its inventory, and the Department received the resultant 47.6 MTU of U.S.-origin LEU. After a March 15, 2013 Secretarial Determination that the transfer of the SWU component of the LEU would not have an adverse material impact on the domestic uranium mining, conversion, or enrichment industry, DOE transferred the SWU component of this LEU to USEC and American Centrifuge Demonstration, LLC (ACD, a USEC subsidiary) as part of the government cost share in the 2012 Cooperative Agreement Between DOE, USEC, and ACD Concerning the American Centrifuge Cascade Demonstration Test Program. DOE provided USEC with the LEU and received in return from USEC the value of the SWU component of the LEU, which was applied to the cooperative agreement, and approximately 409 MTU of the natural uranium equivalent to the feed component of the LEU.

IV. URANIUM MANAGEMENT AND DISPOSITION PLANS

Uranium Originating from U.S. HEU

Management Strategy: The NNSA strategy is to down-blend and dispose of its excess HEU inventories in a manner that meets DOE's nonproliferation objectives. The implementation of the strategy and the timing of planned sales take into account several key factors, including:

- The primary purpose of the down-blending activity,
- Availability of HEU to be down-blended, as well as nuclear weapons dismantlement schedules,
- Availability of HEU down-blending capacity, and
- Commercial nuclear fuel market conditions.

As of December 31, 2012, NNSA has an inventory of 11.4 MTU of surplus HEU allocated to existing disposition programs. NNSA expects to complete down-blending of this material by the end of 2015. Down-blending of the 18.0 MTU of unallocated HEU is expected to begin with one or more new disposition projects in 2015 and will occur gradually over about a decade, with the rate controlled by the rates of weapon dismantlement and other NNSA programs. While 18.0 MTU of HEU is the best current estimate for this material, the exact quantities may change as NNSA requirements for down-blended material change based on development of new projects (i.e., research reactors or other changes in plans) and as other material sources are identified. NNSA anticipates transferring up to 400 MTU of NU-equivalent LEU down-blended from HEU per year during CYs 2012 to 2018 to cover the cost of down-blending HEU to LEU. As part of

these down-blending operations, DOE's commercial down-blending contractors will purchase approximately 500 MTU of NU from the U.S. market during this period for use as diluents.

Discussion: The 11.4 MTU of HEU planned for down-blending during CY 2013, CY 2014, and into CY 2015 will supply the remaining 6.4 MTU of the 12.1 MTU MOX Backup LEU Inventory and the 5.0 MTU of the MOX Backup LEU Inventory extension. The 11.4 MTU of HEU will produce approximately 224 MTU of LEU (containing the equivalent of 2,077 MTU of NU). Approximately 120 MTU of this LEU (containing the equivalent of 1,116 MTU of NU) will enter the market directly to pay for down-blending services. These transfers of LEU into the market are covered by the May 2012 Determination. The remaining LEU will be retained by DOE as part of the AFS and the MOX backup LEU inventory. A firm date for the potential entry of the DOE-owned AFS and MOX backup LEU material into the market has not been determined, and both are intended as backup or emergency supplies.

U.S. - Origin NU as UF_6

Management Strategy: The Department is continuing to evaluate its program needs regarding the potential uses of U.S.-origin NU. This U.S.-origin uranium is considered unobligated and unencumbered by peaceful use restrictions and therefore available to the Department for use in national security missions. The same uranium has value to other DOE missions as well.

Discussion: Under the 2008 Plan, DOE discussed the possible exchange of its U.S.-origin uranium with other-origin uranium supplied by TVA under the DOE-TVA Tritium Production Interagency Agreement. More recently, this material was considered for use to support additional accelerated cleanup activities at the Paducah and/or Portsmouth GDP sites after the Department's Russian-origin NU inventory is exhausted. This potential was analyzed as part of the analysis supporting the May 15, 2012 Secretarial Determination (Appendix A). The Secretarial Determination determined such an exchange would not adversely impact the domestic uranium mining, conversion, or enrichment industry. Although enrichment of depleted uranium tails under the DU Enrichment Project provides a near-term solution to support the tritium production requirements, it is not a sustainable solution. Accordingly, the Department will continue to analyze national security needs for the U.S.-origin uranium and evaluate its appropriate use and disposition in the future.

Russian - Origin NU as UF_6

Management Strategy: The May 2012 Determination anticipates the transfer of up to 2,400 MTU of NU per year, with no more than 600 MTU per quarter, in exchange for additional accelerated cleanup activities at the Paducah and/or Portsmouth GDP sites through 2021.

Discussion: After the issuance of the 2008 Plan, DOE transferred Russian-origin NU in exchange for accelerated cleanup activities at the Portsmouth GDP, including:

- 202 MTU as UF_6 in CY 2009,

- 921 MTU as UF_6 in CY 2010, and
- 1,600 MTU as UF_6 in CY 2011.

An additional 1601 MTU as UF_6 was transferred during CY 2012. Further decreasing the Russian-origin NU inventory, DOE procured SWU from USEC in March 2012, and received 47.6 metric tons of U.S.-origin LEU by providing 409 MT of Russian-origin NU as feed. At the end of CY 2012, 7,705 MTU remained in this inventory. The Department anticipates transfers of up to 2,400 MTU per year of NU (consistent with the May 2012 Determination) will come from this inventory. At the 2,400 MTU per year rate, the inventory of Russian-origin NU could be exhausted in about 4 years.

Off-spec Non-UF_6

Management Strategy: Of the 221 MTU of off-spec non-UF_6 material in DOE's inventory, approximately 31 MTU has potential commercial interest. DOE is currently evaluating options involving the potential transfer or exchange of this material, after extensive processing not currently available in the United States, in a manner that would exclude introduction of any uranium product into the domestic uranium fuel market.

Discussion: EM has the responsibility of completing site cleanup at the GDP sites and is continuing to identify disposition paths for uranium materials at these sites. It is anticipated that more such uranium might be identified and evaluated for disposal options.

Off-spec LEU as UF_6

Management Strategy: DOE has approximately 1,106 MTU of off-spec LEU with varying degrees of contaminants and enrichment levels. Specific pathways for commercial disposition will likely require processing (or other actions) to return the material to commercial specification or utility. DOE is evaluating technical options available to perform the processing and the potential to return the material to specification.

Discussion: EM has processed approximately 157 MTU of off-spec LEU as UF_6 to reduce ^{99}Tc. The 157 MTU requires processing or blending to reduce ^{236}U concentration in order to meet commercial fuel specifications. Other options for this material are still being considered. The remaining 949 MTU with various levels of contamination is expected to be more difficult to process and return to specification.

Depleted Uranium as UF_6

Management Strategy: DOE has no specific plans to transfer sell, or enter into contracts for further DUF_6 enrichment beyond the approximately 9,082 MTU transferred to ENW under the DU Enrichment Project announced on May 15, 2012. However, DOE continues to assess options for the sale, transfer, or enrichment of a portion of its high-assay DUF_6 inventory to NU or LEU should circumstances arise to make these options attractive. On February 6, 2013, DOE issued an Expression of Interest (EOI) to determine whether there is potential interest for the

purchase, transfer or exchange of specified lots of DUF_6. After evaluating the responses to the EOI, DOE is beginning a Request for Offers process in July 2013, to help further assess its options. For the purposes of this Plan, DOE's remaining potentially marketable inventory of DUF_6 is 114,000 MTU.

Discussion: EM contractors have completed construction of and have begun operating the two DUF_6 conversion plants: Paducah, Kentucky, and Piketon, Ohio. Processing of the higher assay DUF_6 will occur at the end of the DUF_6 project cycle thereby allowing sufficient time to consider the potential sale or transfer of higher assay DUF_6 should it prove to be commercially viable.

V. SUMMARY OF URANIUM MANAGEMENT PLAN

The planned and potential sales and/or transfers of uranium into the commercial market identified in this Plan reflect current and reasonably foreseeable DOE mission needs and intentions. The Department will comply with all applicable laws, including Section 3112(d) of the USEC Privatization Act and Section 312(a) of the Consolidated Appropriations Act, 2012, in its management and disposition of its uranium inventories.

The transactions that have taken place between the issuance of the 2008 Plan and 2013 Plan and the representative projected annual quantity of NU equivalent that could enter the commercial market through CY 2018 based upon DOE planned or potential sales or transfers, as described or referenced in this Plan, are presented in Table 7. Table 8 shows the historic transactions and representative projected annual enrichment, or SWUs, contained in the associated LEU that could enter the market. Actual quantities made available during those years will depend on program approval and implementation, and thus may vary from year to year.

The Department continues to evaluate potential options for the disposition of its high-assay DUF_6 but has no specific plans to sell, transfer, or enrich this material during the period covered by this Plan. The Department will regularly revisit its analyses of market impacts and issue new Determinations every two years for transfers of uranium covered under Section 3112(d)(2)(B) of the USEC Privatization Act, if it seeks to continue the covered transfers.

Ongoing Departmental strategies, plans, and prospective actions in this Plan are not commitments or obligations to specific activities on the part of DOE beyond those that have already been contracted. DOE anticipates periodically updating the Plan, as necessary, to reflect new and evolving information, policies, and programs.

Table 7. Historic and Representative Future Transactions (CYs 2009-2018)

Natural Uranium Equivalent (metric tons)										
	2009	**2010**	**2011**	**2012**	**2013***	**2014***	**2015***	**2016***	**2017***	**2018***
HEU Down-blending for the American AFS, LEU Available to the Commercial Market	53	26	31	86	0	0	0	0	0	0
HEU Down-blending for the MOX Backup LEU Inventory, LEU Available to the Commercial Market	0	0	112	90	369	44	0	0	0	0
HEU Down-blending for the MOX Backup LEU Inventory Extension, LEU Available to the Commercial Market	0	0	0	0	0	341	132	0	0	0
HEU Down-blend to LEU for TVA Off-spec Transfers	81	117	151	0	0	0	0	0	0	0
Projected Down-blending of Currently Unallocated HEU, LEU available to the Commercial Market	0	0	0	0	0	0	262	378	378	373
U.S.-Origin NU**	0	0	0	0	0	0	0	1,589	2,327	1,318
Russian-Origin NU***	202	921	1,600	1,601	2,336	2,320	2,311	738	0	0
DUF_6	0	0	0	****	****	*****	*****	*****	*****	*****
Off-spec UF_6 and non-UF_6					*****	*****	*****	*****	*****	*****
Total	**336**	**1,064**	**1,894**	**1,777**	**2,705**	**2,705**	**2,705**	**2,705**	**2,705**	**1,691**

* Calendar years 2013-2018 are projections and do not represent commitments beyond those already contracted.

** This material may be considered for use to meet national security missions.

*** The 1,601 MTU in 2012 does not include 409 MTU of Russian-origin NU provided to USEC as feed material for DOE's purchase of SWU, which resulted in adding 47.6 MT of LEU to its inventory in 2012. No uranium was introduced into the market by DOE's transfer of NU as feed material; the NU provided to USEC equals the equivalent amount of NU contained in the LEU returned to DOE's inventory.

**** DOE transferred 9,082 MTU of DUF_6 to ENW as part of the DU Enrichment Project. In Tables 1 and 6, DOE provided a large range for the NU equivalent of its inventory of DUF_6, however, to avoid confusion, the NU equivalent is not estimated for the ENW transfer, given the many variables and uncertainties in converting DUF_6 to its NU equivalent and the stated plans for this material in accordance with the DU Enrichment Project.

*****DOE continues to evaluate options for DUF_6 and Off-spec material disposition within the context of this Plan. (See discussion "Off-spec Non-UF_6" under Section IV, Uranium Management and Disposition Plans.)

Table 8. Historic and Representative Future Enrichment Transactions Associated with Uranium Management Plan (CYs 2009-2018)

SWU (thousands)										
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Allocated HEU Down-blend (to commercial market)	287	205	325	292	494	427	154	0	0	0
Projected Down-blend of Currently Unallocated HEU (to commercial market)	0	0	0	0	0	0	290	419	419	413
LEU*				**(299)**	**299**					
Total	**287**	**205**	**325**	**(7)**	**793**	**427**	**444**	**419**	**419**	**413**

* The Department procured 47.6 MTU of LEU containing approximately 299,000 SWU from the market to its inventory in 2012. In 2013, DOE transferred the SWU component of this LEU to the market (USEC and American Centrifuge Demonstration, LLC.).

VI. REFERENCES

DOE, 2008, *Department of Energy Excess Uranium Inventory Management Plan*, Department of Energy, December 16, 2008.

Public Law 104-134 (42 U.S.C. 2297h), "USEC Privatization Act," April 26, 1996.

Public Law 105-277, "Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999," October 21, 1998.

Public Law 112-74, "Consolidated Appropriations Act, 2012," December 23, 2011.

VII. GLOSSARY OF TERMS

American Assured Fuel Supply Program (AFS) – The AFS Program is a nonproliferation initiative available to support countries that pursue peaceful civilian nuclear programs by providing a back-up source of fuel in the event of a supply disruption that threatens normal operations. In addition, the AFS will be available to address supply disruptions affecting domestic nuclear power plants.

Blending or down-blend – The term used in this report to describe the process whereby HEU is mixed with depleted, natural, or low-enriched uranium to create low-enriched uranium product with an assay less than 20% ^{235}U.

Conversion – The process of converting uranium oxide (U_3O_8) from uranium mines and processing facilities to uranium hexafluoride (UF_6), a feedstock for the uranium enrichment process.

Depleted uranium (DU) – Uranium having an assay less than natural uranium or 0.711% ^{235}U.

Deposit removal material – Uranium recovered during the process of gaseous-diffusion-plant cleanup activities.

Diluent – Natural, depleted, or low-enriched uranium used to blend with HEU to produce lower-assay enriched uranium.

Enriched uranium – Uranium having an assay greater than 0.711% ^{235}U. Commercial nuclear fuel uses uranium with enrichment assays that can be between 3.0% and 5.0% ^{235}U.

Fissile material – Any material fissionable by thermal (slow) neutrons. The three primary fissile materials are ^{233}U, ^{235}U, and plutonium-239 (^{239}Pu).

Gaseous diffusion – A uranium enrichment process whereby UF_6 as a gas is compressed through a series of membranes to increase the concentration of ^{235}U isotopes.

High-assay tails – Depleted uranium tails that have a higher assay than commercial enrichment plants are currently producing (between .25% and .3% ^{235}U assay), such as .35% or higher.

Highly enriched uranium (HEU) – HEU is uranium having an assay of 20% or greater of the ^{235}U isotope.

Kilogram of uranium (kgU) as UF_6 – Approximately equal to 2.6 pounds of U_3O_8.

Low-enriched uranium (LEU) – Uranium having an assay greater than 0.711% ^{235}U but less than 20%. Most nuclear reactor fuel contains uranium content with an assay that is less than 5% ^{235}U.

Metric ton of uranium (MTU) – 1,000 kilograms of uranium.

Natural uranium (NU) – Uranium having an assay of 0.711% ^{235}U. This is the ^{235}U content that begins the nuclear fuel cycle.

Natural uranium component – The uranium feed material provided to a uranium enricher to produce enriched uranium and uranium tails.

Off-spec (off-specification) uranium – Uranium that does not meet the specification for commercial material, as defined by the standards of the American Society for Testing and Materials.

Off-spec Agreement – DOE and TVA signed an Interagency Agreement for the Off-specification Fuel Project in April 2001.

Paducah Gaseous Diffusion Plant – Uranium enrichment plant owned by DOE and leased by USEC located in Paducah, Kentucky.

Portsmouth Gaseous Diffusion Plant – DOE owned uranium enrichment plant located in Piketon, Ohio. The plant ceased operation in 2001 and the site is undergoing cleanup.

Separative work unit (SWU) – A unit of measurement enrichment used in the process of changing levels of ^{235}U in uranium.

Tails – The DU waste stream produced as part of the processor enriching uranium.

Uranium – A radioactive, metallic element with the atomic number 92, which is one of the heaviest naturally-occurring elements. Uranium has at least 14 known isotopes, of which ^{238}U is the most abundant in nature. ^{235}U is commonly used as a fuel for nuclear fission.

Uranium hexafluoride (UF_6) – At room temperature, UF_6 is a solid form that can be heated into a gas to enrich the ^{235}U isotope to a higher concentration in a gaseous diffusion or gas-centrifuge enrichment plant.

USEC Privatization Act – Public Law 104-134 (42 U.S.C. 2297h), enacted April 26, 1996.

APPENDIX A

Secretarial Determination for the Sale or Transfer of Uranium, May 15, 2012

The Secretary of Energy
Washington, D.C. 20585

SECRETARIAL DETERMINATION
FOR THE SALE OR TRANSFER OF URANIUM

Having considered the current status of the domestic uranium mining, conversion, and enrichment industries, and the Department's analysis regarding the potential impacts of the transfers of:

1) up to 9,156 metric tons uranium (MTU) of depleted uranium to Energy Northwest in calendar years 2012 and 2013, which would be immediately followed by enrichment to low enriched uranium (LEU) equivalent to 482 MTU, with Energy Northwest utilizing a portion of the LEU for fueling the power reactor it operates and the remaining LEU sold as LEU or in its component parts as natural uranium and separative work units (SWU) to TVA as part of a commercial transaction supporting future power generation and tritium production from 2013 through 2030, thereby serving national security purposes;

2) up to 2,400 MTU per year of natural uranium to DOE contractors for cleanup services at the Paducah or Portsmouth GDPs, in quarterly transfers of up to 600 MTU for the period 2012 through 2021; and

3) up to 400 MTU natural-uranium equivalent per year contained in low-enriched uranium (LEU) transferred to NNSA contractors for down-blending highly-enriched uranium to LEU for the period 2012 through 2020,

I have determined that these Departmental sales or transfers will not have an adverse material impact on the domestic uranium mining, conversion, or enrichment industries. I have taken into account the sales of uranium under the Russian Highly-Enriched Uranium Agreement and the Suspension Agreement. This determination fulfills the requirement in section 3112(d)(2)(B) with respect to transfers of natural and enriched uranium.

Steven Chu

MAY 15 2012
Date