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Department of Energy

Excess Uranium Inventory Management Plan

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Executive Summary

On March 11, 2008, Secretary of Energy Samuel W. Bodman signed a policy statement[1] on the management of the U.S. Department of Energy's (DOE) excess uranium inventory (Policy Statement). This Policy Statement provides the framework within which DOE will make decisions concerning future use and disposition of this inventory. The Policy Statement commits DOE to manage those inventories in a manner that: (1) is consistent with all applicable legal requirements; (2) maintains sufficient uranium inventories at all times 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, unless the Secretary of Energy determines in writing that overriding DOE mission needs dictate otherwise; and (4) is consistent with and supportive of the maintenance of a strong domestic nuclear industry.

DOE's Office of Nuclear Energy (NE), Office of Environmental Management (EM) and National Nuclear Security Administration (NNSA) are the organizations within DOE responsible for these excess uranium inventories, and those organizations have coordinated in the development of this Excess Uranium Inventory Management Plan (Plan). The purpose of this Plan is to provide the general public and interested stakeholders more specific information and enhanced transparency with respect to DOE's preliminary plans for its excess uranium transactions. This Plan identifies excess uranium inventories and identifies transactions that are planned or under consideration, or that may be considered by DOE in the future, for disposition of this excess uranium. The Plan also provides a strategy for the sale or other disposition of this excess uranium in a manner consistent with the principles set forth in the Policy Statement.

The objectives of the Plan are to seek to: (1) enhance the value and usefulness of DOE's uranium by converting a portion of it into a low enriched uranium (LEU) inventory; (2) reduce DOE programmatic costs by decreasing uranium inventories; (3) meet key nonproliferation objectives; and (4) dispose of unmarketable material to facilitate the cleanup of DOE's gaseous diffusion plants (GDPs). DOE also anticipates that it will undertake to optimize the use and disposition of its excess uranium assets in a manner that also minimizes any material adverse impacts on the domestic uranium mining, conversion and enrichment industries.

The Plan addresses the disposition of DOE's excess uranium identified in this Plan through potential sales or transfers of uranium based on a combined annual quantity of no more than ten percent of the annual U.S. nuclear fuel requirements. The Department may exceed the ten percent in any given year for certain special purposes, such as initial core loads for new reactors. Uranium disposition decisions will be undertaken in a manner that is consistent with DOE's mission needs and the principles set forth in the Policy Statement. DOE sales or transfers would be conducted consistent with applicable legal requirements and will result in the U.S. Government's receipt of reasonable value.

[1] The Secretary of Energy's Policy Statement on Management of the Department of Energy's Excess Uranium Inventory, issued March 11, 2008, is attached as Appendix A.

The sales or transfers of the Department's excess uranium inventory identified in this Plan that are currently ongoing and/or planned (items 1 and 2, below) or are under consideration or may be considered by DOE in the future (items 3, 4 and 5, below) to accomplish the Plan objectives include:

1. Down-blend 12.1 metric tons of uranium (MTU) of unallocated highly enriched uranium (HEU) to about 220 MTU of LEU of which about 170 MTU could be used for a general or special-purpose DOE LEU inventory.
2. Make available for sale up to 4,461 MTU of uranium of various enrichment levels that are stored at the Portsmouth, Ohio, Gaseous Diffusion Plant. This uranium is not within commercial specification (off-spec) or in the form of uranium hexafluoride (UF_6).
3. Make available for sale up to 7,700 MTU of natural uranium (NU) (equivalent to 20 million pounds U_3O_8). This NU could be sold to licensed U.S. nuclear reactor operators for use in initial cores for new reactor build projects over a period of several years starting in 2010.
4. Make available as much as 4,647 MTU of NU to be enriched to approximately 500 MTU of LEU (at an enrichment of 4.95% ^{235}U). This LEU could be included in a DOE LEU inventory.
5. DOE anticipates that it will engage in the sale of high-assay DUF_6 or enter into a contract to re-enrich the DUF_6 to natural uranium or LEU to realize the best value for the Government. DOE anticipates that it will also make available for sale any remaining NU. The sale of this material could reduce storage and security costs.

All of the above planned or potential actions are subject to compliance with appropriate DOE orders relating to program and project management, including all necessary senior management approvals. Further, any such actions are subject to completion of required National Environmental Policy Act analyses and compliance with applicable laws and/or regulations. In addition, as appropriate, cost-benefit and market analyses will be conducted prior to execution of each sale or transfer to support the various approaches for disposition of DOE's excess uranium. As appropriate, the responsible program office would prepare analyses for processing, transfer, spot market and long-term sales, and cost avoidance. Consistent with the Policy Statement, DOE program offices will seek to obtain the best economic value for the U.S. Government in light of DOE's identified objectives and needs.

While this Plan's focus is a 10-year period, the disposition of DOE's excess uranium inventories identified in this Plan is expected to take about 25 years. DOE expects to periodically update the Plan to reflect new and evolving information, policies and programs.

Excess Uranium Inventories

DOE possesses significant quantities of depleted uranium (DU), NU, LEU, and HEU in excess to DOE's current and anticipated national security, energy security, and other mission needs. Table 1 provides an overview of the excess uranium inventories addressed in this Plan, which are equivalent to about 59,000 MTU of NU (or about 153 million pounds of U_3O_8 equivalent) contained in various forms and assays.

Table 1: Overview of Excess Uranium Inventories (Beginning FY 2008)

Inventory	MTU	Enrichment Level	NU Equivalent Million lbs. U_3O_8	NU Equivalent MTU
Unallocated U.S. HEU	67.6	HEU	32.5	12,485
U.S.-Origin NU as UF_6	5,156	NU	13.4	5,156
Russian-Origin NU as UF_6	12,440	NU	32.3	12,440
Off-Spec Non-UF_6*	4,461	DU/NU/LEU	7.5	2,900
DU as UF_6**	75,300	DU	67.5	25,950
Total DOE Excess Uranium Inventory:			153.2	58,931

* NU equivalent corresponds to NU and LEU material only.
** DU as UF_6 having an assay equal to or greater than 0.35% ^{235}U but less than 0.711% ^{235}U. NU equivalent is based on 0.20% tails assay.

The following provides a description of each category of excess uranium.

Unallocated U.S. HEU

About 67.6 MTU of surplus HEU is unallocated[1] for any specific purpose and will become available for disposition gradually over several decades with the rate controlled by the rates of weapon dismantlement and rejections of material by Naval Reactors. While 67.6 MTU of HEU is the best current estimate for this material, the exact quantities will change as NNSA down-blends material or develops new projects, as research reactor or Naval Reactors requirements change, and as other material sources are identified.

U.S.-Origin NU as UF_6

DOE has an inventory of 5,156 MTU of U.S.-origin NU remaining from DOE's former uranium enrichment activities. This entire quantity is committed under a moratorium, discussed below in regard to the Russian-origin NU, and is not available for sale before March 24, 2009.

Additional background information regarding DOE's NU inventory, both U.S.-origin and Russian-origin, is provided in Appendix B.

Russian-Origin NU as UF_6

In 1999, DOE and the Russian Federation entered into an agreement, 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,*" (hereafter "1999

[1] Unallocated uranium is not presently obligated or approved for a specific purpose or DOE program.

Transfer Agreement") that obligated DOE to purchase 11,000 MTU of NU as UF_6 from Russia. The NU will remain under moratorium until after March 24, 2009. Prior to this date, the inventory can only be used to ensure the reliability of NU deliveries under the commercial arrangement referred to in the 1999 Transfer Agreement. This uranium meets commercial specification.

In addition, approximately 361 MTU of Russian-origin NU was received from the Tennessee Valley Authority (TVA) in 2007 under an exchange of U.S. and Russian-origin material. This NU is also subject to the moratorium and is not available for sale or transfer before March 24, 2009. Lastly, DOE has an inventory of approximately 1,079 MTU of Russian-origin NU acquired under the HEU Purchase Agreement with the Russian Federation entered into in 1993.

Off-Spec Non-UF_6

DOE has about 4,461 MTU of off-spec non-UF_6, uranium of which about 1,680 MTU is LEU and NU; the remaining material is comprised of DU. This uranium is in various forms and assays originating from past DOE programs in Hanford and Fernald and from university programs. This uranium requires considerable processing and, therefore, would not be readily available for use as commercial nuclear power reactor fuel.

Depleted Uranium as UF_6

During the 50 years that the Federal Government controlled the U.S. uranium enrichment enterprise, DOE generated over 700,000 metric tons of depleted uranium hexafluoride (DUF_6). The DUF_6 is the result of feeding NU at 0.711 percent ^{235}U into the enrichment plant to produce LEU or HEU. During the enrichment process depleted uranium is produced containing less than 0.711 percent ^{235}U.

About 75,300 MT of DOE's DU has an assay from 0.35 percent ^{235}U to less than 0.711 percent ^{235}U.[3] This is equivalent to 25,950 MT of NU[4]. As the price of NU has increased, the value of the relatively higher assay DU makes it attractive for re-enrichment. The exact amounts and the economic attractiveness of the DUF_6 depend on many variables, including assumed re-enrichment tails assay, the cost of re-enrichment, and the price of NU.

[3] This Plan does not address the inventory quantities of DUF_6 that have an assay lower than .35 percent ^{235}U. EM is currently constructing two conversion facilities to process DUF_6. In 2010, DOE plans to begin the conversion of the lower assay DU (having no current or projected economic value) from UF_6 into uranium oxide for long-term disposition and into hydrogen fluoride. The conversion project does not change the uranium enrichment aspect of the DUF_6 and is not the re-enrichment process addressed in this Plan.

[4] Assumes an average DU assay of 0.366% ^{235}U based on a tails assay of 0.20% ^{235}U.

Uranium Management & Sales Strategy

This Plan contemplates disposition of DOE's excess uranium inventory through controlled sales or transfers of uranium generally up to a combined annual quantity of ten percent of the U.S. nuclear fuel requirements in that same year, consistent with the Policy Statement. Actions that are currently ongoing and/or planned (items 1 and 2) or that are under consideration or may be considered by DOE in the future (items 3, 4 and 5) to accomplish these objectives include:

1. Down-blend 12.1 metric tons of uranium (MTU) of unallocated highly enriched uranium (HEU) to about 220 MTU of LEU of which about 170 MTU could be used for a general or special-purpose DOE LEU inventory.
2. Make available for sale up to 4,461 MTU of uranium of various enrichment levels that are stored at the Portsmouth, Ohio, Gaseous Diffusion Plant. This uranium is not within commercial specification (off-spec) or in the form of uranium hexafluoride (UF_6).
3. Make available for sale up to 7,700 MTU of NU (equivalent to 20 million pounds U_3O_8). This NU could be sold to licensed U.S. nuclear reactor operators for use in initial cores for new reactor build projects over a period of several years starting in 2010.
4. Make available for sale or transfer as much as 4,647 MTU of NU to be enriched to approximately 500 MTU of LEU (at an enrichment of 4.95% ^{235}U). This LEU could be included in a DOE LEU inventory.
5. DOE anticipates that it will engage in the sale of high-assay DUF_6 or contract to re-enrich to natural uranium or LEU to realize the best value for the Government. DOE anticipates that it will also make available for sale any remaining NU. The sale of this material could reduce storage and security costs.

All of the above planned or potential actions are subject to compliance with appropriate DOE orders relating to program and project management, including all necessary senior management approvals. Further, any such actions are subject to completion of required National Environmental Policy Act analyses and compliance with other applicable laws and/or regulations. In addition, as appropriate, cost-benefit and market analyses will be conducted prior to execution of each sale or transfer to support the various approaches for disposition of DOE's excess uranium. These planned or potential actions are described further below.

1. Unallocated U.S. HEU Blended to LEU

Sales Strategy: NNSA's unallocated excess U.S. HEU inventory is shown in Table 2.

Table 2: Unallocated U.S. HEU to be Blended to LEU (Beginning FY 2008)

Program	MTU	Enrichment Level	NU Equivalent Million lbs. U_3O_8	NU Equivalent MTU
Unallocated HEU	67.6	HEU	32.5	12,485

NNSA's 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 timing of planned sales take into account several key factors including: (1) the primary purpose of the down-blending activity; (2) the availability of HEU to be down-blended as well as nuclear weapons dismantlement schedules; (3) the availability of HEU down-blending capacity; and (4) the commercial nuclear fuel market conditions. NNSA expects to down-blend 67.6 MTU of unallocated HEU gradually over several decades. A portion of this unallocated HEU would be used for the following:

- 12.1 MTU of on-spec HEU would be down-blended to about 220 MTU of LEU of which about 170 MTU would be for a general or special-purpose DOE LEU inventory.
- 39 MTU of on-spec HEU would produce 765 MTU of LEU. In 1996, DOE decided to gradually down blend HEU and sell, over time, as much as possible of the resulting commercially usable LEU for use as reactor fuel feed (61 FR 40619; August 5, 1996). Disposition of this on-spec HEU would fall within the 1996 decision. At this time, DOE does not have more specific plans under consideration for the potential disposition of this LEU. Any future planning or consideration would be coordinated with other DOE program offices to ensure consistency with the Policy Statement and this Plan.
- 16.5 MTU of unallocated off-spec HEU would produce 355 MTU of LEU. Disposition of this off-spec HEU would fall within the 1996 decision referred to above (61 FR 40619; August 5, 1996). At this time, DOE does not have more specific plans under consideration for the potential disposition of this LEU. Any future planning or consideration would be coordinated with other DOE program offices to ensure consistency with the Policy Statement and this Plan.

Discussion: Down-blending 12.1 MTU of unallocated HEU to about 220 MTU of LEU likely will require the transfer of about 50 MTU of LEU to the processor for down-blending services. The LEU to be sold in the commercial market contains uranium and SWU components. The market impact of the LEU is offset by the purchase in the market of NU as blendstock for HEU.[1] The net effect would be sale of 336 MTU of NU and about 420,000 SWU. NNSA expects to down-blend additional quantities of its excess unallocated HEU as future plans develop.

Table 8 in the *Summary of Excess Uranium Management Plan* section of this Plan shows the annual uranium quantities entering the market associated with the 12.1 MTU of unallocated HEU to be down-blended.

[1] DOE's HEU down-blending contractors have purchased NU in the market to blend with surplus HEU, rather than use DOE inventories of NU or DU, primarily because DOE's inventories are in the wrong chemical form and are not readily converted, or are not of sufficiently high purity. This practice has also served to reduce the market impacts of the HEU disposition program.

2. U.S.-Origin NU as UF_6

Sales Strategy: DOE's inventory of U.S.-Origin NU as UF_6 is shown in Table 3.

Table 3: U.S.-Origin UF_6 Uranium Inventory

Inventory	MTU	Enrichment Level	NU Equivalent Million lbs. U_3O_8	NU Equivalent MTU
U.S. Origin NU as *UF_6*	5,156	NU	13.4	5,156

At this time DOE has not evaluated or proposed options for the potential sale or disposition of the U.S.-origin NU in this Plan.

Discussion: The U.S.-origin NU shown in Table 3 is under the moratorium until March 24, 2009. When the moratorium ends, DOE anticipates that it will consider its options under the DOE-TVA Agreement for TVA production of tritium to the exchange of its unrestricted U.S.-origin uranium with other-origin uranium supplied by TVA. In the event DOE exchanges its U.S.-origin uranium with TVA, DOE anticipates that it would obtain other-origin uranium that could be available to meet other program needs.

Table 8 in the *Summary of Excess Uranium Management Plan* section of this Plan does not show expected annual uranium quantities to be introduced into the market because DOE has not yet evaluated or proposed options for the potential sale or disposition of the U.S.-origin NU in this Plan.

3. Russian-Origin NU as UF_6

Sales Strategy: NE's inventory of Russian-Origin NU is shown in Table 4.

Table 4: Russian-Origin NU Inventory

Inventory	MTU	Enrichment Level	NU Equivalent Million lbs. U_3O_8	NU Equivalent MTU
Russian-Origin NU (1995 & 1996)	1,079	NU	2.8	1,079
Russian-Origin NU (1997 & 1998)	11,000	NU	28.6	11,000
Other Russian NU	361	NU	0.9	361
Total Russian-Origin UF_6 Inventory:			32.3	12,440

DOE's Russian-origin NU inventory is comprised of three separate inventories as shown in Table 4. NU requires considerable storage space and associated costs, and therefore DOE is considering options for the sale or transfer of this material that include: 1) the direct sale of specified amounts of this uranium into the commercial market; and/or 2) enrichment of the NU into LEU for a DOE inventory.

DOE anticipates that it could make available for sale or transfer approximately 4,647 MTU of NU that could be used to enrich up to 500 MTU of LEU (at an enrichment of 4.95% ^{235}U). This LEU could be included in a DOE LEU inventory.

Beginning in 2010, DOE may sell up to 7,700 MTU of NU. This NU could be sold to licensed U.S. nuclear reactor operators for use in initial cores for new reactor build projects for a period as long as 10 years starting in 2010.

Discussion: DOE may either sell its NU on the commercial market or enrich some of its excess NU inventories into a more optimal, usable form as LEU. Subject to economic analysis, such enrichment could: (1) reduce inventory levels; (2) minimize inventory management, surveillance, and maintenance costs; and (3) provide DOE with increased flexibility for meeting potential requirements, possibly including national security, national fuel supply assurance, and the support of ongoing programs such as the disposition of excess plutonium.

DOE currently considers it prudent to have an inventory containing approximately 670 MTU of LEU, which would be equivalent to about 20 reloads for commercial U.S. reactors. The inventory would provide fuel supply assurance in the event of disruptions to global enrichment capacity. While the actual schedule would be dependent on a number of factors including the availability of material for down-blending and of enrichment capacity, it appears reasonable to expect that arrangements could eventually be made to obtain approximately 670 MTU of LEU. Such arrangements could include using uncommitted capacity from a domestic and/or a foreign enrichment plant to obtain sufficient enrichment. Approximately 500 MTU could come from the enrichment of NU to LEU, and the remaining LEU could be accessed as available and appropriate from the down-blending of HEU by NNSA from a HEU disposition program such as the down-blend of 17.4 MTU of HEU for the Reliable Fuel Supply. It is not however presently known how much excess enrichment capacity is available worldwide thus the timing of such enrichment availability is not known.

LEU could be stored at DOE sites at the Paducah or Portsmouth uranium enrichment plants where it would be secure and physically segregated from other LEU. A second option could be to enter into an arrangement with U.S. fuel fabricators or another fuel cycle entity to store the LEU at its facility and permit the entity to use LEU as part of its working inventory subject to certain conditions to ensure its availability when needed. Additional detailed information on expected costs, schedule, and implementation as well as the cost-benefit to DOE would be prepared prior to execution of any sales or transfers.

The Department anticipates that it may introduce into the domestic market, in any given year, less than 10 percent or, in some years for certain special purposes such as the provision of initial core loads for new reactors, more than 10 percent. Consistent with applicable law the Department will conduct analyses of the impacts of particular sales on the market and the domestic uranium industry, prior to entering into particular sales.

Table 8 in the *Summary of Excess Uranium Management Plan* section of this Plan shows annual uranium quantities of Russian-origin NU that could be introduced into the market for purposes of use by U.S. reactors for initial reactor cores, subject to future actions and decisions based on relevant circumstances and conditions. Table 8 does not show NU to be

enriched to LEU because there is no present commitment to make this material available on the commercial market.

4. Off-Spec Non-UF_6 Uranium

Sales Strategy: DOE's inventory of off-spec non- UF_6 uranium, currently managed by EM, is shown in Table 5.

Table 5: Off-Spec Non-UF_6 Uranium Inventory

Inventory	MTU	Enrichment Level	NU Equivalent Million lbs. U_3O_8	MTU
Off-Spec Non-UF_6	4,461	DU/ NU/LEU	7.5	2,900

EM currently plans to sell this off-spec non-UF_6 uranium into the market. Of the 4,461 MTU of off-specification non-UF_6 uranium, about 1,680 MTU consists of LEU and NU. This is equivalent to 7.5 million pounds of U_3O_8. DOE has also accepted relatively small quantities of excess uranium from five U.S. universities that used the material for research purposes. These materials would be considered in any bundled sale of the off-spec non-UF_6 uranium.

Table 8 in the *Summary of Excess Uranium Management Plan* section of this Plan provides the annual quantities of uranium that would enter the market associated with the proposed sale of off-spec non-UF_6 uranium beginning as early as 2009. Table 9 includes the annual quantities of enrichment that would enter the market associated with the proposed sale of off-spec non-UF_6 uranium beginning as early as 2009.

Discussion: EM has the responsibility of completing site cleanup at the GDPs. The Portsmouth site has long been the collection site for other DOE sites' excess uranium (except for HEU which has been sent to Oak Ridge, Tennessee). EM currently has about 4,461 MTU of off-spec non-UF_6 uranium contained in various forms, enrichments, and material quality. The largest single quantity is depleted uranium metal. The various lots of off-spec uranium material at Portsmouth have varying degrees of value and require differing amounts and types of processing to meet ASTM specification for commercial sales. A more detailed review of the off-spec non-UF_6 uranium is shown in Table 6. To complete the overall cleanup at the GDP sites, EM must identify the disposition paths for all uranium materials at these sites including some off-spec UF6 with no identified disposition path due to the degree of contamination. Consequently, EM may have additional program cleanup factors that must be considered.

Table 6: Off-Spec Non-UF_6 Uranium Inventory Details	
Uranium Type	**MTU**
Metal	1,957
Oxide	990
Fluoride	1,511
Solution	1.453 (11,804 liters)
Total Off-Spec Non-UF_6 Inventory:	**4461**
Note: Number may not total due to rounding	

5. Depleted UF_6

Sales Strategy: EM's inventory of depleted UF_6 from 0.35 percent to up to 0.711 percent ^{235}U is shown in Table 7.

Table 7: Depleted Uranium Inventory				
Inventory	**MTU**	**Enrichment Level**	**NU Equivalent Million lbs. U_3O_8**	**MTU**
DU as UF_6*	75,300	DU	67.5	25,950
* Having an assay equal to or greater than 0.35% ^{235}U but less than 0.711% ^{235}U. NU equivalent based on 0.20% tails assay				

DOE will consider the sale of DUF_6 or re-enrichment to natural uranium or LEU to realize the best value for the Government. The DOE inventory of 75,300 MTU of DU having an assay from 0.35 percent ^{235}U to 0.711 percent ^{235}U is currently scheduled for conversion to a more stable form, followed by its re-use or disposal. However, as the price of NU has increased the value of the relatively higher assay DU makes it potentially attractive for re-enrichment. Enriched to 0.711 percent ^{235}U, the DU could produce about 25,950 MTU of NU as UF_6. DOE has estimated that the gross value of this uranium would be approximately $5.6 billion based on the April 2008 market price for uranium. The net value is estimated to be about $3.4 billion after re-enrichment, depending on the actual SWU price. [1]

The sale of this DUF_6 along with other DOE uranium sales in any given year would generally not exceed ten percent of the U.S. nuclear fuel requirements in that same annual period. The sale of DUF_6 (that is economically attractive to the commercial sector) could reduce the Government's liability for conversion of the DUF_6. Table 8 in the *Summary of Excess Uranium Management Plan* section of this Plan shows the annual quantities of uranium that would enter the market related to the proposed DUF_6 sales.

[1] Uranium Exchange (Ux) Corporation's month end spot price of $78.00 per pound of U_3O_8, conversion price of $9.00 kgU, NU UF6 price of $215 kgU and SWU price of $143.

Discussion: Under the Energy Policy Act (EPACT) of 1992 Congress directed DOE to conduct an environmental cleanup of the three aged GDPs located in Piketon, Ohio; Paducah, Kentucky; and Oak Ridge, Tennessee and in the EPACT of 1992 directed the Secretary of Energy to establish an account in the U.S. Treasury dedicated to support the GDP cleanup program. On November 15, 2007, EM published the 5th Triennial Report to Congress on the status of the cleanup program and provided the current and projected balances of the Uranium Enrichment Decommissioning & Decontamination Fund based on improved cost estimates and cleanup experiences from the first 15 years of the cleanup program.

Summary of Excess Uranium Management Plan

As described in the preceding sections of this Plan, DOE is currently planning or may consider in the future certain actions to manage the various types and forms of uranium in its excess inventory through controlled sales or transfers, consistent with the principles set forth in the Policy Statement and the objectives of this Plan. As stated in the Policy Statement, transactions involving non-U.S. Government entities will be undertaken in a transparent and competitive manner, unless the Secretary of Energy determines in writing that overriding DOE mission needs dictate otherwise. All transactions involving excess uranium transfers or sales to non-U.S. Government entities must result in the Government's receipt of reasonable value for any uranium sold or transferred to such entities. Reasonable value takes into account market value, as well as other factors such as the relationship of a particular transaction to overall DOE objectives and the extent to which costs to DOE have been or will be incurred or avoided.

DOE anticipates that uranium sales would be offered under both near and longer term contracts through a competitive bidding process, unless otherwise contractually committed, to make the uranium available and ensure that fair market value is received. The total NU equivalent potentially entering the market in any one year would generally represent no more than ten percent of the total annual domestic fuel requirements of all licensed nuclear power plants, except in the case of potential sales of NU for initial reactor cores. This amount should not have an adverse material impact on the domestic uranium mining, conversion, and enrichment industries. DOE anticipates that it may introduce into the domestic market, in any given year, less than that amount, or, in some years for certain purposes such as the provision of initial core loads for new reactors, more than that amount. Consistent with applicable law, DOE will conduct analyses of the benefits to DOE and the potential impact of particular sales or transfers on the market and the domestic uranium industry, prior to entering into particular sales or transfers.

Table 8 shows the projected annual quantity of equivalent NU that could enter the commercial market between 2008 and 2017 based upon DOE planned or potential sales or transfers as described or referenced in this Plan. These projections are based on representative DOE sales or transfers, and the estimate of U.S. annual fuel requirements is based on the assumption that the recent domestic fuel requirements (i.e., roughly 50 million pounds U_3O_8) would continue the same for the period 2008 to 2017. Included in Table 8 is uranium from the HEU down-blend programs (including the transactions associated with the allocated HEU down-blend program referenced in Appendix C), Russian-origin NU, off-spec non-UF_6 uranium and DU. Russian NU to be enriched to LEU for purposes of inventory creation are not presently included on Table 8 because there is no present commitment to make such material available on the commercial market. Actual quantities made available during those years would be a function of program approval and implementation and thus may vary from year to year.

Table 8: Representative DOE Excess Uranium Management Plan
(Metric tons of natural uranium equivalent)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Allocated HEU Down-blend (to commercial market)	584	816	923	798	1,005	997	992	659	491	402
Unallocated HEU Down-blend (LEU transfer)*		96	128	81	31					
Off-Spec Non-UF_6 requiring additional processing before entering the market**	**	**	**	**	**	**	**	**	**	**
DU as UF_6***		42	96	387	443	912	927	1,258	1,420	1,512
Sub-Total in MTU	584	954	1,147	1,266	1,479	1,909	1,919	1,917	1,911	1,914
Sub-Total in million pounds U_3O_8	1.5	2.5	3.0	3.3	3.8	5.0	5.0	5.0	5.0	5.0
10 Percent U.S. Requirements in million pounds U_3O_8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Russian-origin NU for initial cores in MTU****			1,231	731	1,462	846	2,038	1,385		
Russian-origin NU for initial cores in million pounds U_3O_8			3.2	1.9	3.8	2.2	5.3	3.6		
Total in MTU	584	954	2,378	1,997	2,941	2,755	3,957	3,302	1,911	1,914
Total in million pounds U_3O_8	1.5	2.5	6.2	5.2	7.6	7.2	10.3	8.6	5.0	5.0

* Additional small-scale HEU down-blending projects are anticipated, but not yet planned, in this timeframe.
** DOE has 4,461 MTU of Off-Spec Non-UF_6. If this material enters the market it would require substantial processing and would eventually be offered for use in the commercial market over a number of years. Responses to the initial Request for Proposal released in 2008 did not result in an award; however, future sales are possible as well as the identification of additional Off-Spec candidate material.
*** DU as UF_6 having an assay equal to or greater than 0.35% ^{235}U but less than 0.711% ^{235}U. NU equivalent based on 0.20% tails assay.
****Tentative schedule, subject to future actions and decisions based on relevant considerations and conditions. May lead to uranium dispositions over 10% of the market for certain special purposes such as for initial cores.

With respect to the off-spec non-UF_6 uranium, DOE may sell this material starting as early as 2009. However, because this uranium requires further processing, DOE expects that the actual material would enter the commercial market in small quantities over a longer timeframe. In addition, some of the off-spec UF_6 and non-UF_6 material that is not economically attractive due to the low assay is not included in Table 8 or counted towards the total disposition quantity. This material will be held subject to changing economic conditions or otherwise made available without reuse in the nuclear fuel cycle market.

With respect to NU provided for initial cores for new reactors, such provisions might lead to DOE uranium sales in excess of ten percent of total annual U.S. nuclear fuel requirements.

With respect to the DU, the amounts shown entering the market take into account the Plan's objectives and sales priorities, and is assumed to be managed so as to generally not exceed the ten percent threshold. It is uncertain how much of the DUF_6 the market would be able to absorb since it requires additional enrichment and the buyers would have to consider their uranium requirements with their ability to contract for re-enrichment. If additional

enrichment capacity is commercially available in the future, re-enrichment would be facilitated.

Table 9 shows the projected annual enrichment or SWU contained in the associated LEU that could enter the market. The enrichment shown for HEU blend down is the associated SWU entering the commercial market as it is processed into LEU. The DUF_6 is shown as a negative value since additional SWU would have to be purchased to re-enrich the DUF_6 to

Table 9: Representative Enrichment Associated with Uranium Management Plan
(thousands of SWU)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Allocated HEU Down-blend (to commercial market)	611	786	787	634	801	787	787	541	408	333
Unallocated HEU Down-blend (LEU transfer)*		119	163	100	38					
Off-Spec Non-UF_6 requiring additional processing before entering the market**	**	**								
DUF_6 ***		-27	-62	-249	-285	-586	-596	-809	-913	-972
Total in thousand SWU	611	878	888	485	554	201	191	-268	-505	-639

* Additional small-scale HEU down-blending projects are anticipated, but not yet planned, in this timeframe.
** DOE has 4,461 MTU of Off-Spec Non-UF_6 If this material enters the market it would require substantial processing and would eventually be offered for use in the commercial market over a number of years. Responses to the initial Request for Proposal released in 2008 did not result in an award; however, future sales are possible as well as the identification of additional Off-Spec candidate material.
*** Negative numbers assume re-enrichment based on 0.20% ^{235}U tails assay.

an assay of 0.711 percent ^{235}U or to a level the buyer arranges with a private enrichment provider. Under these assumptions, beginning in 2013, the DUF_6 re-enrichment would be expected to more than offset any impact of LEU or HEU from DOE sales on the commercial SWU market. Table 9 does not include the enrichment of 4,647 MTU of NU to LEU for purposes of creating an LEU inventory, because it is not clear that the required enrichment capability would be available.

Potential market impacts to the domestic uranium mining, conversion, and enrichment industries would be considered as of the time uranium would be delivered and would actually enter the commercial market, not when a DOE sales contract is offered, signed, or when additional processing may be required. In this manner, long-term uranium disposition would be evaluated for its impact in the out-years when delivery would be scheduled, not in the year the sales or purchase agreement would be offered or signed. DOE further anticipates that the DUF_6 sales or transfer would be used to balance out the annual DOE sales to ensure a stable market environment.

Appendices

Appendix A

The Secretary of Energy
Washington, DC 20585

Secretary of Energy's Policy Statement on Management of the Department of Energy's Excess Uranium Inventory

INTRODUCTION

The Department of Energy has a significant inventory of uranium that is excess to United States defense needs. This inventory is expensive to manage and to secure, and consists of uranium in various forms, most of which are not readily usable. However, in light of the significant increases in market prices for uranium in recent years, the uranium in this inventory is a valuable commodity both in terms of monetary value and the role it could play in achieving vital Departmental missions and maintaining a healthy domestic nuclear infrastructure. This Policy sets forth the general framework within which the Department prudently will manage its excess uranium inventory.

MANAGEMENT PRINCIPLES

Legal. The Department has broad authority under the Atomic Energy Act of 1954 (AEA) to loan, sell, transfer or otherwise utilize its inventories of depleted, natural and enriched uranium. In exercising this authority, the Department must act consistently with other relevant statutory provisions, such as section 3112 of the USEC Privatization Act which imposes limitations on certain specified transactions.

In the absence of otherwise applicable statutory authority, the Department may not retain any money it receives from the sale of uranium and use that money for Departmental programs. Instead, money received normally will be deposited into the miscellaneous receipts account in the United States Treasury. However, the Department does have authority under the AEA to engage in barter transactions, where it transfers uranium and receives services or another form of uranium as compensation. Under this statutory authority, the Department has structured several arrangements so that some uranium can be used to offset the costs of certain services that have been provided to the Department such as downblending, enrichment, decontamination or storage. The Department will consider using this approach in the future where it determines such an approach is reasonable, furthers the interests of the Department and results in the receipt of reasonable value for the material exchanged for services.

Before making any final decision on a particular action, the Department must comply with applicable requirements of the National Environmental Policy Act of 1969 (NEPA). This may include the preparation of an environmental assessment, an environmental impact statement, or other analyses, as appropriate.

Department of Energy Needs. The Department should maintain sufficient uranium inventories at all times to meet the current and reasonably foreseeable needs of Departmental missions. The National Nuclear Security Administration, the Office of Nuclear Energy, the Office of Environmental Management and other relevant Departmental offices will work together to ensure these needs are identified, the needed amounts and forms of uranium quantified, and the Department's uranium inventory appropriately maintained. The Department will only sell or transfer uranium that is excess to those needs.

Transparency and Competitive Procedures. Transactions involving non-U.S. Government entities will be undertaken in a transparent and competitive manner, unless the Secretary of Energy determines in writing that overriding Departmental mission needs dictate otherwise. All transactions involving excess uranium transfers or sales to non-U.S. Government entities must result in the Department's receipt of reasonable value for any uranium sold or transferred to such entities. Reasonable value takes into account market value, as well as other factors such as the relationship of a particular transaction to overall Departmental objectives and the extent to which costs to the Department have been or will be incurred or avoided.

Energy Security. To the extent practicable, the Department will manage its uranium inventories in a manner that is consistent with and supportive of the maintenance of a strong domestic nuclear industry. Consistent with this principle, the Department believes that, as a general matter, the introduction into the domestic market of uranium from Departmental inventories in amounts that do not exceed ten percent of the total annual fuel requirements of all licensed nuclear power plants should not have an adverse material impact on the domestic uranium industry. The Department anticipates that it may 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. Consistent with applicable law, the Department will conduct analyses of the impacts of particular sales or transfers on the market and the domestic uranium industry, prior to entering into particular sales or transfers.

The Department also has determined that, in some cases, it may be feasible to manage its uranium inventories by entering into arrangements with existing and potential operators of nuclear fuel cycle facilities in a manner that supports the maintenance and expansion of domestic nuclear fuel cycle infrastructure. The Department believes that it is in the energy security interests of the United States to maintain and expand this infrastructure. Any such arrangement, however, must contain reasonable terms and conditions, be competitive to the extent practicable, and be otherwise consistent with this Policy. Further, and if the Department determines appropriate on a case by case basis, the Department would consider using its uranium inventory to address prolonged severe

disruptions in the supply of uranium that cannot be addressed practically through the marketplace and that threaten to cause the shutdown of commercial nuclear reactors in the United States.

CONVERSION OF URANIUM INVENTORY INTO LEU

The Department uranium inventory contains uranium in various forms. These forms include highly enriched uranium (HEU), low enriched uranium (LEU), natural uranium and depleted uranium. For many purposes, uranium is not readily usable unless it has been converted into LEU. In addition, the conversion of HEU, natural uranium and depleted uranium into LEU would, in many cases, reduce inventory levels, minimize inventory management, surveillance and maintenance costs, provide the Department with increased flexibility for meeting potential future programmatic needs, enhance the value of the converted uranium, and, if sales occur and the Department was able to retain the proceeds from those sales, result in the need for fewer appropriated dollars to meet the Department's mission needs. Furthermore, the conversion of HEU into LEU promotes nuclear non-proliferation objectives by reducing the amount of HEU available.

Accordingly, the Department is considering conversion into LEU of a portion of its uranium inventory, and retaining that LEU in the Department's uranium inventory. The Department will base any decisions to engage in such transactions on cost-benefit analyses and other relevant factors.

For non-proliferation reasons, the Department already has an active program for downblending much of its excess HEU into LEU, and has issued a Record of Decision under NEPA concerning that activity and the use of the LEU in commercial reactors. Over the coming years, the Department expects to downblend most of its excess HEU into LEU. The Department will continue the downblending of HEU to promote non-proliferation objectives and to assure a supply of LEU to meet various Departmental programmatic needs.

The Department's current excess uranium inventory also contains a considerable amount of natural uranium, primarily in the form of uranium hexafluoride. Much of this uranium meets commercial-grade specifications but cannot be sold until after March 2009 because of a prior agreement between the United States and Russia. While this natural uranium already has value in its current form, conversion into LEU would minimize management costs to the Department while enhancing the usability and value of the uranium. Accordingly, the Department is evaluating the desirability of enriching a portion of this natural uranium into LEU, taking into account costs, market conditions, programmatic priorities and potential uses. As part of this evaluation, the Department will initiate work on cost-benefit and environmental analyses that will support a decision on how to proceed.

Most of the remaining excess uranium in the Department's inventory consists of depleted uranium. Making this depleted uranium useable would require considerable processing, depending on the uranium's form, assay level, and degree of contamination. In light of the significant increases in market prices for uranium over the past three years, however, some of this depleted uranium, especially that with higher assay levels, has become a potentially valuable commodity. The Department will identify categories of depleted uranium that have the greatest potential market value and/or use to the Department, on the basis of assay level, degree of contamination and other relevant factors. The Department then will conduct appropriate cost-benefit analyses to determine what circumstances would justify enriching and/or selling potentially valuable depleted uranium rather than pursuing current plans to store, process and ultimately dispose of it. The Department will seek to obtain the best economic value for the Department, in light of the Department's identified objectives and needs, and will proceed with this effort in the near future.

Samuel W. Bodman
Secretary of Energy

March 11, 2008
Date

Appendix B

Natural Uranium Inventories

As of the beginning of Fiscal Year (FY) 2008, the Department of Energy's (DOE's) natural uranium inventories amounted to a total of 17,596 metric tons of uranium (MTU) as hexafluoride. This total consists of three separate stockpiles.

The first stockpile is 1,440 MTU of Russian-origin natural uranium derived from transfers to DOE by USEC and the Tennessee Valley Authority (TVA). USEC initially transferred 5,521 MTU in 1996, which was the natural uranium component of low enriched uranium (LEU) delivered under the U.S. and Russia Highly Enriched Uranium (HEU) Purchase Agreement in 1995 and 1996. About 1,079 MTU of the USEC-transferred quantities remain in DOE's inventories as a result of: (1) 2,228 MTU transferred consistent with section 3112 of the USEC Privatization Act between 1996 and 2001; (2) 1,105 MTU transferred to USEC for sale in FY 2005 and FY 2006; (3) 906 MTU sold by DOE in Fiscal Year 2006; and (4) 200 MTU sold in FY 2007 using the proceeds for the technetium cleanup program. In addition to the 1,079 MTU remaining from the transfer by USEC, DOE received 361 MTU of Russian-origin from TVA in return for DOE providing a similar quantity of U.S.-origin uranium under a prior agreement between DOE and TVA.

The second stockpile of uranium, amounting to 11,000 MTU, was purchased from Russia for $325 million consistent with Public Law 105-277. This material is the natural uranium component of LEU delivered under the U.S.-Russia HEU Purchase Agreement in 1997 and 1998. Disposition of the material cannot begin to take place until March 24, 2009, based on an agreement between the United States and Russian Governments that requires DOE to maintain a 22,000 MTU stockpile and restricts the entry of the uranium into the commercial market until March 2009.

The third stockpile of uranium consists of U.S-origin uranium of 5,156 MTU, the majority of which is also restricted from sale into the commercial market until after March 24, 2009. Sampling and analysis indicate that a portion of DOE's stockpile of uranium hexafluoride contains technetium exceeding nuclear fuel specifications. This uranium is currently being processed to meet commercial specifications. About 3 MTU remain unrecoverable as cylinder heels from the technetium cleanup program and is not included in the 5,156 MTU.

Appendix C
Existing Programs to Down-Blend Excess HEU

U.S. Origin HEU Allocated to Existing Programs

Table C-1 provides an overview of HEU currently in DOE inventory and committed to existing surplus HEU disposition projects. HEU inventories currently allocated (or obligated) for down-blending into LEU as part of the Surplus Fissile Materials Disposition Program are included in this Plan, as the transfer of LEU to commercial processors to cover the cost of down-blending the HEU is part of the total DOE commercial annual uranium sales.

Table C-1: U.S. HEU Allocated to be Down-Blended to LEU (As of beginning FY 2008)

Program	MTU	Enrichment Level	NU Equivalent Million lbs. U_3O_8	NU Equivalent MTU
Reliable Fuel Supply	14.2	HEU	5.7	2,202
Off-Spec HEU for TVA	5.7	HEU	1.6	606
Research Reactor Fuel	6.9	HEU	2.2	846
H-Canyon EU Disposition	20.9	HEU	6.0	2,297
Total U.S. HEU to be Down-Blended into LEU	47.7		15.5	5,951

Background

The disposition of DOE's excess HEU inventories for non-proliferation purposes began over a decade ago. In 1994, 174 MTU of HEU was declared excess to national security needs. In 1996, DOE issued a Record of Decision (ROD) providing that the material would be made non-weapons-usable by down-blending it to LEU and, to the extent feasible, its economic value would be recovered through use as power or research reactor fuel. Of the 174 MTU, 156 MTU was deemed eligible for down-blending to LEU for use as reactor fuel; the remaining 18 MTU was deemed ineligible and would be disposed of as waste. A supplemental analysis was completed in 2007 to update the National Environmental Policy Act (NEPA) coverage for the HEU disposition program.

In addition to the 174 MTU of HEU declared excess in 1994, DOE announced in the fall of 2005 the removal of an additional 200 MTU of HEU from further use as fissile material in nuclear weapons. The decision, approved by the Secretary of Energy, addressed the future use of HEU available from nuclear weapons dismantlement and from significant reductions in the nuclear weapons stockpile as directed by the President in May 2004. DOE's preliminary plans for disposition of this future additional 200 MTU of HEU are:

- About 160 MTU would be provided for use in naval ship power plants. About 20 percent of this uranium (32 MTU of HEU) would likely be rejected by Naval Reactors Program based on its strict standards. However, the rejected HEU, when down-blended with NU, can meet commercial specifications for use as fuel in power reactors.

- About 20 MTU would be down-blended to LEU for eventual use in civilian nuclear power reactors, research reactors, or related research.
- About 20 MTU would be reserved for space and research reactors that currently use HEU, pending development of fuels that would enable the conversion to LEU fuel cores.

Existing Programs for Allocated HEU

The 47.7 MTU of HEU in Table 1 represents the amount of HEU that currently exists in inventory, excluding those amounts that have already been down-blended. NNSA currently has several ongoing down-blending projects that are summarized below. DOE has approved these projects and, where appropriate, Secretarial Determinations have concluded that the sales would have no adverse material impacts on the domestic nuclear fuel market or industry. Uranium sales from these projects are included in the overall annual DOE uranium sales proposed in this plan.

- In September 2005, the Secretary of Energy announced that DOE would down-blend 17.4 MTU of HEU for use in the Reliable Fuel Supply (RFS) initiative. To down-blend the HEU and store the resulting LEU, a contractor team was selected in June 2007. It is expected to take approximately 3 years to down-blend the HEU to LEU (4.9 percent ^{235}U). The 17.4 MTU of HEU is expected to yield approximately 290 MTU of LEU. A portion of the LEU will be used to pay for down-blending the HEU. As of the end of FY 2007, about 3.2 MTU of HEU has been down-blended or shipped, leaving about 14.2 MTU for future shipment and down-blending.
- An April 2001 Interagency Agreement between DOE and the Tennessee Valley Authority (TVA) for the off-specification fuel project (otherwise referred to as the Off-Spec HEU Purchase Agreement), and its various amendments, provide for the down-blending of 40.3 MTU of HEU for use in designated TVA reactors from 2004 through 2014. [Note: This off-spec HEU is not the same as off-spec non-UF_6 material referred to in Table 1.] About 34.6 MTU of HEU have been down-blended or delivered for down-blending through FY 2007. The remaining 5.7 MTU of HEU will be delivered and down-blended by the end of FY 2009.
- DOE has set aside about 10 MTU of HEU to be down-blended to LEU at an enrichment level of 19.75 percent ^{235}U for sale as research reactor fuel to approved customers. About 2.2 MTU of this HEU have been down-blended and delivered as research reactor fuel through FY 2007. Sales in FY 2008 will be approximately 0.9 MTU of HEU, leaving 6.9 MTU to be down-blended in the future. These sales do not impact the commercial nuclear fuel industry because the product has a much higher enrichment level than the commercial sector can produce (3 to 5 percent ^{235}U versus 19.75 percent ^{235}U).
- NNSA, in conjunction with EM, began recovery and down-blending of 21 MTU of surplus HEU metals, oxides, and reactor fuel elements in FY 2008 at the Savannah River Site (SRS) H-Canyon and associated facilities, producing approximately 250 MT of off-spec LEU solution. It is expected that the down-blending work will be completed in 2019. Further, the LEU resulting from this down-blending project is likely to be

added to the material TVA receives under the existing DOE-TVA Off-spec HEU Purchase Agreement.

Glossary of Terms

ASTM -- American Society of Testing and Materials

Blending or down-blend – The term used to describe the process whereby HEU is mixed with depleted, natural, or low enriched uranium to create LEU.

Conversion – The process of converting uranium oxide to uranium hexafluoride (UF_6).

Depleted uranium – Uranium having an assay less than 0.711 percent ^{235}U

Enriched uranium – Uranium having an assay greater than 0.711 percent ^{235}U

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

Gas centrifuge - A uranium enrichment process that uses centrifuges to spin UF_6 as a gas at high speeds to separate ^{235}U isotopes from the ^{238}U isotopes based on their difference in atomic weight.

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

Highly enriched uranium (HEU) – Uranium having an assay of 20 percent ^{235}U or greater.

Highly Enriched Uranium Purchase Agreement – In 1993 the United States agreed to purchase 500 metric tons of highly enriched uranium from dismantled Russian nuclear weapons, in the form of 15,000 metric tons of LEU for approximately $12 billion over 20 years.

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

Long-term price – In the context of this report, refers to the price paid for nuclear fuel materials and services that will be delivered more than one year after the contract is signed.

Low enriched uranium (LEU) – Uranium having an assay greater than 0.711 percent ^{235}U but less than 20 percent. Most nuclear power reactor fuel contains uranium having less than 5 percent ^{235}U.

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

Moratorium - The Transfer Agreement sets the amount of the stockpile to be maintained for 10 years by DOE at 22,000 metric tons uranium equivalent (58 million pounds U_3O_8). The purpose of this agreement was to facilitate the implementation of the HEU Purchase Agreement.

Natural Uranium - Uranium having an assay of 0.711 percent ^{235}U. This is the ^{235}U content found in most natural occurrences of uranium.

Natural uranium component – The feed material provided to a uranium enricher to produce enriched uranium and uranium tails. The natural uranium feed component consists of U_3O_8 and UF_6 conversion service.

Off-Spec (off-specification) – 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 (IA) for the Off-Specification Fuel Project in April 2001.

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

Portsmouth Gaseous Diffusion Plant – DOE owned uranium enrichment plant located in Piketon, Ohio. The plant is shutdown.

Reliable Fuel Supply (RFS) - The RFS Program includes a series of initiatives to ensure that foreign countries that meet nonproliferation objectives and do not develop and deploy uranium enrichment and reprocessing technologies have access to the nuclear fuel market. DOE plans to down-blend 17.4 MTU to LEU and maintain this supply of LEU until needed.

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

Spot market price or spot price – The price paid for nuclear fuel materials or services delivered within one year of the purchase date.

Tails – Depleted uranium produced during the uranium enrichment process.

Transfer Agreement - The Agreement between the United States and the Ministry of the Russian Federation for Atomic Energy (Minatom) concerning the transfer of source material to the Russian Federation. The agreement signed by DOE and Minatom on March 24, 1999, permitted the transfer to Russia of the uranium feed component stored in the United States under the HEU Purchase Agreement. It also includes the DOE purchase of 11,000 metric tons of natural uranium from Minatom and the agreement that the United States and Russia to stockpile 22,000 metric tons of natural uranium equivalent under a sales moratorium for 10 years.

Uranium – A radioactive, metallic element with the atomic number 92; one of the heaviest naturally occurring elements. Uranium has 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 - On April 26, 1996, the USEC Privatization Act, Public Law 104-134 (42 U.S.C. 2297h) was enacted.