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EXCESS URANIUM INVENTORIES

Clarifying DOE's Disposition Options Could Help Avoid Further Legal Violations

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Why GAO Did This Study

Uranium is a key component in the production of nuclear energy and nuclear weapons. The Department of Energy (DOE) manages the nation's surplus uranium, which is derived in part from former nuclear weapons production. In 2008, DOE published a uranium management plan that set a target for DOE uranium sales and transfers to avert harm to the domestic uranium industry. In 2009, DOE began using natural uranium to pay for cleanup work at a former uranium enrichment facility in Ohio, without having identified such transactions in its 2008 plan.

As directed, GAO reviewed DOE's uranium management program. This report examines (1) DOE's uranium transactions and plans for future transactions, (2) the extent to which these transactions were consistent with DOE's uranium management plan, and (3) the extent to which these transactions were consistent with federal law. GAO reviewed transaction documents and contracts and interviewed knowledgeable DOE, contractor, and uranium industry officials and uranium market analysts.

What GAO Recommends

GAO recommends that DOE update its uranium management plan and suggests that Congress consider authorizing DOE to, among other things, retain the proceeds of future uranium transactions. DOE agreed to update its uranium management plan but disagreed that its actions did not comply with federal fiscal law. GAO maintains, however, that DOE's comments do not undermine the conclusion that the department violated the miscellaneous receipts statute.

View [GAO-11-846](#) or key components. For more information, contact Gene Aloise at (202) 512-3841 or aloise@gao.gov.

EXCESS URANIUM INVENTORIES

Clarifying DOE's Disposition Options Could Help Avoid Further Legal Violations

What GAO Found

In a series of seven transactions from December 2009 through June 2011, DOE used 1,873 metric tons of natural uranium to pay for \$256 million in cleanup services provided by two contractors at the Portsmouth, Ohio, enrichment facility, and additional transactions are planned. Six out of seven of these transactions involved the United States Enrichment Corporation (USEC), former operator of the Portsmouth facility. DOE released 1,473 metric tons of uranium, and USEC provided \$194 million in cleanup services at the Portsmouth facility. Among other activities, USEC's services included removing chemical and hazardous materials from the plant. The seventh transaction involved a second contractor. In June 2011, DOE released 400 metric tons of uranium, and the contractor agreed to provide \$62 million in decontamination and decommissioning services. DOE officials said the department expects to continue transferring natural uranium to this contractor for cleanup services through 2013.

DOE's uranium transactions have been consistent with parts of its uranium management plan but not with others. The plan states that DOE would adhere to a target for uranium sales and transfers of no more than 10 percent of annual domestic fuel requirements for uranium. DOE's releases of uranium into the commercial market did not exceed the annual target specified in the plan, ranging from 5 percent of demand in 2008 to 6 percent in 2010—well below the 2008 plan's designated target. With regard to other provisions, however, DOE has departed somewhat from the plan. For example, the department has deviated from the schedule of uranium transfers articulated by the plan, allowing more uranium to enter the market sooner than cited.

DOE's uranium transactions with USEC were sales authorized by the USEC Privatization Act, but they did not comply with federal fiscal law. The USEC Privatization Act requires that before a uranium sale, DOE must determine that the materials are surplus to national security needs; that the department is receiving fair market value; and that the sales will not adversely affect the domestic uranium mining, conversion, and enrichment industries. GAO found that DOE met these requirements. Nevertheless, by not depositing the value of the net proceeds from the sales of uranium into the Treasury, DOE violated the miscellaneous receipts statute. This statute requires an official or agent of the government receiving money from any source on the government's behalf to deposit the money in the Treasury. As GAO found when it reviewed a similar series of transactions in 2006, DOE provided the uranium to USEC for sale to a third party and allowed USEC to keep the proceeds of the sales. Even with no money changing hands, GAO concludes that an amount equivalent to the value that went to USEC should have gone to the Treasury. By not depositing an amount equal to the value of the uranium into the Treasury, DOE has inappropriately circumvented the power of the purse granted to Congress under the Constitution.

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Abbreviations

DOE Department of Energy
NNSA National Nuclear Security Administration
USEC United States Enrichment Corporation

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Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

September 26, 2011

The Honorable Dianne Feinstein
Chairman
The Honorable Lamar Alexander
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
United States Senate

The Honorable Rodney P. Frelinghuysen
Chairman
The Honorable Peter J. Visclosky
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
House of Representatives

Uranium—a naturally occurring radioactive element—is used in nuclear weapons as well as in fuel for nuclear power plants. In the United States, 20 percent of the nation’s electricity comes from nuclear power, and growing energy demand and concerns about carbon dioxide emitted when fossil fuels are burned have sparked interest in increasing the use of nuclear power. A healthy and reliable domestic uranium industry is considered essential to ensuring that nuclear power remains a viable option for supplying the nation’s energy needs.

From the 1940s, the Department of Energy (DOE) and its predecessor agencies have processed uranium as a source of nuclear material for defense and commercial purposes. A key step in this process is the enrichment of natural uranium, which raises its concentration of uranium-235, the form, or isotope, that undergoes fission to release enormous amounts of energy in nuclear reactors and weapons. The enrichment process results in two principal products: (1) enriched uranium hexafluoride, which can be further processed for specific uses, such as nuclear weapons or fuel for power plants, and (2) leftover “tails” of uranium hexafluoride, which are also called depleted uranium because the material is depleted in uranium-235 compared with natural uranium. Since 1993, uranium enrichment activities at DOE-owned uranium enrichment plants have been performed by the United States Enrichment Corporation (USEC), a former government-owned corporation that was privatized in 1998.

DOE maintains inventories of natural, enriched, and depleted uranium in excess of its needs. This inventory comes from a variety of sources, including the dismantling of some of the nation's nuclear weapons or leftover material from before 1993. The department stores most of its uranium at its Portsmouth Gaseous Diffusion Plant, a uranium enrichment facility in Piketon, Ohio, that ceased operations in 2001, and at its Paducah Gaseous Diffusion Plant, a similar facility currently operated by USEC in Paducah, Kentucky.

In March 2008, we reported on DOE's options for its inventory of depleted uranium.¹ We recommended that the department develop a comprehensive uranium management assessment containing detailed information on the types and quantities of depleted, natural, and enriched uranium managed by DOE and a comprehensive assessment of the department's options for this material. In December 2008, with input from the uranium industry, DOE published its "Excess Uranium Inventory Management Plan" detailing the amount of uranium held by the department and what plans it had at that time for selling or transferring uranium to the commercial market. The purpose of DOE's plan was 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.² The plan detailed the amount and type of uranium in the department's possession and DOE's disposition strategy at the time. Among other details in the plan, DOE committed to generally restricting its annual uranium sales and transfers to 10 percent of domestic nuclear fuel requirements but also noted that it may exceed 10 percent in any given year for certain special purposes. Shortly thereafter, in July 2009, DOE announced its intent to use some of its natural uranium to compensate USEC—in lieu of cash payment—for accelerated environmental cleanup work the company was conducting at the Portsmouth facility. This work was intended to prepare the facility for decontamination and decommissioning. In August 2010, DOE entered

¹GAO, *Nuclear Material: DOE Has Several Potential Options for Dealing with Depleted Uranium Tails, Each of Which Could Benefit the Government*, [GAO-08-606R](#) (Washington, D.C.: Mar. 31, 2008).

²According to DOE officials, the objectives of DOE's plan were to: (1) enhance the value and usefulness of DOE's uranium; (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 uranium enrichment plants, in addition to minimizing any material adverse impacts on the domestic uranium industry.

into a new contract with the firm Fluor-B&W Portsmouth to decontaminate and decommission the Portsmouth facility.³ Subsequently, DOE announced a second round of uranium transactions—this time with the new contractor instead of USEC—to similarly compensate it for some of its services at Portsmouth.

The conference report accompanying the fiscal year 2010 Energy and Water Development and Related Agencies Appropriations Act directed us to review DOE's overall uranium management plan, including the department's oversight and implementation strategy, and to assess certain uranium transactions for consistency with federal law.⁴ Accordingly, this report examines (1) DOE's transactions using its excess uranium and its plans for such transactions in the future, (2) the extent to which these transactions have been consistent with DOE's excess uranium management plan, and (3) the extent to which these transactions are consistent with federal law.

To examine DOE's uranium transactions for cleanup services, we reviewed, among other things, DOE documents detailing the transactions the department has engaged in involving its uranium, assessments of the value of uranium in each transaction, and analyses of the impact of DOE's activities on the uranium market. To examine the extent to which DOE's activities have been consistent with its excess uranium management plan, we analyzed the plan and compared the uranium activities the plan projected against DOE's actual uranium transactions. To determine the extent to which DOE's uranium transactions are consistent with federal law, we reviewed statutes governing DOE's uranium activities, including the USEC Privatization Act, as well as relevant fiscal laws, such as the miscellaneous receipts statute.⁵ For all of

³Fluor-B&W Portsmouth LLC is a partnership between Fluor Federal Services, Inc., a subsidiary of Fluor Corporation, an engineering and construction management firm, and Babcock & Wilcox Technical Services Group, a subsidiary of the Babcock & Wilcox Company, a firm that owns and operates large nuclear facilities. Both companies have experience in the handling and disposal of nuclear waste and materials and have worked with DOE to clean up other nuclear weapons facilities across the United States.

⁴H.R. Rep. No. 111-278, at 121-22 (2009) (accompanying Energy and Water Development and Related Agencies Appropriations Act, 2010, Pub. L. No. 111-85, 123 Stat. 2845).

⁵USEC Privatization Act, 42 U.S.C. §§ 2297h-2297h-13 (2006); miscellaneous receipts statute, 31 U.S.C. § 3302(b) (2006).

our objectives, we interviewed officials at DOE's headquarters in Washington, D.C., and at the Portsmouth/Paducah Project Office in Lexington, Kentucky. We interviewed uranium industry representatives at selected mining, milling, conversion, enrichment, and fabrication firms about DOE's uranium management plan, the commercial uranium market, and the impact of DOE's activities on the uranium industry. We selected firms in the uranium industry to obtain information from each stage of the nuclear fuel cycle. We also interviewed nuclear industry trade representatives, market analysts, uranium brokers, and utilities. Appendix I describes our scope and methodology in more detail.

We conducted this performance audit from November 2010 through September 2011, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Before uranium can become nuclear fuel to produce energy or be used in weapons, it must be mined from the earth. Mining firms in the United States extract uranium by conventional means, such as open-pit and underground mining, as well as by means of a liquid that leaches uranium from the ground. The product from these techniques is a substance called yellowcake. Yellowcake on its own cannot fuel nuclear reactors and weapons. Rather, it is shipped to a conversion facility, where the yellowcake is converted to uranium hexafluoride (a gas when heated) for the enrichment process. Uranium comprises a mix of several isotopes, or forms of the same element with different atomic weights. Less than 1 percent of natural uranium found in yellowcake is the isotope uranium-235—the fissile isotope used in nuclear reactors and nuclear weapons. After conversion, enrichment firms use one of several processes to increase the amount of uranium-235 to concentrations suitable for generating nuclear power or for nuclear weapons. To be suitable as fuel for nuclear reactors, natural uranium must be enriched to a concentration of from 3 to 5 percent uranium-235. This fuel is referred to as low-enriched uranium. Natural uranium enriched to a concentration of over 90 percent uranium-235 is highly enriched uranium, which is considered weapons-grade material. For more detailed information about the nuclear fuel cycle, see appendix II.

Initially, the federal government was the only entity providing domestic enrichment services in the United States. More recently, however, domestic uranium enrichment activities have been performed by private industry. USEC is one of several firms that provide enrichment services to utilities operating nuclear power plants. It has provided enrichment services using DOE-owned facilities since 1993, when it began functioning as a government-owned corporation. In 1998, USEC began functioning as a private corporation, which today runs the Paducah Gaseous Diffusion Plant in Kentucky. USEC ran the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio, until 2001, when DOE contracted the firm to maintain the plant in cold-standby status for a number of years until the department was ready to decontaminate and decommission it.⁶ USEC is currently seeking funding to open a new enrichment facility, the American Centrifuge Plant, at the Portsmouth site.⁷

The market for uranium works somewhat differently from other commodity markets. In one of two ways, uranium buyers, such as utilities, purchase uranium and the services to convert it into nuclear fuel. First, buyers can obtain uranium under long-term contracts with sellers in the “term” market. Second, sellers can make their uranium available for immediate sale in a forum called the “spot” market. Transaction details about sales through both long-term contracts and the spot market are ordinarily considered business proprietary information. Uranium typically changes ownership through a process called a book transfer. Book transfers do not usually involve the physical movement of uranium, generally occurring at conversion and enrichment facilities, which tend to maintain large quantities of yellowcake or uranium hexafluoride on site for their customers. Uranium transactions are conducted directly between buyers and sellers, but brokers also match buyers with sellers for a fee. In addition, speculators may hold and sell uranium strategically to profit from swings in the price of the material.

⁶Cold standby is an inactive status that maintains a plant in usable condition so that production at the facility can be restarted in the event of a significant disruption in the nation’s supply of enriched uranium.

⁷If constructed, this new plant would enrich uranium by gas centrifuge, a technique that consumes far less energy than the gaseous diffusion process used at DOE’s Portsmouth and Paducah facilities.

DOE Has Used Excess Uranium to Pay for Cleanup Services, and Additional Transactions Are Planned

Since 2008, DOE has engaged in transactions involving excess uranium to pay two contractors for cleanup services at the Portsmouth Gaseous Diffusion Plant. Most of the uranium went to USEC to prepare the Portsmouth facility for decontamination and decommissioning. DOE plans additional transactions involving excess uranium.

DOE Has Used Nearly 1,900 Metric Tons of Excess Uranium to Pay for More Than \$250 Million in Cleanup Services

From December 2009 through June 2011, DOE used 1,873 metric tons of its excess natural uranium to pay for \$256 million in cleanup services at its Portsmouth facility (see table 1). During this period, the department completed seven transactions with two firms.

Table 1: Net Value of Natural Uranium DOE Used to Pay for Cleanup, December 2009 through June 2011

Date	Recipient	Dollars per kilogram	Metric tons of uranium	Value
December 2009	USEC	\$112.63	201.90	\$22,740,662
March 2010	USEC	109.27	201.52	22,020,735
May 2010	USEC	111.55	226.32	25,246,385
July 2010	USEC	111.51	250.82	27,970,088
October 2010	USEC	132.89	242.74	32,256,667
March 2011	USEC	182.95	349.99	64,030,962
June 2011	Fluor-B&W Portsmouth	154.33	400.20	61,763,235
Total			1,873.49	\$256,028,734

Source: GAO analysis of DOE data.

DOE's first six transactions took place with USEC. In these transactions, DOE released in total about 1,473 metric tons of uranium valued at about \$194.3 million. In return, USEC provided accelerated cleanup services to prepare the Portsmouth facility for eventual decontamination and decommissioning. For example, USEC removed and disposed of chemical and hazardous materials, including electrical equipment containing polychlorinated biphenyls, toxic chemicals that the Environmental Protection Agency states have been demonstrated to cause cancer. Other work USEC performed included relocating a cooling water line and identifying excess equipment suitable for recycling.

One uranium transaction to date has also occurred between DOE and Fluor-B&W Portsmouth. This firm began activities to decontaminate and decommission the Portsmouth facility in March 2011, according to a DOE official. In June 2011, DOE released 400 metric tons of uranium valued at nearly \$62 million to Fluor-B&W Portsmouth as payment for additional cleanup services at the Portsmouth facility.

In these transactions, the value DOE received for each lot of natural uranium was reduced by the transaction costs both USEC and Fluor-B&W Portsmouth expected to incur to carry out the seven transactions (see table 2). These costs, which included charges for such things as storage cylinder handling and inspections, record keeping, and sales management, totaled almost \$4 million. To account for these costs in the first six transactions, USEC reduced the value of the uranium transactions by 1 percent. Fluor-B&W Portsmouth reduced the value of its June 2011 transaction by substantially more—almost 2.8 percent—to account for sales costs. Fluor-B&W Portsmouth expects to discount all future transactions by a similar percentage as well, according to company representatives. In addition, under its contract with the department, Fluor-B&W Portsmouth also sought cost reimbursement from DOE for expenses associated with uranium handling and inspection and setting up what the parties referred to as a “uranium transfer management program.” According to Fluor-B&W Portsmouth representatives, Fluor-B&W Portsmouth was not a participant in the uranium market before it entered into its contract with DOE, which required the company to establish processes and procedures to manage 10 anticipated transactions over two and a half years. DOE plans nine additional transactions of natural uranium with Fluor-B&W Portsmouth through 2013, according to agency documents.

Table 2: Uranium Sales and Other Transaction Costs

Date	Recipient	Sales costs	Other transaction costs	Total costs	Percentage of value
December 2009	USEC	\$195,000	\$230,000	\$425,000	1.9
March 2010	USEC	195,000	155,000	350,000	1.6
May 2010	USEC	170,000	155,000	325,000	1.3
July 2010	USEC	135,000	195,000	330,000	1.2
October 2010	USEC	135,000	195,000	330,000	1.0
March 2011	USEC	262,348	0	262,348	0.4
Subtotal		\$1,092,348	\$930,000	\$2,022,348	1.0
June 2011	Fluor-B&W Portsmouth	\$1,748,822	\$60,209	\$1,809,031	2.8
Total		\$2,841,170	\$990,209	\$3,831,379	1.5

Source: GAO analysis of DOE data.

DOE Plans Additional Transactions Involving Excess Uranium but Has No Plans to Transfer or Sell Depleted Uranium

In addition to the natural uranium that DOE anticipates it will release to Fluor-B&W Portsmouth for cleanup services through 2013, DOE also maintains other inventories of natural uranium. In 2008, DOE stored approximately 4,500 metric tons of uranium that does not currently meet commercial specifications for manufacturing nuclear fuel. According to DOE's December 2008 uranium management plan, this uranium would require considerable processing before it could meet commercial standards. The plan states that some of this material would eventually be processed and offered for use in the commercial market over a number of years. According to DOE, however, some of the material is so contaminated that it is no longer under consideration for processing, and DOE is uncertain what its ultimate disposition will be.

In addition to natural uranium, DOE maintains inventories of enriched and depleted uranium that are in excess of the department's needs. For example, at the end of fiscal year 2010, DOE had 89 metric tons of excess highly enriched uranium in its inventories. To dispose of highly enriched uranium, DOE's National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE that is responsible for the management of the nation's nuclear weapons program, has reduced the enrichment level of some of this uranium so it is potentially usable as nuclear fuel in the Tennessee Valley Authority's nuclear power reactors. Some of the down-blended material has also gone to support DOE's American Assured Fuel Supply Program, which ensures, among other

things, access to nuclear fuel for civilian reactors in foreign countries that have good nonproliferation credentials.

According to agency officials, DOE also has approximately 750,000 metric tons of depleted uranium tails that it stores in about 63,000 metal cylinders in storage yards at its Paducah and Portsmouth enrichment plants. A product of the enrichment process, this depleted uranium has historically been considered of limited use, but increases in uranium prices have potentially made it profitable to re-enrich some of the tails to further extract uranium-235. We reported in June 2011 that at May 2011 uranium prices and enrichment costs, DOE's tails have a net value of \$4.2 billion.⁸ This estimate is very sensitive, however, to changing uranium prices, which have been extremely volatile, as well as to the availability of sufficient enrichment capacity.

USEC has publicly announced an interest in re-enriching some of DOE's tails beginning in 2012. USEC plans to shut down operations at DOE's Paducah facility, depending on market conditions, and also plans to replace some of the Paducah facility's production capacity with the new centrifuge-based uranium enrichment plant it is constructing. USEC is considering continued operation of the Paducah facility beyond May 2012. According to USEC, processing depleted uranium could contribute toward maintaining operations at Paducah and retaining 1,200 employees the company might otherwise have to lay off. DOE officials, however, said that the department has no current plans to sell or re-enrich depleted uranium tails.

⁸GAO, *Nuclear Material: DOE's Depleted Uranium Tails Could Be a Source of Revenue for the Government*, [GAO-11-752T](#) (Washington, D.C.: June 13, 2011).

DOE's Transactions Did Not Exceed Targets Set by Its Uranium Management Plan, but DOE's Activities Were Not Consistent with the Plan in Other Ways

DOE's excess uranium transactions have been consistent with parts of its uranium management plan but not with others. Specifically, the amount of uranium the department sold or transferred is less than the target of 10 percent of annual domestic fuel requirements that DOE established under the 2008 plan. With regard to other provisions, however, DOE has departed somewhat from the plan. For example, DOE has deviated from the schedule of uranium transfers articulated by the plan, resulting in more uranium entering the market much sooner than cited.

DOE's Uranium Transactions Have Not Exceeded the Target of 10 Percent of Domestic Uranium Demand Specified by the Plan

The total amount of uranium that DOE sold or transferred from January 2008 to June 2011 has stayed below the target specified in the department's December 2008 uranium management plan. The plan stated that DOE would adhere to a target for uranium sales and transfers of no more than 10 percent of the annual U.S. requirements for nuclear fuel. The target was established in part to alleviate concerns raised by uranium industry officials that sales of uranium by DOE could harm the domestic uranium mining, conversion, and enrichment industries. Such concerns included a fear that sudden marked increases in the supply of uranium could depress prices. The targeted limit on uranium sales and transfers reflects DOE and uranium industry officials' concurrence that the industry could withstand, without adverse material impact, the addition to the market from DOE's uranium inventory of up to 10 percent of the U.S. demand for uranium in any year.

DOE's December 2008 plan estimated that U.S. nuclear fuel requirements would be about 19,250 metric tons of uranium annually from 2008 through 2010. According to industry analysts, requirements are likely to increase gradually to about 20,000 metric tons by 2013.⁹ As shown in table 3, the total uranium DOE released to the market represented only about 5 percent of total U.S. demand in 2008 and

⁹We used estimates for future fuel requirements identified by Energy Resources International, Inc., in a market impact analysis it prepared for DOE. See Energy Resources International, Inc., *Quantification of the Potential Impact on Commercial Markets of DOE's Transfer of Natural Uranium Hexafluoride during Calendar Years 2011, 2012, and 2013* (Washington, D.C., December 2010).

6 percent in 2009, significantly below the 10 percent target established by the plan.

Table 3: Amount of Uranium DOE Released or Plans to Release to the Market Annually, 2008-2013

	2008 ^a	2009 ^a	2010 ^a	2011 ^b	2012 ^b	2013 ^b
Estimated total U.S. commercial nuclear fuel requirements	19,250	19,250	19,250	19,450	19,590	20,430
Uranium sold, transferred, or planned for sale or transfer						
To American Assured Fuel Supply Program	57	88	47	44	94	0
To MOX Backup Inventory Program ^c	0	0	0	47	128	334
To Tennessee Valley Authority	982	828	126	127	0	0
To Portsmouth contractors for cleanup services	0	202	921	1,605	1605	1,350
Total	1,039^{d,e}	1118^e	1,094^e	1,823	1,827	1,684
Percentage of annual U.S. nuclear fuel requirements	5	6	6	9	9	8

Source: GAO analysis of data from DOE and Energy Resources International, Inc.

Note: Quantities are expressed as metric tons of natural uranium; totals and percentages have been rounded.

^aNumbers for 2008-2010 represent actual amounts of uranium released.

^bNumbers for 2011-2013 represent the most recent DOE estimates.

^cDOE's MOX [mixed oxide] Backup LEU [low-enriched uranium] Inventory Program down-blends highly enriched uranium to low-enriched uranium to be used as a backup fuel supply to utilities participating in DOE's MOX program for surplus plutonium disposition.

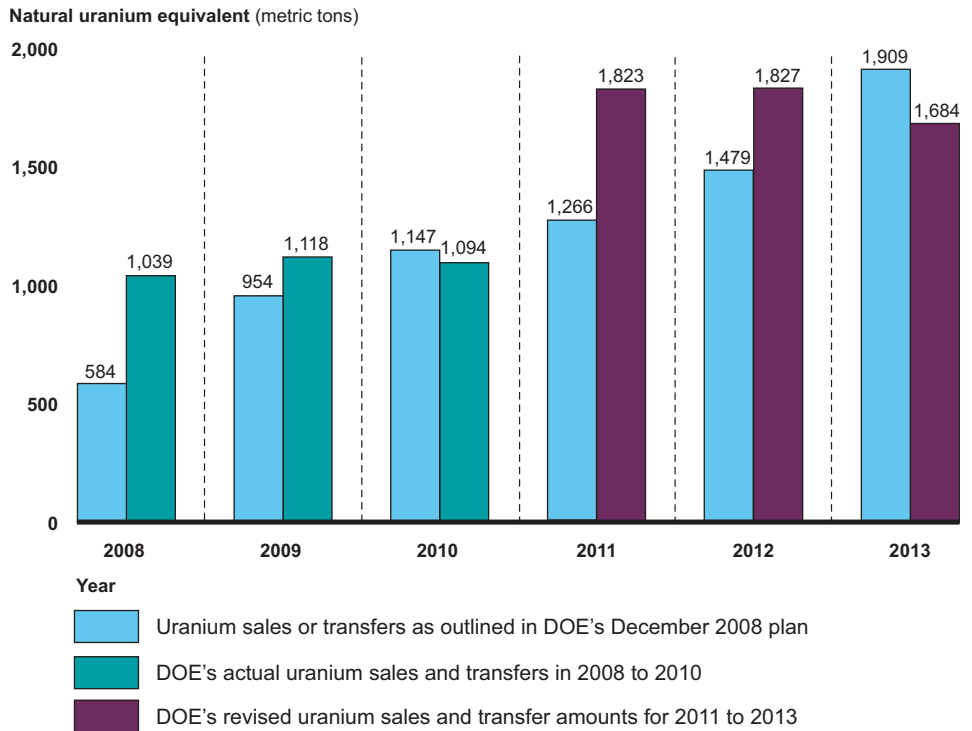
^dThe 2008 total excludes the equivalent of 10.4 metric tons of natural uranium that DOE released to a private firm for use as commercial reactor fuel in Ukraine. This "off-specification" uranium contained contaminants that made it unsuitable for use in U.S. commercial nuclear power reactors.

^eThe 2008 to 2010 totals exclude the equivalent of 90 metric tons of natural uranium that DOE transferred to research reactors. Commercial uranium enrichment companies do not produce uranium at the required enrichment level for use in these reactors; DOE therefore supplies fuel at the appropriate enrichment level.

DOE Plans to Release More Uranium into the Market Sooner Than Detailed in the Plan

Consistent with its 2008 plan, DOE has successfully kept its sales or transfers of uranium below the 10 percent target, but it has departed from other key provisions in its 2008 plan. For example, the plan scheduled uranium sales or transfers so that uranium would be released into the market gradually from 2009 through 2013. As shown in figure 1, DOE originally intended to increase the amount of uranium released year by year, from about 600 metric tons of uranium in 2008 to nearly 2,000 metric tons by 2013. But as a result of the uranium transactions with USEC and Fluor-B&W Portsmouth, which were announced after DOE's December 2008 plan, DOE is poised to release substantially more uranium faster than the plan stated.

Figure 1: Comparison of DOE's Planned Sales or Transfers, as Outlined in the December 2008 Excess Uranium Management Plan, with Actual and Expected Sales or Transfers, 2008-2013



Source: GAO analysis.

Note: Bars for 2008-2010 compare DOE's 2008 management plan with actual amounts of uranium released to the commercial market. Bars for 2011 to 2013 compare amounts cited in DOE's 2008 management plan with DOE's current plan to sell or transfer uranium, revised as of December 2010.

DOE's plan also stated that the department may sell or re-enrich up to 7,000 metric tons of depleted uranium from 2008 to 2017. We learned from DOE officials, however, that the department has no plans to release any inventory of depleted uranium in the near term. According to DOE officials, a key reason depleted uranium is not likely to be sold or re-enriched is concern that doing so would push total DOE uranium sales and transfers over the December 2008 plan's 10 percent target.

According to domestic uranium industry officials we interviewed, DOE's departure from its 2008 plan has created anxiety about how much further DOE might deviate from its plan in the future. In particular, industry officials were concerned that uncertainties about the quantities of uranium DOE might suddenly decide to sell or transfer could cause a fall in future

uranium prices. Industry officials told us that this fear of declining prices discouraged potential investment in the industry, particularly in newer mining companies seeking to start production. Industry officials also said they feared that uncertainties about DOE's future plans would raise the costs of borrowing and of insurance coverage.

In discussions, DOE officials stated that the December 2008 uranium management plan was out of date soon after it was issued and that most of the plan's projected transfers from 2011 forward no longer reflected the department's present intentions. DOE officials told us that the department has begun work on updating the uranium management plan, but officials were unable to provide a date by which the update will be completed.

**DOE's Uranium
Transactions with
USEC Were
Consistent with
Federal Law
Governing Uranium
Transactions but Did
Not Comply with
Federal Fiscal Law**

We found that DOE's uranium transactions with USEC constituted sales authorized under the USEC Privatization Act and that conditions the act requires before a uranium sale can be made were met.¹⁰ We found, however, that by not depositing an amount equivalent to the proceeds from these transactions into the Treasury, DOE violated the miscellaneous receipts statute.¹¹

¹⁰Because DOE's first uranium transaction with Fluor-B&W Portsmouth occurred as this report was being finalized, we did not analyze the extent to which DOE's transaction with Fluor-B&W Portsmouth is consistent with federal law. Therefore, this section discusses only the transactions between DOE and USEC.

¹¹Miscellaneous receipts statute, 31 U.S.C. § 3302(b) (2006) ("an official or agent of the Government receiving money for the Government from any source shall deposit the money in the Treasury as soon as practicable without deduction for any charge or claim").

DOE's Uranium Transactions with USEC Constituted Sales through an Agent

The Atomic Energy Act of 1954, as amended, gives DOE general authority under certain conditions to sell, lease, distribute, or otherwise make available source material,¹² including natural uranium. Congress, however, limited this authority in 1996 when it passed the USEC Privatization Act. This act prohibits the Secretary of Energy from transferring or selling any uranium except as consistent with the act's specific terms and conditions. The specific provision governing the material that DOE provided to USEC authorizes only sales of that material.

We found that from December 2009 through March 2011, DOE sold natural uranium into the market using USEC as its agent. DOE maintains that these transactions constituted barter with USEC, rather than sales by DOE using USEC as its agent, in that the transactions involved an exchange of services (environmental cleanup work) for materials (uranium). Our review of the substance of these transactions, however, showed that they were sales. A sale typically involves an exchange of goods or services for cash, and DOE in fact arranged for USEC to receive cash from the sale of federal uranium assets as compensation for services USEC provided to DOE. The transactions were thus sales executed through an agent—USEC. (Appendix III contains a detailed legal analysis of these issues.) Such sales are authorized by the USEC Privatization Act.¹³ Because we found that the transactions were sales, we did not consider and did not decide whether barter is also authorized under the USEC Privatization Act.¹⁴

Two key factors demonstrate that DOE's transactions with USEC were sales through an agent, rather than barter: first, DOE had control over USEC's sales of the uranium, which was the property of the federal government, and second, USEC sold the uranium for the benefit of the government and assumed no financial risk in the transaction.

¹²42 U.S.C. §§ 2093, 2201(m) (2006).

¹³We came to the same conclusion when analyzing a similar series of transactions in 2006. See GAO, *Department of Energy: December 2004 Agreement with the United States Enrichment Corporation*, B-307137 (Washington, D.C.: July 12, 2006).

¹⁴The fact that these transactions were sales and not barter is also significant to the question of whether DOE complied with federal fiscal law. By not depositing the proceeds from these sales into the Treasury, DOE violated the miscellaneous receipts statute, as described in greater detail below.

According to USEC officials, USEC finalized the sales of uranium to third parties before it signed the contract modifications under which it agreed to conduct cleanup in exchange for the uranium. That is, USEC arranged for the sale of federal property; it did not sell its own property. DOE has stated that it did not control the sale of the uranium under the terms of the contract modifications with USEC, but because the uranium was marketed and sold before those contract modifications were made final, the terms of the contract modification did not govern the sale. Instead, DOE and USEC officials told us that they had an earlier, oral agreement for the valuation of the material under which USEC solicited buyers for federal uranium assets. During the term of this agreement, which led directly to sales of the uranium, DOE had the right to exercise control over USEC's actions as an agent.¹⁵ Moreover, USEC sold the uranium primarily for DOE's benefit. USEC stated in its 2010 annual report to the U.S. Securities and Exchange Commission¹⁶ that it never considered itself the owner of the uranium because the company assumed no risk in its sale and did not stand to earn a profit. USEC also stated in the report that the amount of work USEC was to provide under the cleanup contract depended on the net value of the uranium (minus transaction costs). If USEC had secured less value for the material, it would have done less work for DOE; it therefore did not stand to gain or lose on the uranium sales. The primary beneficiary of the transactions was DOE, which sought to structure the transactions to avoid the receipt of cash it was not authorized to retain and use to pay for cleanup at the Portsmouth facility.

That USEC acted as DOE's agent is also indicated by the value DOE received for the uranium (in terms of work to be performed by USEC), which was reduced by an amount equal to the transaction costs that USEC incurred in the sale of the uranium. In other words, DOE did not receive the gross value, or price, that USEC realized from the sale of the uranium but instead received value equal to the net proceeds of its sale.

¹⁵DOE officials have stated that they did not ask, but instead allowed, USEC to solicit buyers or bids for the uranium. In addition, DOE officials approved USEC's valuation of the uranium on the basis of USEC's solicitation of bids. Because parties may assent to an agency relationship by words or actions (*see Restatement (Third) of Agency*, § 1.01 (2006)), whether DOE expressly asked USEC to act as its agent, or merely allowed it to do so and approved the resulting valuation, the result is the same: USEC acted as DOE's agent.

¹⁶USEC, *U.S. Securities and Exchange Commission, Form 10-K, Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act 1934*, fiscal year ending December 31, 2010.

USEC deducted from its valuation of the natural uranium transfer costs for such things as materials handling and a commission covering its sales management activities. For example, USEC deducted \$825,000 in sales management fees, plus other transaction and transfer costs, from the value of the uranium involved in the transaction. A USEC official said that the sales management fees were for the time and expertise to collect offers, value the material, negotiate sales of the material, and execute book transfers of the material. In other words, USEC charged a commission against the value of the material. DOE officials stated that such transactional fees or costs are routinely part of any commodity transaction. We agree that such costs routinely figure into commodity transactions, but where those costs are incurred by the recipient and charged back to the seller, and where those costs include a commission, the transactions are most accurately understood as ones involving an agent. DOE has mischaracterized the transactions as barter, but it is not this mischaracterization that makes the transactions illegal. The transactions constituted sales, and sales—whether through an agent or not—are authorized by the USEC Privatization Act. Rather, DOE's legal violation occurred when it failed to deposit the value of the net proceeds into the Treasury as required by the miscellaneous receipts statute.

Conditions Required by the USEC Privatization Act Were Met, but Analysis of the Market Impact of the Uranium Transactions Was Inconclusive

For DOE to carry out sales under the USEC Privatization Act, three conditions must first be met.¹⁷ First, the President must determine that the uranium intended for sale is not needed for national security. The uranium involved in DOE's transactions with USEC has been in DOE's inventory for over a decade. According to DOE, in that time this uranium has never been included in a nuclear weapons stockpile memorandum signed by the President, which identifies inventories of uranium for national defense needs. Because the uranium involved in DOE's transactions was not included in the most recent memorandum, the Nuclear Weapons Council—a joint Department of Defense and DOE organization established by Congress to manage the U.S. nuclear weapons stockpile—approved the release of the material for other purposes. Thus, the first condition was met.

Second, the USEC Privatization Act requires that the Secretary of Energy receive no less than fair market value for uranium sold. To ensure that

¹⁷42 U.S.C. § 2297h-10 (2006).

this condition was met, DOE officials said they assessed USEC's proposed valuation of the uranium and considered the most recent average spot market prices and USEC's transfer costs. The department then issued a determination that USEC's valuation represented fair market value for the material. Although we did not conduct our own analysis as to whether the Secretary in fact received fair market value for the uranium, we do not dispute the department's determination that it met this requirement of the USEC Privatization Act.

Third, the act requires the Secretary of Energy to determine that proposed transactions will have no adverse material impact on the domestic uranium mining, conversion, and enrichment industries. To meet this requirement, DOE contracted with an energy research firm, Energy Resources International, which issued a market impact analysis in November 2009 that projected the potential market effects of planned uranium sales and transfers from the last quarter of calendar year 2009 through 2013.¹⁸ The study took into consideration the five planned transactions for environmental cleanup at Portsmouth, as well as other planned transactions, including those between NNSA and the Tennessee Valley Authority and the American Assured Fuel Supply Program, among others.¹⁹ The authors of the study stated that DOE's planned transactions would have no adverse material impact on uranium producers, and DOE issued the required determination on the basis of this study. Thus, the third condition under the USEC Privatization Act was met.

Nevertheless, our review found the results of the market impact analysis to be inconclusive. The economic model developed by Energy Resources International analyzed market impact for the term market and included assumptions about supply-and-demand characteristics that represent the long-term, rather than the spot market, even though DOE, industry experts, and Energy Resources International analysts themselves agreed that DOE uranium transactions would have the potential to affect the spot

¹⁸Energy Resources International, Inc., *Quantification of the Potential Impact on Commercial Markets of DOE's Transfer of Natural Uranium during the Period October 2009 through December 2013* (Washington, D.C., Nov. 5, 2009).

¹⁹DOE carried out a sixth transaction with USEC in March 2011. This transfer was not included in Energy Resources International's November 2009 analysis.

market most.²⁰ Furthermore, the study stated that long-term prices are more relevant to investment decisions by the industry. In fact, in a subsequent study issued in December 2010 to account for additional DOE transactions beginning in 2011, Energy Resources International expanded its analysis to include the price impact of the transfers on the spot market, which it had previously characterized as too difficult to assess.²¹

The new study included an econometric model to evaluate the price impact in the spot market, but we found that it too was inconclusive.²² In particular, the econometric model used historic data on price, quantity supplied, and quantity demanded and did not identify and evaluate the effects of other factors that could also affect the behavior of uranium spot prices. These factors could include market participants' expectations about future uranium supply and demand, as well as their expectations of future levels of uranium inventories. In addition, because the details about uranium sales through both long-term contracts and the spot market are typically considered business proprietary information, data about expected future uranium supply and demand are usually not available and thus difficult or impossible to adequately model. A change in the price of competing energy resources, such as oil and coal, could also affect uranium spot prices. Changes in the prices of related minerals found in tandem with uranium, such as gold, copper, and vanadium, can also affect uranium spot prices. Specifically, a high market price for gold, copper, vanadium may encourage uranium exploration and production. Furthermore, domestic and international political and economic events or natural disasters—such as the March 2011 earthquake, tsunami, and subsequent nuclear accident in Japan—can affect uranium spot prices.

²⁰Energy Resources International also presented percentage price changes for the spot market, which were based on the firm's estimated price changes in the term market. In other words, the firm estimated a percentage spot price change if the spot market were to experience the same dollar amount of change in price as it had estimated for the term market.

²¹Energy Resources International, Inc., *Quantification of the Potential Impact on Commercial Markets of DOE's Transfer of Natural Uranium Hexafluoride*. This study evaluated the impact on the domestic uranium market of 12 additional transfers totaling up to 4,679 metric tons of natural uranium in the 3-year period from January 2011 through December 2013.

²²Energy Resources International's expanded analysis of the potential price impact on the spot market, found that DOE's 12 additional planned transfers would have no material adverse impact on uranium producers.

Because the econometric model used was not able to evaluate any of these factors, its estimate of the change in the spot market price of uranium caused by an isolated event would be inconclusive. We agree, as Energy Resources International noted in its study, that it is difficult to predict a specific change in the spot market price due to one particular future event, such as a DOE uranium transaction.

DOE Violated the Miscellaneous Receipts Statute by Not Depositing the Value of Net Proceeds from Uranium Transactions with USEC into the Treasury

DOE violated the miscellaneous receipts statute in handling the proceeds of its sales of uranium through USEC. This statute requires that “an official or agent of the Government receiving money for the Government from any source shall deposit the money in the Treasury as soon as practicable without deduction for any charge or claim.”²³ Generally, a federal agency may not operate beyond the level that it can finance with its annual appropriation without specific congressional authorization. For an agency to keep money that has not been appropriated is to undercut Congress’s constitutional power of the purse.²⁴

In providing uranium to USEC for sale to a third party and allowing USEC to keep the proceeds, DOE constructively received money for the government and improperly extended its reach beyond the operating level that it was otherwise authorized to achieve through its congressional appropriation. DOE officials readily acknowledged that if the department had sold the uranium directly into the market and received cash, it would have had to deposit that cash into the Treasury. DOE officials also acknowledged that it structured its transactions with USEC the way it did so as to avoid having to deposit the proceeds of a sale into the Treasury. DOE said that without this mechanism, it would not have been able to fund the accelerated cleanup at Portsmouth. In DOE’s view, however, because it received no cash in these transactions, it was not required to deposit any proceeds into the Treasury.

We disagree with DOE’s conclusion—that, because it received no direct cash for its uranium, it was not subject to the miscellaneous receipts statute—for the same reasons that we found similar actions by DOE in

²³31 U.S.C. § 3302(b) (2006).

²⁴This concept refers to the clause of the Constitution stating, “No Money shall be drawn from the Treasury, but in Consequence of Appropriations made by Law.” U.S. Const. art. I, § 9, cl. 7.

2006, also involving use of USEC as its sales agent, to violate this law.²⁵ It is a well-understood principle of law that what cannot be done directly cannot be done indirectly.²⁶ An agency that lacks authority to retain and use amounts that it receives directly cannot circumvent its lack of authority by engaging a contractor or, as here, a sales agent to indirectly receive, retain, and use the funds.²⁷ To the extent that Congress sees merit in the additional cleanup work that DOE states is needed at its facilities, it could provide DOE with explicit authority to barter uranium, as well as authority to receive and retain funding from the department's barter, transfers, and sales of uranium.

Conclusions

One purpose of DOE's December 2008 uranium management plan was to reassure the domestic uranium industry that the department would refrain from suddenly releasing unanticipated amounts of uranium into the market. But by announcing, 8 months after issuing its plan, uranium transactions that were not envisioned in the plan, DOE introduced additional uncertainty into that market. Partly as a result of the department's actions, the domestic uranium producers we interviewed fear the consequences of future transactions in which the department may engage. Without an accurate, updated plan that clearly details DOE's future uranium activities and the circumstances under which departmental plans could change, companies in the domestic uranium industry cannot adequately anticipate the department's actions and take steps to mitigate the consequences of those actions.

Federal law authorizes DOE to dispose of its excess uranium by selling it directly on the open market and depositing the proceeds in the Treasury. According to DOE officials with whom we spoke, however, DOE has no incentive to do so because the department would be unable to use the proceeds for its own cleanup priorities without specific congressional authorization. Nevertheless, our review indicates that DOE's uranium transactions with USEC constituted sales and that USEC served as the department's sales agent. Even though DOE did not directly receive cash for its uranium, in our view the transactions constituted sales, and thus

²⁵GAO, B-307137.

²⁶Cummings v. Missouri, 71 U.S. (4 Wall.) 277, 325 (1866).

²⁷GAO, *Contractors Collecting Fees at Agency-Hosted Conferences*, B-306663 (Washington, D.C.: Jan. 4, 2006), and GAO, B-307137.

the department was required to deposit an amount equal to the value of the uranium into the Treasury. By not doing so, DOE has inappropriately circumvented the power of the purse granted to Congress under the Constitution and violated the miscellaneous receipts statute. We do not question the need to decontaminate and decommission DOE's uranium enrichment facilities. If, however, the department cannot finance these cleanup activities without additional funding, it is the prerogative of Congress, not DOE, to make the necessary funding available.

Recommendation for Executive Action

To improve DOE's management of its excess uranium inventories, we recommend that the Secretary of Energy update the December 2008 "Excess Uranium Inventory Management Plan" to more accurately reflect DOE's plans for marketing its uranium.

Matter for Congressional Consideration

If Congress sees merit in using proceeds from the barter, transfer, or sale of federal uranium assets to pay for environmental cleanup of uranium enrichment facilities, it should consider:

- providing DOE with explicit authority to barter excess uranium and to retain the proceeds from barter, transfers, or sales or
- directing DOE to sell federal uranium assets for cash and directing that collected proceeds be made available for obligation only to the extent and in the amount provided in advance in appropriations acts for necessary expenses in decontaminating and decommissioning uranium facilities and directing DOE to deposit into the Treasury any excess over what is appropriated.

Agency Comments and Our Evaluation

We provided a draft of this report to DOE for comment. In its written comments, reproduced in appendix IV, DOE agreed with our recommendation to update its excess uranium management plan but disagreed that the department violated federal fiscal law.

In general, DOE's comments focused on our finding that DOE's uranium transactions constituted sales through an agent. Specifically, DOE commented that its transfer of uranium to USEC was a barter, exchanging uranium assets for environmental cleanup, and that USEC was not a sales agent for the department. Therefore, according to DOE, the department did not violate the miscellaneous receipt statute. DOE

stated that no authorized official signed a written agreement with USEC under which the company would sell uranium for DOE, nor could the department be bound by an oral agreement. DOE stated that the contract modifications under which USEC agreed to conduct cleanup in exchange for uranium did not include any language indicating USEC should obtain offers for DOE uranium or otherwise serve as DOE's sales agent. In DOE's view, we should not have considered any evidence other than the written contract modifications between DOE and USEC. DOE also disagreed with our statement that USEC faced no risk of loss in its sale of the uranium and that DOE paid a commission to USEC for its sale of the uranium. In addition, DOE disagreed that it entered into the transactions with USEC specifically to avoid receiving cash, contrary to what USEC and DOE officials explicitly told us. Instead, DOE stated the purpose of the transactions was to achieve accelerated cleanup of the Portsmouth site, which would help create or retain jobs at the site and save the federal government money in long-term maintenance costs. DOE also disagreed with our estimate of the value of the department's depleted uranium tails and provided updated data on the department's actual and planned uranium sales and transfers.

DOE's comments do not undermine our conclusion that the department violated the miscellaneous receipts statute. DOE arranged for USEC to receive cash from the sales of federal uranium as compensation for cleanup activities that DOE would otherwise have had to pay for out of its appropriated funds. Rather than address this fact, DOE reasserts its position that the transactions constituted barters, not sales through an agent. DOE's argument is misplaced, however. Whether the transactions were barters or sales goes mainly to the question of whether DOE was authorized to engage in the transactions at all under the USEC Privatization Act, and we found that the transactions were authorized as

sales.²⁸ As we noted in our report, that the transactions were sales and not barter is also significant to the question of whether DOE complied with the miscellaneous receipts statute, but only in that DOE did not deposit the net proceeds from its sales into the Treasury. The department does not refute, however, the central tenet behind our conclusion that it violated the miscellaneous receipts statute. It asserts that because it did not receive any actual cash in the transaction, it did not have to deposit any money into the Treasury. As we noted in our draft report, GAO and the courts have found in a number of instances that an entity does not have to receive actual cash to trigger a responsibility to deposit money into the Treasury.

DOE's comments also do not refute our finding that its transactions with USEC were sales through an agent. DOE focuses on the lack of a written agreement between the department and USEC that establishes the company as DOE's agent. We agree that no written agreement exists authorizing USEC to value DOE's uranium assets. Nevertheless, DOE has acknowledged the existence of an oral agreement, and whether DOE could be bound to act under such an agreement is not relevant to the present analysis. The fact remains that DOE requested USEC's valuation of the uranium, which it knew to be based on the solicitation of firm offers for the material and which led directly to the uranium's sale. Further, it was necessary and appropriate to look to evidence other than the contract modifications because the contract modifications do not cover valuation of the uranium.

²⁸DOE states that we did not refer to or refute the legal conclusions in its internal *Guidance on Barter Transactions Involving DOE-Owned Uranium*, which sets forth the department's position that it has general authority under the Atomic Energy Act to barter uranium for services as it did here. Our report does, however, present DOE's position in this regard. Our report also highlights the fundamental limitation that Congress placed on this general DOE authority: the later and more specific provisions of the USEC Privatization Act, which, as relevant here, authorize only sales of uranium. Because we found that the transactions were sales, we did not consider and did not decide whether barter is also authorized under the USEC Privatization Act. We note, however, that barter is not explicitly or clearly authorized by the terms of the Privatization Act. The provision of the USEC Privatization Act applicable to transactions involving the type of uranium at issue here authorizes only sales, and other provisions draw a distinction between the terms "transfer" and "sell." This distinction suggests that Congress did not intend for sales to encompass barter, which might more easily be understood as a type of transfer, rather than a type of sale. Furthermore, a 2006 bill gave DOE temporary authority to barter uranium, suggesting that Congress did not believe that DOE already had such authority.

Our review, therefore, appropriately examined the process USEC and DOE used to establish the uranium's value before the contract modifications were signed. Our review of this process also established that USEC in fact faced no risk of loss in its sale of the uranium because it sold the uranium *before* agreeing on how much work it would do in exchange for the uranium. In addition, DOE did pay a commission to USEC under the common definition of the term, that is, "a fee paid to an agent or employee for transacting a piece of business or performing a service."²⁹ DOE acknowledges that it paid a "sales management fee" to USEC. We see no distinction between such a fee and a commission. Further, we do not dispute DOE's contention that the overall purpose of accelerating the Portsmouth cleanup work may have been to save on long-term site maintenance costs and protect local employment, but DOE officials repeatedly told us that the department chose to pay for this project in the manner it did specifically to avoid the receipt of cash. DOE provided no other reason why it would seek to barter uranium rather than sell it. We therefore conclude that DOE manipulated the disposition of federal assets to avoid the payment of proceeds for those assets into the federal Treasury. Doing so violated the miscellaneous receipts statute.

With regard to our estimate of the value of DOE's depleted uranium tails, DOE stated that the draft report did not include any source or backup information for our \$4.2 billion estimate of the tails' value. DOE's statement is incorrect. The draft report cited our June 2011 report that explained in detail how we developed our estimate. Specifically, our estimate is based on a model we previously developed that uses standard formulas to estimate how much enriched uranium and tails can be produced from a given amount of uranium and enrichment services. The model employs price data obtained from nuclear industry trade publications. Such data are commonly used to estimate the market price for uranium. We agree with DOE that our estimate of the tails' value does not include the additional costs that may be incurred processing tails stored in deteriorating cylinders, addressing the poor quality of some material, or packaging and transporting the material. Our estimate omits these costs because they are unknown. DOE is mistaken, however, in stating that our estimate does not include the costs of production. Our model includes the cost of enrichment services in its estimate of the tails' net value. Nevertheless, as our June 2011 report and the draft report

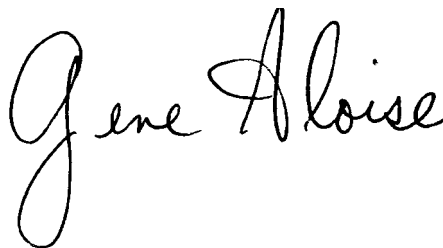
²⁹*Merriam-Webster's Collegiate Dictionary*, 11th ed. (Springfield, Mass.: 2003).

noted, our estimate is very sensitive to changing uranium prices, as well as to the availability of sufficient enrichment capacity. Uranium prices are volatile, and a sharp rise or fall can greatly affect the value of uranium tails. Any estimates of the value of DOE's tails are therefore subject to great uncertainty.

Finally, after we received the department's comments on our draft report, DOE officials provided additional updated data on the department's actual and planned uranium sales and transfers. We revised the report accordingly to reflect the most current data DOE provided to us.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Energy, the Director of the Office of Management and Budget, and other interested parties. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff members have any questions regarding this report, please contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov. You may also contact Susan D. Sawtelle at (202) 512-6417 or sawtelles@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix V.



Gene Aloise
Director, Natural Resources and Environment



Susan D. Sawtelle
Managing Associate General Counsel

Appendix I: Scope and Methodology

To identify the Department of Energy's (DOE) transactions involving excess uranium used to pay for accelerated cleanup work at the Portsmouth Gaseous Diffusion Plant, we obtained department summary data drawn from the Nuclear Materials Management and Safeguard System regarding all sales and transfers of uranium from January 1, 2008, through June 30, 2011. To identify specific transactions involving natural uranium during this time frame, we also obtained and reviewed individual nuclear materials transaction reports, which detailed the change of uranium ownership from DOE to the United States Enrichment Corporation (USEC) and to Fluor-B&W Portsmouth. We obtained information on the value of these transactions and the services paid for by these transactions by reviewing uranium valuation documents from USEC and Fluor-B&W Portsmouth, as well as the relevant DOE contracts or contract modifications related to the transactions. To further our understanding of these transactions and to determine DOE's future plans to sell or transfer uranium, we interviewed DOE nuclear materials management officials from the National Nuclear Security Administration (NNSA), the Office of Nuclear Energy, and the Office of Environmental Management. We also met with or interviewed by phone knowledgeable USEC officials at the Paducah Gaseous Diffusion Plant in Kentucky and Fluor-B&W Portsmouth officials at the Portsmouth Gaseous Diffusion Plant in Ohio. We did not determine the accuracy of DOE's uranium inventory data or specifically verify the amount of uranium physically transferred from DOE to other entities, including USEC and Fluor-B&W Portsmouth. We instead reviewed extensive department guidance regarding the Nuclear Materials Management and Safeguard System, including the Nuclear Materials Control and Accountability System, which tracks the character, location, and transfer of all federal inventories of nuclear materials, including uranium. Associated documentation indicates that an extensive program exists to ensure the accuracy of information on the nuclear materials inventory, but we nevertheless reviewed recent assessments of key databases that make up the nuclear materials management system. No material weaknesses were reported. We therefore determined that uranium inventory data drawn from these systems were sufficiently reliable for purposes of this report.

To determine the extent to which DOE's natural uranium transactions were consistent with DOE's "Excess Uranium Inventory Management Plan" issued in 2008, we compared key provisions of the plan to DOE's specific activities to manage its uranium inventory. To develop an understanding of DOE's uranium management activities, we interviewed DOE officials at the Portsmouth/Paducah Project Office in Lexington, Kentucky, which has managed the recent uranium transactions, as well

as the DOE contracting officers responsible for negotiating and executing federal contracts for cleanup services. To develop an understanding of the impact that DOE's uranium transactions might have on the market for uranium products, we also interviewed a wide range of uranium industry representatives. These representatives included officials from uranium trade associations; startup and established mining companies; ConverDyn's conversion facility in Metropolis, Illinois; and USEC's gaseous diffusion enrichment plant in Paducah, Kentucky. We also interviewed officials from selected utility companies operating commercial nuclear power plants, commodities brokers and traders, and market analysts. We visited two mining operations, a Cameco corporation "in situ" uranium mine at Smith Ranch, Wyoming, and the Denison Mines corporation underground mine and uranium milling facility near Blanding, Utah.

Finally, to determine the extent to which DOE's uranium transactions were consistent with applicable federal law, we reviewed requirements of the Atomic Energy Act,¹ the USEC Privatization Act² and the miscellaneous receipts statute.³ We obtained and reviewed internal DOE documentation authorizing uranium transactions and changing ownership of cylinders containing natural uranium to USEC and to Fluor-B&W Portsmouth. We reviewed market impact analyses prepared by Energy Resources International, Inc., under contract with DOE; internal documents certifying that DOE would receive fair market value for its natural uranium; and secretarial determinations that uranium transactions would have no adverse impact on the uranium market and that the uranium was not needed for national security purposes. For information on how the uranium transactions were documented for accounting purposes, we also reviewed USEC's annual 10-K report to the Securities and Exchange Commission and interviewed USEC and Fluor-B&W Portsmouth business and accounting officials.

We conducted this performance audit from November 2010 through September 2011, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the

¹42 U.S.C. §§ 2093, 2201(m) (2006).

²USEC Privatization Act, 42 U.S.C. §§ 2297h-2297h-13 (2006).

³31 U.S.C. § 3302(b) (2006).

audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: The Nuclear Fuel Cycle

Full-screen mode

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1. Finding uranium deposits

Unlike coal, which forms continuous seams in rock, uranium forms discrete, concentrated deposits distributed like the specks in blue cheese. Uranium can be found by detecting the presence of radioactivity from the air, from the earth's surface, or by excavation.



Uranium ore
Source: U.S. Geological Survey.

1 2 3 4 5 6 7 8 9 10

Full-screen mode

www.GAO.gov

2. Uranium mining regulation and startup

The uranium mining industry is regulated by various federal and state authorities. To bring a mine into production takes 8 to 10 years and costs many millions of dollars.

The cost to bring a conventional open-pit or underground mine on line can be up to \$400 million, while an “in situ” mine, which extracts minerals from an underground aquifer, costs about \$100 million.

Federal regulations



State regulations



Sources: GAO; Map Resources (map).

1 2 3 4 5 6 7 8 9 10

Full-screen mode

www.GAO.gov

3. Conventional mining

Conventional open-pit mining gains access to ore by using explosives to remove surface material. If the uranium is too far below the surface, tunnels and shafts are dug to reach and extract the ore. Broken ore is then sent to a processing mill.

At the mill, the ore is crushed, ground, and then fed to a leaching system that uses resin and chemicals to separate uranium from the ore.

The resulting yellow slurry—called “yellowcake” —is washed, dried, and sold to utility customers.

Interactive features: Roll your mouse over to see yellowcake.



Open-pit uranium mine
Source: U.S. Department of Energy.

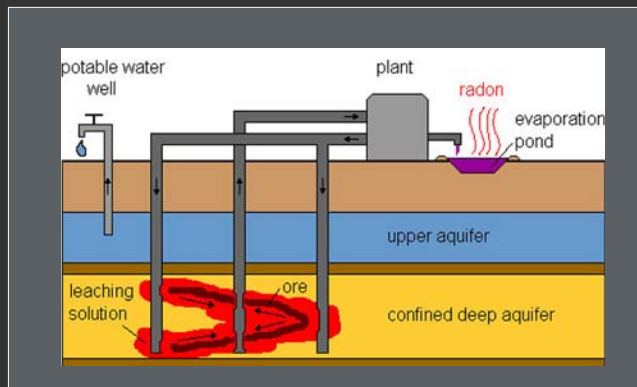
1 2 3 4 5 6 7 8 9 10

Full-screen mode

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4. Mining by in situ recovery

In situ mineral recovery circulates naturally occurring groundwater through uranium deposits in porous sandstone. At the surface, the uranium is treated to separate it from the water and then dried. The resulting yellowcake is sold to utility customers.



In situ mineral recovery
Source: World Information Service on Energy Uranium Project.

1 2 3 4 5 6 7 8 9 10

Full-screen mode


www.GAO.gov

5. Converting uranium

The uranium in yellowcake is heated and combined with other gases to produce uranium hexafluoride, a gas. Once cooled, uranium hexafluoride crystallizes and becomes a solid, which can be easily shipped in cylinders to a uranium enrichment plant.



Inside ConverDyn's conversion plant
Source: ConverDyn.

Interactive features: Roll your mouse over  to see uranium hexafluoride crystals.

1 2 3 4 5 6 7 8 9 10

Full-screen mode

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6. Department of Energy inventory of uranium hexafluoride

The Department of Energy oversees a substantial supply of uranium hexafluoride cylinders left over from prior nuclear weapons programs or received under U.S. nuclear nonproliferation agreements with the Russian Federation.

The department has occasionally sold or transferred this uranium, most recently to accelerate cleanup of the Portsmouth Gaseous Diffusion Plant near Piketon, Ohio.



The Department of Energy's uranium hexafluoride cylinders
Source: U.S. Department of Energy.

1 2 3 4 5 6 7 8 9 10

Full-screen mode

www.GAO.gov

7. Uranium enrichment

Commercial nuclear reactors in the United States require fuel consisting of at least 3 percent concentration of uranium-235. Uranium hexafluoride, the gaseous form of natural uranium, contains a concentration of only 0.71 percent uranium-235 and therefore requires enrichment before it can be used as fuel. In the United States, enrichment is done primarily by means of gaseous diffusion and gas centrifuge.



Nuclear power plant
Source: Nuclear Regulatory Commission.

1 2 3 4 5 6 7 8 9 10

Full-screen mode

www.GAO.gov

8. Enrichment by gaseous diffusion

Enriching uranium through gaseous diffusion repeatedly forces uranium hexafluoride under pressure through porous membranes, separating the isotope uranium-235 from uranium-238. The gas must be processed through as many as 1,400 stages to achieve a concentration of 3 percent uranium-235.

Interactive features: Roll your mouse over ● to see the gaseous diffusion stage.



Gaseous diffusion equipment
Source: U.S. Department of Energy.

1 2 3 4 5 6 7 8 9 10

Full-screen mode

www.GAO.gov

9. Enrichment by gas centrifuge

Enriching uranium with a gas centrifuge involves spinning uranium hexafluoride gas at high speed in a series of cylinders to separate uranium-235 from uranium-238. Centrifuge technology requires only 10 to 20 stages and a fraction of the energy required for gaseous diffusion.



Bank of centrifuges
Source: Urenco LTD.

1 2 3 4 5 6 7 8 9 10

Full-screen mode

www.GAO.gov

10. Fuel fabrication

To fabricate fuel, enriched uranium hexafluoride gas is combined with other elements to form a uranium dioxide powder, which is compressed, formed into pellets, and then sealed into long metal tubes to form fuel rods. These rods are bundled to create a fuel assembly.

Depending on the reactor type, about 179 to 264 fuel rods are required for each fuel assembly; a typical reactor core holds 121 to 193 fuel assemblies.

Interactive features: Roll your mouse over bubble to see fuel pellet.



Fuel assemblies

Source: Nuclear Regulatory Commission.

1 2 3 4 5 6 7 8 9 10

Appendix III: Legal Analysis of DOE's Strategy to Finance USEC's Cleanup Work at the Portsmouth Gaseous Diffusion Plant

Introduction and Summary of Conclusions

As part of GAO's review of DOE's overall uranium management plan, we examined what DOE referred to as a series of "barter arrangements" between DOE and USEC for accelerated cleanup services at the Portsmouth Gaseous Diffusion Plant. Specifically, we examined the consistency of these transactions with federal law governing uranium transactions and the disposition of government assets.

We found that DOE's transactions constituted sales of uranium, which were authorized under the USEC Privatization Act but violated the miscellaneous receipts statute because DOE failed to deposit the value of the net proceeds into the Treasury. We came to the same conclusion in 2006 in analyzing a similar series of transactions between DOE and USEC. In particular, although DOE has characterized its most recent transactions with USEC as "barters," they are more accurately characterized as sales of uranium into the market, with USEC acting as DOE's sales agent. The miscellaneous receipts statute requires government officials who receive money for the government to deposit the money into the Treasury. Although DOE did not receive cash from the sale of federal uranium assets, it allowed USEC to receive and keep cash from the sales. Because DOE was not authorized to keep the sale proceeds, the department also was not authorized to engage USEC to receive them. The current transactions differ in some superficial respects from the 2006 transactions, but the core substance is the same, and, as DOE told us, in this case it intentionally structured the disposition of federal assets to avoid payment of the proceeds for those assets into the federal Treasury.

Analysis

DOE's Uranium Transactions with USEC Were Sales Authorized by the USEC Privatization Act

Under the Atomic Energy Act of 1954, as amended,¹ DOE has general authority to sell, lease, distribute, or otherwise make available source material, including natural uranium, under certain conditions to licensed entities. Congress limited this general authority in 1996, however, in the USEC Privatization Act.² Section 3112(a) of this act explicitly prohibits DOE from selling or transferring “any uranium” except as “consistent with” section 3112. The remaining provisions of section 3112 then specify the conditions under which DOE may sell or transfer various types of natural and enriched uranium. Section 3112(b) covers uranium transferred to DOE under the US-Russia Highly Enriched Uranium Purchase Agreement in 1995 and 1996. Section 3112(c) covers natural and enriched uranium transferred before 1998 to USEC without charge as part of its privatization. Section 3112(e) covers transfers of enriched uranium to federal, state, and local agencies; nonprofit, charitable, or educational institutions; and others. Section 3112(d)(1) covers natural and low-enriched uranium sold from DOE's inventory that is not otherwise covered under sections 3112(b), (c), or (e). According to DOE, the uranium subject to the 2009-2011 transactions with USEC was natural uranium from DOE's inventory. It therefore does not fall into any of the categories covered by sections 3112(b), (c), or (e) and is thus covered by section 3112(d)(1).³ Because section 3112(d)(1) only authorizes sales, DOE's transactions with USEC must be sales or else be prohibited by the USEC Privatization Act.

According to DOE, its transactions with USEC constituted barter—an exchange of goods (natural uranium) for services (accelerated cleanup

¹42 U.S.C. §§ 2093, 2201(m) (2006).

²To the extent that the Atomic Energy Act conflicts with the USEC Privatization Act, that conflict should be resolved under the basic tenet of statutory construction that the more specific provision takes precedence. *See, e.g., Preiser v. Rodriguez*, 411 U.S. 475, 489-90 (1973). *See also Watt v. Alaska*, 451 U.S. 259, 266-67 (1981); *Radzanower v. Touche Ross & Co.*, 426 U.S. 148, 153 (1976); *Morton v. Mancari*, 417 U.S. 535, 550-51 (1974); and *Smith v. Robinson*, 468 U.S. 992 (1984) (Brennan, J., dissenting).

³According to DOE, the material provided to USEC was uranium delivered in 1997 and 1998 under the US-Russia Highly Enriched Uranium Purchase Agreement. Public Law Number 105-277, which appropriated the funds for the purchase of this material, specifically provided that this material would become part of DOE's inventory.

services at the Portsmouth Gaseous Diffusion Plant) authorized by the Atomic Energy Act—and are not “inconsistent with” the USEC Privatization Act. DOE declined to explain to us whether and how barter authorized under the Atomic Energy Act also constitute sales authorized by the USEC Privatization Act. DOE instead stressed that because it relies on its broad Atomic Energy Act authority to dispose of source material, the distinction between barter and sales is not relevant. Specifically, in DOE’s view, the USEC Privatization Act does not affect its authority under the Atomic Energy Act to engage in transactions involving uranium but simply establishes additional conditions that apply to the exercise of its authority under this act.⁴ Because we found that the current transactions in question were sales (through an agent) of uranium, and because all such sales are governed by the USEC Privatization Act, we need not and did not address whether barter is authorized under this act.

In this report we found, as we did in analyzing similar transactions in 2006, that DOE’s transactions with USEC constituted sales authorized by section 3112(d)(1) of the USEC Privatization Act—but through USEC as agent, rather than to USEC as buyer.⁵ DOE and USEC had different views about the nature of their relationship with respect to the most recent transactions. DOE told us that it bartered federal uranium assets for cleanup services with USEC and did not employ USEC as an agent to sell the uranium to third parties. By contrast, a USEC official told us that USEC did act as DOE’s sales agent and in its 2010 annual report to the U.S. Securities and Exchange Commission⁶ stated that USEC never owned the material because it did not stand to make a profit or loss from the uranium sale. Labels that parties ascribe to their roles are not controlling as to whether a principal-agent relationship exists, however. That relationship is determined by considering four key characteristics

⁴The additional conditions are a presidential determination that the material is not needed for national security; a secretarial determination that the sale of the material will not have an adverse material impact on the domestic uranium mining, conversion, and enrichment industries; and that the price paid to the Secretary will not be less than the fair market value of the material. See 42 U.S.C. § 2297h-10(d) (2006).

⁵GAO, *Department of Energy: December 2004 Agreement with the United States Enrichment Corporation*, B-307137 (Washington, D.C.: July 12, 2006).

⁶USEC, Inc., *U.S. Securities and Exchange Commission, Form 10-K, Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934*, fiscal year ending December 31, 2010.

and looking to the substance of the transaction as a whole, with no single characteristic being determinative.⁷ The four characteristics of a sales agency arrangement are (1) one entity delivers goods to another; (2) the other entity is to sell the goods not as his own property but as the property of and for the benefit of another, with the first entity remaining the owner of the goods; (3) the first entity has the right to control the sale, fix the price and terms, and recall the goods; and (4) the first entity has the right to demand and receive proceeds of the goods when sold, minus the agent's commission.⁸ The series of transactions between DOE and USEC exhibited the last three of these four characteristics, and the first, delivery of the goods, is not applicable to uranium.⁹ Thus, taken as a whole, the DOE-USEC series of transactions indicates that the relationship was functionally one of agency, with DOE as the principal and USEC as the agent.

First, USEC sold uranium that was the property of the federal government primarily for the benefit of the government. According to USEC officials, USEC finalized the sales of the uranium to third parties before it signed the contract modifications with DOE under which it agreed to conduct

⁷GAO, B-307137 (*citing* *Dorf International v. United States*, 291 F. Supp. 690, 694 (Cust. Ct. 1968)). *See also* *Pier 1 Imports, Inc. v. United States*, 708 F. Supp. 351, 354 (Ct. Int'l Trade 1989); *Rosenthal-Netter, Inc., v. United States*, 679 F. Supp. 21, 23 (Ct. Int'l Trade 1988); and *J. C. Penney Purchasing Corp. v. United States*, 451 F. Supp. 973, 983 (Cust. Ct. 1978).

⁸1 *Mechem on the Law of Agency*, §§ 44–48, at 28–32 (2d ed. 1914) (general essence of agency to sell). *See also* *Stansifer v. Chrysler Motors Corp.* 487 F.2d 59 (9th Cir. 1973); *Rosenthal-Netter*, 679 F. Supp. at 25; and *Pier 1 Imports*, 708 F. Supp. at 355 (stressing importance of identifying beneficiary of transaction in determining whether party is agent or principal).

⁹The contract modifications did not provide for delivery of the goods to USEC until after the contract modifications were signed. This fact is not relevant to our analysis, however. Uranium is typically sold through book transfer rather than through physical delivery, so physical possession of the uranium was not necessary for USEC to arrange for its sale. In other words, uranium is fungible. For example, according to USEC officials, USEC did not deliver DOE's uranium to the buyers. Instead, to complete the sales, USEC arranged for book transfer at its Paducah enrichment facility, whereby the buyers received title to an equivalent amount of uranium already located there. Only later did USEC move what had formerly been DOE's uranium to Paducah to replace what it had provided to the buyers out of its other inventories.

cleanup in exchange for the uranium.¹⁰ USEC arranged for the sale of federal property; it did not sell its own property. This point is underscored by USEC's 10-K report, in which it states that it did not consider itself to be the owner of the material.¹¹ USEC also sold the uranium primarily for DOE's benefit: USEC's 10-K states that USEC assumed no risk in the sale and did not stand to make any profit because the amount of work USEC was to provide under the cleanup contract was dependent on the net value of the uranium. USEC set the value of the uranium on the basis of offers it received for the uranium, the highest of which it subsequently accepted and translated into sales. If USEC had secured less value for the material, it would have done less work for DOE. The only benefit of the "barter" transaction accrued to DOE: as DOE officials told us, by purportedly structuring the transactions as barter, DOE sought to avoid receiving cash, which it would have had to deposit into the Treasury. USEC kept the proceeds of the sale and used them for the cleanup services it provided at the Portsmouth facility but became entitled to the value of the uranium only after it signed the contract modifications to furnish cleanup services in exchange for that value. Those proceeds, therefore, cannot be said to be a benefit of the transaction that resulted in the sale of the uranium. The contract modifications purported to transfer title to the uranium to USEC, but at the time the contract modifications were signed, the uranium had already been sold. To the extent that title

¹⁰We requested but did not receive copies of these sales contracts from USEC. Even assuming the contracts conditioned the sales on the expected receipt of the uranium from DOE, sales were arranged *before* USEC agreed to take the uranium as compensation. Thus, USEC was acting as DOE's agent and not for its own benefit in selling the uranium because it sold the material on DOE's behalf before it accepted the material as part of its "barter" with DOE.

¹¹The 10-K states in relevant part, "DOE funded work in 2010 under our contract for maintenance services at the Portsmouth site ('cold shutdown contract') in part through an arrangement whereby DOE transferred to USEC uranium which USEC immediately sold. USEC's receipt of the uranium was not considered a purchase by USEC and no revenue or costs of sales was recorded upon its sale. This is because USEC had no significant risks or rewards of ownership and no potential profit or loss related to the uranium sale. The amount of work provided, and therefore the total value of the contract modification, was dependent on the net value of the uranium realized by USEC upon each sale. Net value of the uranium equaled the cash proceeds from sales less USEC's selling and handling costs. The net value from the uranium sale was recorded as deferred revenue. Revenue was recognized in our contract services segment as cold shutdown services were provided."

did actually pass through USEC, it could only have been to facilitate further transfers to the ultimate buyers.¹²

Second, DOE had the right to control the sale of the uranium. DOE stated that it did not control the sale of the uranium under the terms of the contract modifications with USEC but, rather, bartered federal uranium assets to USEC in exchange for cleanup services. DOE also stated that USEC was subsequently free to sell the uranium at any time it wished. The uranium was marketed and sold before the contract modifications were executed, however, so the terms of those contract modifications are not relevant in evaluating the control that DOE did or did not exercise over the sale. Instead, DOE and USEC officials told us that they had an oral agreement for the valuation of the material before the contract modifications were signed. DOE stated that it did not specifically authorize, require, or request USEC to solicit offers for the uranium but acknowledged that it requested USEC's valuation of the uranium, which it knew was to be based on the solicitation of firm offers for the material. During the term of this agreement, which led directly to sale of the uranium, DOE had the right to exercise control over USEC's actions as agent.

Moreover, although DOE officials stated that they did not know whether or when USEC in fact sold the material, a USEC official told us that a DOE official knew that USEC was seeking to finalize sales contracts with the highest bidders for the uranium and in fact encouraged USEC to finalize the sales quickly so that the contract modifications could be signed. In addition, two of the letters that USEC sent to DOE to establish the value of the uranium on the basis of offers received refer to the material as already sold.¹³ These facts indicate that DOE was, or should have been, aware that the material was being sold before finalization of its "barter"

¹²It is common for selling agents to be given title and possession to property in order to effect a sale on behalf of the principal. *Potts v. Budget Rent-a-Car Sys.*, No. 04-074, 2005 U.S. Dist. LEXIS 27356, at *13 (N.D. Fla. Nov. 14, 2005) (citing *Restatement (Second) of Agency* § 14N (1958)): independent contractor agents "also fall within the category of trustees, as in the case of a selling agent who has been given title to the subject matter . . . [and] there is an agency [relationship] if in the transaction which they undertake they act for the benefit of another and subject to his control").

¹³The letters indicated that broker fees were applied to sales to certain parties, whereas other sales were made directly to buyers without a broker fee.

agreement, while the material was still subject to DOE's control, and that DOE at least assented to, and may have explicitly authorized, the sales.

That DOE controlled the price obtained from the sales is also evinced by the fact that the valuation process, over which DOE had approval, was tied up with the sales process. USEC submitted its valuation of the uranium to DOE for approval for two reasons: (1) to determine the amount of work that USEC would be required to perform in exchange for that value and (2) to enable DOE to determine that it would receive fair market value for the material. Receipt of no less than fair market value is a condition required by the USEC Privatization Act before the sale of uranium.¹⁴ As USEC stated in a series of letters to DOE establishing the value of the uranium, USEC felt that actual bids represented a more realistic value than mere consultation of spot market prices at the time of the sale. Soliciting firm offers for the material may have provided a realistic valuation of the material, but the same process also constituted USEC's first step in selling federally owned uranium on DOE's behalf. Further, this step was taken with DOE's knowledge and approval, including its specific approval of the price to be attained.¹⁵

Third, the value that DOE received for the uranium, in terms of work to be performed by USEC, was reduced by an amount equal to the transaction costs that USEC incurred in the sale of the uranium. In other words, DOE did not receive the gross value, or price, that USEC realized from the sale of the uranium but instead received value equal to the net proceeds of its sale. USEC deducted its transaction costs from the value it attributed to the uranium, and DOE approved that net value as the fair market value of the material. The value USEC attributed to the uranium was also the price received from its buyers, and the fact that costs were deducted from the value means that the value DOE received equaled the net proceeds of the sale to a third party from its agent, USEC, rather than the price of the sale from USEC as buyer.

¹⁴42 U.S.C. § 2297h-10(d)(2)(C) (2006).

¹⁵When we considered a similar series of transactions between DOE and USEC in 2006, we noted that DOE required USEC to submit a marketing plan for DOE's approval. In the transactions we review in this report, USEC was not required to submit a marketing plan to DOE, but in requesting that USEC value the material, and in approving a value derived from firm offers for the material, DOE effectively did review USEC's marketing strategy.

Furthermore, the value of the uranium was decreased to account for USEC's "sales management fee" in addition to USEC's other transaction costs. USEC clearly labeled these amounts as sales management fees in its valuation letters for DOE approval, and DOE did in fact approve the net valuations. A USEC official told us that the sales management fee represented USEC's fee for brokering the material, USEC's fee for negotiating the actual sales of the material, and USEC's costs associated with arranging book transfers of the material. In other words, USEC charged a commission against the value of the material. DOE has stated that such transactional fees or costs are routinely part of any commodity transaction. We agree that such costs routinely figure into commodity transactions, but where those costs are incurred by the recipient and charged back to the seller, and where those costs include a commission, they indicate a transaction involving an agent.

In sum, DOE's uranium transactions with USEC, viewed as a whole, constituted sales through an agent rather than barter. USEC arranged for the sale of federal uranium assets while the uranium was still federal property. The only party that benefited from the sale was DOE. USEC deducted its transactions costs, as well as a commission, from the value of the uranium. These are all characteristics of sales agency rather than barter and resale. Even assuming some ambiguity in how these facts and circumstances should be characterized—agency or sale—courts have long found against the party whose mixed motives created the ambiguity.¹⁶ In this case, any mixed motives are attributable to DOE. DOE's acknowledged objectives were to accomplish the cleanup work and avoid using appropriated funds to do so. It was motivated to structure the uranium transactions as purported barter so that it would not receive cash that it would have to deposit into the Treasury. At the same time, it was motivated to provide an arrangement acceptable to USEC so that the cleanup work could be accomplished. USEC's sole motivation was to minimize the risks inherent in the transaction. USEC officials told us they only accepted uranium as payment for cleanup services because they did not believe that DOE could finance the cleanup work with cash (i.e., appropriated funds), and they wanted the cleanup work to proceed to keep the skilled employees at Portsmouth working until USEC could open its new gas centrifuge enrichment facility there. Thus, USEC accepted the

¹⁶1 *Mechem on the Law of Agency*, § 48, at 31 (2nd ed. 1914); see, e.g., *Arbuckle v. Kirkpatrick*, 98 Tenn. 221, 252-53 (Tenn. 1897).

arrangement DOE offered, but only after it had found buyers for DOE's uranium, so the time USEC held the uranium and USEC's exposure to swings in the uranium market would be minimized. USEC was willing to take DOE's uranium only in a manner that made it DOE's sales agent. Although DOE did not specifically ask USEC to deal with the uranium in this way, DOE knew what actions USEC was taking and approved of the steps USEC took along the way. The true nature and effect of this arrangement was that USEC served as DOE's agent in selling federal uranium assets into the market.

DOE Violated the
Miscellaneous Receipts
Statute by Not Depositing
the Value of Net Proceeds
from Uranium
Transactions with USEC
into the Treasury

Our present review found, as did our analysis of similar transactions in 2006, that DOE did not comply with the miscellaneous receipts statute because it did not deposit the proceeds from sale of its uranium into the Treasury. Under the miscellaneous receipts statute, "an official or agent of the Government receiving money for the Government from any source shall deposit the money in the Treasury as soon as practicable without deduction for any charge or claim."¹⁷ As a general proposition, a federal agency may not augment its appropriations from Congress without specific statutory authority.¹⁸ When Congress makes an annual appropriation to an agency, it is also establishing an authorized program level. In other words, Congress is telling the agency that it cannot operate beyond the level it can finance under its appropriation. To permit an agency to operate beyond this level, with funds derived from some other source without specific congressional approval, would amount to a usurpation of Congress's constitutional prerogative to appropriate funds. Restated, the objective of the rule against augmentation of appropriations is to prevent a government agency from undercutting Congress's constitutional "power of the purse" by circuitously exceeding the amount Congress has appropriated for that activity. For an agency to keep money that has not been appropriated by Congress is to augment its appropriation.

In providing uranium to USEC for sale to a third party and allowing USEC to keep the proceeds, DOE constructively received money for the

¹⁷31 U.S.C. § 3302(b) (2006).

¹⁸For a more detailed discussion of the augmentation concept, see GAO, *Principles of Federal Appropriations Law*, 3rd ed., vol. II, [GAO-06-382SP](#) (Washington, D.C.: February 2006).

government. DOE used the proceeds of the sale to fund activities that the department would otherwise have had to pay for out of its appropriation. By allowing USEC to retain the cash proceeds from the sale of federal uranium, DOE improperly extended its reach beyond the operating level that it was otherwise authorized to achieve through its congressional appropriation. DOE readily acknowledged to us that if it had sold its uranium directly into the market and received cash, it would have had to deposit that cash into the Treasury. DOE officials also told us that they structured the transactions with USEC as they did to avoid having to deposit the proceeds of a sale into the Treasury. DOE stated that because it received no cash in this transaction, it was not required to deposit any proceeds into the Treasury. We disagree with DOE's conclusion. It is a fundamental principle of law that what cannot be done directly cannot be done indirectly.¹⁹ An agency that lacks the authority to retain and use amounts that it receives directly cannot circumvent its lack of authority by engaging a contractor or, as here, a sales agent to indirectly receive, retain, and use the funds.²⁰ In similar circumstances, the courts and we have recognized that a contractor constructively receiving money for a federal agency is not free of the requirement of the miscellaneous receipts statute: that funds received for the use of the United States be deposited in the Treasury.²¹ We have also found that a federal agency receives money under the miscellaneous receipts statute if the receipts are to cover the expenses of the government or to pay

¹⁹See, e.g., *Cummings v. Missouri*, 71 U.S. (4 Wall.) 277, 325 (1866).

²⁰GAO, *Contractors Collecting Fees at Agency-Hosted Conferences*, B-306663 (Washington, D.C.: Jan. 4, 2006), and GAO, B-307137.

²¹See, e.g., *Scheduled Airlines Traffic Offices, Inc., v. Department of Defense*, 87 F. 3d 1356, 1361-63 (D.C. Cir. 1996) (Defense Department cannot require payment to morale fund of a portion of concession fees derived from unofficial travel); *Motor Coach Industries, Inc. v. Dole*, 725 F.2d 958, 968 (4th Cir. 1984) (Federal Aviation Administration cannot hold in a trust fund amounts paid by airlines to defray the Aviation Administration's cost of acquiring new shuttle buses for Dulles Airport); GAO, *National Institutes of Health: Food at Government-Sponsored Conferences*, B-300826 (Washington, D.C.: Mar. 3, 2005) (National Institutes of Health cannot authorize its contractor to charge a fee to cover the costs of a formal conference that hosted by the institutes); GAO, *Securities and Exchange Commission: Reduction of Obligation of Appropriated Funds Due to a Sublease*, B-265727 (Washington, D.C.: July 19, 1996) (Securities and Exchange Commission may not reduce its obligation of appropriated funds resulting from a lease and correspondingly increase its available appropriations, by subleasing space and arranging for the sublessee to make its payments directly to the landlord).

government obligations.²² Here, USEC received money for DOE. The uranium belonged to DOE when USEC arranged for its sale, but instead of passing the cash proceeds back to DOE, USEC was allowed to keep the cash as compensation for work under its cleanup contract—work for which it was DOE's responsibility to pay.

Finally, we examined whether DOE's set of transactions with USEC could be characterized as a no-cost contract. In a no-cost contract, a contractor provides a service to the government, but the government has no financial liability to the contractor and the contractor has no expectation of payment from the government. For example, in a case in which the General Services Administration contracted for real estate brokerage services and brokers were compensated not by the agency but through commissions received from landlords, we found that these contracts were no-cost contracts that did not violate the miscellaneous receipts statute.²³ The General Services Administration did not augment its appropriation by accepting services without payment, however, because it had no financial liability to the brokers; the common industry practice was for those brokers to receive their compensation from third parties. But the transactions between DOE and USEC were not comparable. In this case, DOE incurred a cost: it paid a total of \$194.3 million in federal uranium assets for accelerated cleanup services. It allowed USEC to retain cash from the sale of these assets as compensation for services USEC provided to DOE, services for which DOE would otherwise have had to

²²GAO, *SBA's Imposition of Oversight Review Fees on PLP Lenders*, B-300248 (Washington, D.C.: Jan. 14, 2004) (in compensating contractors by requiring regulated lenders to pay the contractor's fees, the agency received money for the government because the receipts were to cover government expenses or obligations). Cf. GAO, *Return of Proceeds from Diesel Fuel Sales*, B-205901 (Washington, D.C.: May 5, 1982) (money received by the Federal Bureau of Investigation for sales of diesel fuel belonging to a private company as part of an undercover operation was not money for the government and did not have to be deposited into the Treasury).

²³GAO, *General Services Administration and Real Estate Brokers' Commissions*, B-302811 (Washington, D.C.: July 12, 2004), and GAO, *General Services Administration: Real Estate Brokers' Commissions*, B-291947 (Washington, D.C.: Aug. 15, 2003).

pay out of its appropriated funds. Thus DOE, unlike the General Services Administration, augmented its appropriation.²⁴

Conclusion

Transactions that DOE characterized as “barter” between itself and USEC, whereby federal uranium assets were used to compensate USEC for cleanup services at the Portsmouth Gaseous Diffusion Plant, are more accurately characterized as sales of uranium into the market with USEC acting as DOE’s sales agent. Such sales complied with the USEC Privatization Act, but DOE violated the miscellaneous receipts statute when it did not deposit the value of the net proceeds of these sales into the Treasury. The fact that DOE did not receive any actual cash from the sales is irrelevant. DOE arranged for USEC to receive cash from the sales as compensation for cleanup activities that DOE would otherwise have had to pay for out of its appropriated funds. DOE was not itself authorized to keep the proceeds of the sale, nor was it authorized to allow USEC to keep them. DOE may not manipulate the disposition of federal assets to avoid the payment of proceeds for those assets into the federal Treasury.

²⁴As we noted in our 2006 decision with respect to the USEC transactions at issue then, an agency may accept replacement for a damaged item without depositing the value of the replacement item into the Treasury. See GAO, *Bureau of Alcohol, Tobacco, and Firearms: Augmentation of Appropriations: Replacement of Autos by Negligent Third Parties*, 67 Comp. Gen. 510 (Washington, D.C.: July 12, 1988). We concluded in this analysis, as we did in 2006, that this scenario does not constitute an in-kind replacement of damaged items. Rather, DOE is seeking to pay for new services—the accelerated cleanup of the Portsmouth Gaseous Diffusion Plant—not to replace or repair federal property.

Appendix IV: Comments from the Department of Energy



Department of Energy

Washington, DC 20585

September 12, 2011

Mr. Gene Aloise,
Director, Natural Resources and Environment
Ms. Susan Sawtelle,
Managing Associate General Counsel
Government Accountability Office
441 G St., NW
Washington, D.C. 20548

Dear Mr. Aloise and Ms. Sawtelle,

Thank you for providing a draft copy of the Government Accountability Office (GAO) report, "Excess Uranium Inventories: Clarifying DOE's Disposition Options Could Help Avoid Further Legal Violations" (the GAO draft report). The GAO draft report explains the findings and conclusions of the GAO's audit of the Department of Energy's (DOE or the Department) uranium barter transactions since 2009. Our response to GAO's recommendations and clarification of certain factual representations in the draft report are provided below.

I. Summary Response to GAO Recommendations

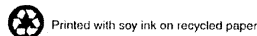
The GAO draft report contains two recommendations. First, it recommends that the Department update its Excess Uranium Inventory Management Plan (Plan). As the Department is already in the process of updating the Plan, it has no disagreement with this recommendation. Second, the GAO draft report recommends that, if Congress agrees with the Department's barter approach, it should either provide the Department with express authority to barter uranium and retain the proceeds from barter transactions, transfers, or sales, or that it direct the Department to sell uranium assets for cash and that the proceeds be made available for specified purposes. As discussed below, the Department currently has the authority to barter excess uranium in exchange for services and is conducting its transactions in full compliance with the law, but it will take GAO's concerns into account when engaging in future transactions.

II. Response to GAO Legal Contentions

The Department's uranium barter transactions referenced in the GAO report did not violate the law. The transactions did not violate the Miscellaneous Receipts Act, and, as affirmed by the GAO draft report, the transactions complied with the USEC Privatization Act.

The GAO draft report focuses on a series of five transactions, executed on a quarterly basis, whereby the Department provided uranium hexafluoride (UF₆) to USEC, Inc. (USEC) in exchange for accelerated cleanup services at the Portsmouth Gaseous Diffusion Plant (PGDP) to prepare the facility for decontamination and decommissioning.¹ At the time of the transfers, USEC was already working under a Cold Shutdown contract at PGDP, and USEC and the Department executed a series of five contract

¹ The GAO draft report mentions, but does not analyze, the Department's decontamination and decommissioning (D&D) contract with Fluor B&W Portsmouth (FBP), which provides for partial payment with UF₆. At the time the GAO draft report was provided to the Department, it had already completed one barter transaction with FBP, and the Department anticipates nine additional quarterly transactions.



modifications, each of which provided that the Department would transfer a set quantity of UF₆ in exchange for an agreed-upon value of accelerated cleanup services to be performed by USEC.

The GAO draft report places a great deal of import on the process DOE and USEC used in determining the value of services to be provided in exchange for the uranium, and incorrectly derives from that process a principal and agent relationship between USEC and DOE. The GAO draft report specifically focuses on USEC's decision to seek bids for the anticipated transfer of material as its method of choice for developing a proposed valuation for the material. The Department then analyzed USEC's proposed valuation, which took into account discounts for USEC's costs related to taking payment in the form of UF₆, and compared it to recent spot market index prices to determine if the proposed value was fair market value, as required by the USEC Privatization Act. For each quarterly transaction, after the value for services was agreed upon by DOE and USEC, the parties executed the contract modification for accelerated cleanup services for that value, and the Department issued a document transferring title to the designated quantity of UF₆ from the Department to USEC, concluding the Department's involvement with the material.

The GAO draft report contends that the transactions with USEC were sales, rather than barter, and that USEC was acting as the Department's agent in selling the material to third parties. The GAO draft report further asserts that because the Department sold UF₆ and did not deposit the proceeds in the Treasury, DOE violated the Miscellaneous Receipts Statute.

a. DOE's transfers to USEC were barter transactions pursuant to the Department's barter authority

The Department's transactions with USEC, and its ongoing transactions with FBP, are consistent with the Department's authority to barter uranium in exchange for goods or services. The Department's "GC Guidance on Barter Transactions Involving DOE-Owned Uranium"² provides a detailed analysis of the Department's broad authority under the Atomic Energy Act to engage in these kinds of transactions.

b. There was no agency relationship between DOE and USEC

The Department disagrees with the GAO draft report's position that USEC and DOE had an agency agreement for a number of reasons. First, an agency relationship is a legal arrangement, with reciprocal powers and obligations, and the GAO draft report does not demonstrate that a person with authority to bind the Department to such an agreement participated in the creation of this alleged principal-agent arrangement. Instead, the GAO draft report relies on its interpretation of a portion of a 1914 treatise of pre-Uniform Commercial Code common law on agency,³ but does not take into account the additional requirements of authority to bind agencies under federal law.⁴ Finally, the GAO draft report focuses on

² Available at <http://energy.gov/gc/downloads/gc-guidance-barter-transactions-involving-doe-owned-uranium>. While this document was provided to GAO, and is publicly available, nowhere does the GAO draft report refer to or refute any of the legal conclusions found therein.

³ The GAO draft report sets forth four characteristics of sales agency apparently derived from 1 Mechem on the Law of Agency (2d ed. 1914). The GAO draft report does not explain how the contractual arrangement between USEC and DOE embodies these characteristics, and the Department does not believe the facts support the contention that the "true nature and effect" of the relationship between DOE and USEC satisfied these criteria. *Id.* at § 48.

⁴ Even if GAO's interpretation of the Mechem treatise is accurate, the treatise and the three versions of the Restatement of Agency which post-date it all recognize that where there is a requirement for formalization of the agreement, the document so memorializing the arrangement "must be produced or its absence accounted for." *Id.* at § 257; see also Restatement (3d) of Agency § 3.03 (2006); Restatement (2d) of Agency § 26 (1958); Restatement of Agency § 26 (1933).

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USEC's statements, and does not analyze the actual contract language agreed to and executed by both the Department and USEC.

To bind the federal government in contract, the agreement must be with an individual with actual authority to enter such a contract.⁵ In this case, the only individual with actual authority to bind the government was the Contracting Officer. The Contracting Officer signed Modification M066, a modification to the pre-existing Cold Shutdown Contract (DE-AC05-01OR22877) between DOE and USEC.

Modification M066, executed by DOE and USEC on December 19, 2009, represents the agreement between the parties and is the foundation for the four subsequent quarterly contract modifications. In this case, USEC was the seller (supplying accelerated cleanup services) and DOE was the buyer, paying for the accelerated cleanup services with uranium through a barter transaction. Federal Acquisition Regulation (FAR) 2.101, notes that, "except as otherwise authorized," contracts "are in writing."⁶ Here, the relationship between USEC and DOE, with respect to the uranium barter for accelerated cleanup services, was specified in writing in bilateral Modification M066. That document does not, in any manner, suggest that DOE intended to enter into a principal-agent relationship with USEC.

DOE is aware that discussions occurred between DOE representatives and USEC for the purpose of establishing a value for the uranium to be bartered and transferred to USEC. DOE is not aware of even any oral agreement between unnamed DOE employees and USEC wherein DOE agreed that USEC would act as an agent of the federal government. DOE is also not aware of even any oral statements by DOE officials that could have reasonably led USEC to believe that DOE intended for USEC to act as DOE's agent with respect to the disposition of the uranium. However, even if any such discussions took place, they cannot function to make the Department party to any principal-agent relationship.⁷

⁵ See, e.g., *Federal Crop Ins. Corp. v. Merrill*, 332 U.S. 380, 384 (1947) ("Whatever the form in which the government functions, anyone entering into an arrangement with the Government takes the risk of having accurately ascertained that he who purports to act for the Government stays within the bounds of his authority. The scope of this authority may be explicitly defined by Congress or be limited by delegated legislation, properly exercised through the rule-making power.").

⁶ *Schweiker v. Hansen*, 450 U.S. 785 (1981), advises that such regulations are sufficient to prevent the application of estoppel to the government. In *Schweiker*, a citizen who was eligible for certain social security benefits followed the advice of an agency employee that she did not meet eligibility requirements, and thus did not comply with the regulatory requirement that an application for those benefits must be in writing. The Court held that the petitioner could not retroactively recover the benefits for which she had been eligible because she had not followed the procedural requirements for receiving them, stating that "[a] court is no more authorized to overlook the valid regulation requiring that applications be in writing than it is to overlook any other valid requirement for the receipt of benefits." *Id.* at 790. Accordingly, here, absent authority to the contrary, the GAO draft report cannot ignore the FAR requirement that contracts with the federal government must be in writing.

⁷ In addition, while recognizing that the GAO draft report is a report of audit activities and not a court proceeding, the Department notes that the GAO draft report's reliance on USEC's statements of its interpretation of the agreement and of an alleged statement by an unnamed Department official prior to execution of the contract documents run counter to established legal principles. First, the parol evidence rule, now considered by courts to be a substantive rule of law, not a rule of evidence, "prohibits the admission of prior or contemporaneous evidence seeking to add to or vary the terms of a written agreement, when the parties have adopted the agreement as an expression of their final understanding." *Starflight Boats v. United States*, 48 Fed. Cl. 592, 595 (2001) (holding that parol evidence rule precluded admission of an alleged secret oral agreement between a government contractor and an agency official where the oral agreement contradicted the terms of subsequent written contract modifications). Accordingly, any statements or purported oral agreements USEC states that it had with an unnamed Department official cannot vary the terms of the contract modifications, which clearly contradict the GAO draft report's interpretation of the relationship between DOE and USEC. Second, "the existence of an agency relationship must be established before an alleged agent's own statements demonstrating such a relationship can be received as

Second, the GAO draft report focuses on a number of statements by USEC in support of its contention that USEC was the Department's agent, even when these statements run counter to the contract documents that the Department and USEC agreed to and executed. Specifically, the GAO draft report focuses on statements by USEC, both oral and in its written filing to the Securities and Exchange Commission, that USEC did not bear any risk of loss for the material, and that if it did not realize the agreed-upon value for the material, that it would simply perform less work or only work equivalent to the value it received for sale of the material.

In reality, the contract language is clear and unambiguous:

DOE shall *transfer title to, risk of loss and possession of* an estimated 875 Metric Tons of natural uranium and the cylinders in which the uranium is contained to USEC in accordance with a quarterly schedule as follows . . .

Modification M0066, Item 1, paragraph 3 (emphasis added).

Indeed, the modification did not require the sale of the material, nor did it impose any limitations on what USEC chose to do with it. It only required that USEC obey applicable law in the event it did sell the material:

Should the Contractor *elect* to sell the Uranium Transfer Material, any such sale shall be consistent with all applicable laws and regulations.

Id. at Item 1, paragraph 5(a) (emphasis added).

The contract language further clearly provides that USEC, upon executing the modification and receiving title to the UF₆, became the sole owner of the material and, in return, was obligated to perform the agreed upon value of services. Indeed, the quarterly contract modifications are each for a set value of services, not for the quantity of material. The modifications, as set out initially in Modification M066, provide that USEC must perform the agreed upon value of services, and, if it fails to do so, must repay the Department in UF₆ for the value of services it did not perform under the modification. Specifically, under Modification M066 clause H.44, if DOE overpaid USEC (i.e., USEC did not perform all of the anticipated work), USEC would need to refund the difference to DOE, through "an equivalent amount of Natural Uranium based on the same formula as it was provided as Uranium Transfer." Put another way, if USEC had performed less work as a way to recoup any potential loss it suffered if, subsequent to execution of the modification, it sold the material for less than it anticipated in its valuation process, it would have been obligated to repay the government for the difference between the contracted value of services to be rendered and the value of the services it actually performed.

Third, the GAO draft report contends, without support, that although transactional fees or costs "routinely figure into commodity transactions... where those costs are incurred by the recipient and charged back to the seller, and where those costs include a commission, the transaction looks like one involving an agent." The GAO draft report does not explain why it deems the transactional costs and fees taken into account in the Department's barter with USEC to be "commissions" and not the types of fees or costs that "routinely figure into commodity transactions." In addition, the GAO draft report does not find that these costs were unreasonable, as it does not question the Department's compliance with the requirement in section 3112(d) of the USEC Privatization Act that it receive fair market value for the sale or transfer of the material.

evidence." *First Annapolis Bancorp., Inc. v. United States*, 72 Fed. Cl. 369, 370 n. 4 (2006) (citing 4 Wigmore, *Evidence* § 1078 (Chadbourn rev.1972)), and the GAO draft report relies in large part on USEC's statements as the basis for this conclusion, likely because the contract documents forming the actual relationship between DOE and USEC speak to the contrary.

In light of all of the above, it is unreasonable and erroneous to conclude that the Department and USEC were in an agency relationship. The purported relationship was not entered into by an authorized official nor memorialized in writing. Indeed, the document that memorializes the relationship – Modification M066 – does not establish, or even suggest, that a principal-agent relationship was intended by DOE. Furthermore, many of the USEC statements upon which the GAO draft report relies to support its position that such a relationship existed are directly contravened by the contract documents agreed to and signed by both the Department and USEC.

c. The Department did not violate the Miscellaneous Receipts Statute

The GAO draft report’s analysis of the miscellaneous receipts issue is based entirely on its faulty conclusions about the purported agency relationship between DOE and USEC; it contends that because the transactions with USEC were sales, using USEC as an agent, the Department violated the Miscellaneous Receipts Act by not depositing the proceeds in the Treasury. As the Department has explained above, the transactions with USEC were, in fact, barter transactions where the Department transferred UF6 to USEC in exchange for accelerated cleanup services, and therefore the miscellaneous receipts statute is not called into question because no moneys were received, directly or indirectly, by the Department.

III. Factual Clarifications

The Department disagrees with a number of the factual statements or assertions in the GAO draft report. A representative list of material facts at issue is presented below.

- The GAO draft report states in several places that the Department entered into the barter transactions with USEC and FBP with purpose of avoiding the receipt of cash proceeds which would need to be deposited into the Treasury. However, this is not consistent with DOE documentation that the uranium barter with USEC were for the purpose of accelerated cleanup at the Portsmouth site, with resulting cost savings for the overall Portsmouth D&D project, and to “create jobs and maintain a stable local workforce” at the site.
- Page 11 of the GAO draft report discusses the Department’s inventory of depleted uranium hexafluoride (DUF6). The GAO draft report repeatedly refers to a net value for DUF6 (\$4.2 billion), but gives no source or backup information for this value. While the Department agrees that the higher assay DUF6 (comprising about 15 percent of the inventory of 750,000 MT DUF6) has potential value, it disagrees with the GAO draft report’s stated value, which appears to be tied to market prices for clean and uncontaminated material. In addition, the GAO draft report does not discuss the costs added to reprocessing the DUF6 due to the age of the storage cylinders, the material condition, packaging and transportation costs, or the cost of production (SWU), all of which can reduce the net value of the material.
- Table 3 on page 13 inaccurately represents the Department’s current surplus highly enriched uranium (HEU) disposition plans. The MOX Backup LEU Inventory Project is missing from the table, the Tennessee Valley Authority (TVA) Project now ends in 2011, and other numbers are incorrect. In addition, the totals shown by GAO for years 2011-13 are incorrect. The table should read as follows (this corrects only the HEU disposition lines, the totals, and the percentages, shown in red):

	2008	2009	2010	2011	2012	2013
Estimated total U.S. commercial nuclear fuel requirements	19,250	19,250	19,250	19,450	19,590	20,430
Uranium sold,						

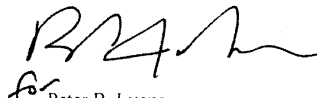
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transferred, or planned for sale or transfer						
To American Assured Fuel Supply	57	88	47	44	94	
To MOX Backup LEU Inventory	0	0	0	47	128	334
To TVA	905	634	24	113	0	0
To Portsmouth	0	202	921	1605	1605	1350
Total	1039	1118	1094	1823	1827	1684
Percent of U.S. Demand	5%	6%	6%	9%	9%	8%

IV. Conclusion

For all of the reasons discussed above, the Department agrees with the GAO recommendation to update the Excess Uranium Inventory Management Plan. However, the Department disagrees with the GAO draft report's contentions that it violated the law. The authoritative contract documents speak for themselves, and do not create an agency relationship. As no agency relationship was created and no money otherwise was received by the Department, there was no violation of the Miscellaneous Receipts Act.

Sincerely,



Peter B. Lyons,
Assistant Secretary
for Nuclear Energy



Eric J. Fygi
Deputy General Counsel

Appendix V: GAO Contacts and Staff Acknowledgments

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