VIEWPOINT: THE HEU DEAL AND THE U.S. ENRICHMENT CORPORATION

by Richard A. Falkenrath

In January 1994, the United States agreed to purchase 500 metric tons (MT) of highly-enriched uranium (HEU) from Russia over 20 years for a total price of about $11.9 billion. This HEU would come from dismantled Russian nuclear weapons, be blended with low enriched uranium (LEU), fabricated into reactor fuel, and sold to nuclear power-generating utilities in the United States and elsewhere in the world. Moscow would receive the proceeds of these sales, thereby giving Russia a financial incentive to continue its nuclear weapons dismantlement program, as well as hard currency for economic reforms and nuclear safety improvements. At no cost to the U.S. taxpayer, this agreement would also serve an important national security objective by promoting the destruction of a substantial fraction of Russia's total stockpile of weapons-grade fissile material, a stockpile which poses a serious proliferation risk because of the degradation of the Russian nuclear custodial system. Colloquially known as the "HEU deal," this idea produced one of the most intelligent national security initiatives in U.S. history.

Despite the elegant concept behind the HEU deal, however, the U.S. government's implementation of the HEU deal has been deeply flawed in practice.[1] For reasons that could have been anticipated but were not, no HEU was purchased from Russia in 1994, and a dispute over the price to be paid for the small amount of material ordered in 1995 caused the Russian government to threaten to cancel the HEU deal. After a rash of criticism in the media and the Congress, the U.S. executive agent for the HEU deal agreed to purchase six MT of Russian HEU in 1995, and a further 12 MT in 1996, representing about half of the amount of HEU that the United States should have bought from Russia during the first three years of the program.

Implementing the HEU deal has been difficult because the Clinton administration, like the Bush administration before it, failed to anticipate the tension between the broader national security interests in removing bomb-grade material from Russia and the commercial interest of the domestic uranium enrichment industry in excluding foreign uranium from the U.S. market. The government began to rectify these faults only in late 1995, when the Clinton administration started to exert much stronger oversight of its executive agent.

Two key problems crippled the U.S. approach to implementing the HEU deal:

• ***The Executive Agent***. During the Bush administration, the U.S. government assigned responsibility for executing the HEU deal to the U.S. Enrichment Corporation (USEC), a federally owned company that was to be privatized in 1996 or later. The Department of Energy's two civilian plants for the enrichment of uranium were leased to USEC in order to make USEC a competitive, private sector supplier on the international nuclear fuel market. Giving USEC the HEU deal would allow USEC to control an even larger percentage of the global nuclear fuel supplies, thereby enhancing USEC's competitiveness and increasing the proceeds of its privatization for the U.S. Treasury. In fact, however, because of its current position as a low-cost monopoly enrichment supplier in the U.S. market, USEC has powerful commercial interests in preventing or, at a minimum, having exclusive control over the large influx of Russian enriched uranium onto the U.S. market required by the HEU deal. This fact makes USEC a highly problematic executive agent of the HEU deal, and is the root cause of the price dispute with the Russian government.

• ***The Suspension Agreement***. As a result of a 1991 anti-dumping suit by the U.S. uranium industry, the U.S. government imposed a prohibitive tariff on uranium imports from the former Soviet Union in 1992. These tariffs were later replaced by a suspension agreement

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between the U.S. and Russian government that regulates Russian uranium imports with a quota system. In effect, the suspension agreement severely restricts the near-term resale of the natural uranium component of the Russian HEU on the U.S. market, which has made it difficult for the U.S. government to find a viable means of compensating Russia for the full value of its blended-down HEU.

In practice, these two problems have been confusingly intertwined, not least because USEC has tried to use the trouble with the suspension agreement to distract attention from the more fundamental problem of its own conflicts of interest as the sole U.S. executive agent in the HEU deal, a role it has a strong commercial interest in retaining.

This viewpoint focuses on the problems for the HEU deal caused by USEC's role as the executive agent. The problems associated with the suspension agreement are both less fundamental and more complex.[2]

THE PROBLEMATIC ROLE OF USEC IN THE HEU DEAL

The troubled implementation of the HEU deal is a result of an unsound decision by the White House to give exclusive executive control over the deal to an enterprise—USEC, a wholly owned government corporation in the process of being privatized—that is uniquely unsuited to that role. USEC has no incentive to offer Russia a fair market price for the blended-down HEU so long as it alone has the exclusive right to order and market the material outside of Russia.

Although the decision to incorporate USEC was a sound one, driven by valid concerns about the need to downsize the government and subject the U.S. enrichment operation to market discipline and professional management, giving USEC executive authority over the HEU deal was bound to lead to problems with its implementation. There are three key reasons why USEC has little incentive to implement the HEU deal at the speed or scope appropriate for such an important national security initiative.

The first and most important such reason is that importing Russian HEU reduces USEC's profits if it must pay Russia more than USEC's own production cost. As a result of a series of implicit subsidies from the U.S. government that are unlikely to be revoked, USEC's production cost is an inordinately low \$60/SWU.[3] In May 1993, the United States agreed to pay Russia \$82/SWU, a price that the Ministry of Atomic Energy (Minatom) has come to regard as the absolute minimum acceptable. At this price, executing the HEU deal serves to displace USEC's own lower cost production, thereby reducing USEC's per unit profit by roughly \$22/SWU.[4] As an effective domestic monopoly, USEC has been accustomed to very high profit margins, on the order of 100 percent. Like any other business, USEC has an obvious incentive to avoid deals that reduce its profitability.

The second reason why USEC is a poor executor for the HEU deal is that USEC has an inherently adversarial relationship with Minatom. There are four suppliers of enrichment services in the world: USEC; Cogema, a French conglomerate; Urenco, a British-Dutch-German consortium; and Minatom. USEC and Minatom are oligopolistic competitors: in the enrichment sector alone, Minatom claims to have 20 to 25 percent of the world enrichment capacity, but only five percent of the world enrichment market, a statistic which Minatom clearly wants to increase.[5] USEC has no incentive to be a mere broker for its competitors, especially when that competitor has a dire shortage of hard currency. By funneling hard currency to Minatom through the HEU deal, USEC would be helping its commercial rival become more competitive in the international marketplace, thus increasing the risk that USEC will lose market share or be forced to accept lower prices in the future. Not surprisingly, Minister Mikhailov has grasped this conflict of interest, which is one reason why he and his ministry have always pushed for the creation of a separate U.S.-Russian joint venture to implement the HEU deal.

Third, by reselling Russian HEU on the U.S. and world market, USEC inevitably accentuates its own problem with excess production capacity. USEC's two gaseous diffusion plants have an annual production capacity of 19.2 million SWU, but, because the global SWU market is beset with excess supply, these plants are together producing only 14 to 15 million SWU per year. A decision to close one of the plants has long been described as inevitable, but USEC has no interest in doing so any sooner than absolutely necessary. Certainly, so long as its privatization legislation is before Congress, USEC will postpone its plant-closing decision, which would inevitably alienate legislators from either Ohio or Kentucky. Since 10 metric tons of HEU contain 1.8 million SWU (one-fiftieth of the total negotiated under the deal), it is easy to see that implementing the HEU deal conflicts with USEC's interest in keeping open both of its enrichment plants for as long as possible.

Until late 1995, USEC was in effect setting U.S. policy toward the HEU deal without any serious oversight from senior U.S. national security officials. This began to change only after the problems USEC was causing for the implementation of the HEU deal attracted the attention of the Clinton administration's senior policy-makers, a development that has resulted in a significant curtailment of USEC's autonomy.

It is worth re-emphasizing that USEC is not to blame for the trouble with the HEU deal. USEC has behaved as any other rational economic actor in its position would: it has taken those actions which it believes will maximize its total profits and its market competitiveness. For it to do anything else would be a violation of the managing team's fiduciary responsibilities to its present and future shareholders. Rather, responsibility for the inadequate implementation of the HEU deal lies with those officials responsible for protecting the national security interests of the United States. There were legitimate reasons for giving USEC the HEU deal, but in retrospect one can only conclude that the decision to make USEC the executive agent in the HEU deal was flawed from a national security perspective. This flaw resulted primarily from an inadequate analysis of the commercial implications of the HEU deal by the Bush administration's national security team. The Clinton administration perpetuated this mistake until late 1995, at which time some promising signs of a more informed U.S. policy toward the HEU deal began to emerge.

U.S. POLICY REAPPRAISED IN LATE 1995

Until mid-1995, it is not clear that any senior U.S. national security official fully appreciated the relationship between the delayed implementation of the HEU deal and USEC's conflicted incentive structure. At a minimum, no action or statement by the Clinton administration suggested that the problematic role of USEC in the HEU deal was fully understood prior to mid-1995. This began to change in the summer of 1995, when the circle of officials involved in the HEU deal was widened and elevated in the context of a thorough policy reappraisal.[6]

There were a number of developments in mid-1995 behind the Clinton administration's reappraisal of its policy toward the HEU deal, starting with a series of unfavorable stories in the media.[7] It was hoped that many of these problems could be cleared up during Vice President Gore's trip to Moscow for a meeting of the Gore-Chernomyrdin Commission (GCC) at the end of June 1995, but this meeting accomplished little. The proposals the U.S. side brought to the June 1995 meeting of the GCC had been formulated with extensive input from the USEC management team, and did not represent a significant departure from previous policy.[8] Proposals for correcting the faults in the HEU deal that emerged from these Moscow meetings were subsequently abandoned by the Clinton administration after drawing heavy criticism from key Congressional leaders and the U.S. nuclear industry, which regarded the proposals as a self-serving attempt by USEC to enhance its commercial position, not as a significant reform of the HEU deal. These factors, along with rumors that USEC may have been involved in illegal or unethical influence-peddling,[9] caused senior leaders in the White House to question the extent to which they should rely on the USEC management team for policy advice on the HEU deal.

Even more important than this external criticism, however, was an internal government review of the detailed plan for privatizing USEC that had been developed by the USEC management team and J.P. Morgan, the investment bank it had retained. Ever since the Energy Policy Act of 1992 had authorized the creation of USEC as a government-owned but independent corporation, it has been assumed that the corporation would be sold to the public in a few years, with the proceeds from this sale going to the U.S. Treasury. Indeed, one of the principal responsibilities of the USEC management team was to develop the plan for carrying out this final privatization. However, when USEC and J.P. Morgan delivered their privatization plan in July 1995, it was found seriously wanting by many of the Clinton administration's top domestic policy advisors in the White House and the Treasury, a view which was generally reinforced by a September 1995 report by the General Accounting Office (GAO).[10]

The GAO study had several important conclusions about USEC and the HEU deal. The first was that the Clinton administration needed to strengthen its oversight of the privatization process rather than rely extensively on USEC officials. This recommendation followed from a separate conclusion that J.P. Morgan may have underestimated the privatization value of USEC, which could result in undue losses to U.S. taxpayers and windfall profits for those who invest in USEC shares.[11]

The GAO study also suggested that the revenue received by the government from the sale of USEC could well be less than the net present value of the corporation as a government-owned entity, a pre-condition to the privatization of USEC that was set by the Energy Policy Act of 1992. Specifically, the GAO study estimated the net present value of USEC's future cash flows at between $2.8 and $3.5 billion.[12] However, it estimated that the total return from privatizing USEC would be only $1.7 to $2.2 billion.[13] In other words, according to the GAO, the sale of USEC would waste between $600 million and $1.8 billion.[14] Moreover, and again according to the GAO, the public sale of USEC would involve transaction costs of "about $100 million,"[15] which would be paid as fees to lawyers and investment bankers involved in the sale. Thus, about five to seven percent of the total privatization value of the corporation would be a direct transfer of wealth from the Treasury to Wall Street, a quite high margin of sale, particularly in times of fiscal austerity. Along with a greater appreciation of the problems a privately owned USEC could cause for the HEU deal, this conclusion by the GAO had a major impact on the Clinton administration's reappraisal of its policy toward the HEU deal, and in fact caused some officials to question the wisdom of privatizing USEC in the first place.

The Clinton administration's reevaluation of the USEC privatization decision has strongly influenced the official U.S. approach to buying HEU from Russia. When the privatization of USEC was taken for granted, any argument for reforming the HEU deal had to contend with the implications these changes would have on USEC's profitability and, therefore, on the government's privatization revenue. However, if it is no longer assumed that USEC will be sold off, it is no longer necessary to trade the national security gains associated with the HEU deal against the budgetary gains associated with USEC's privatization. This, in turn, reduces the importance of the views of the USEC management team, allowing senior policy-makers to focus on the compelling national security advantages of the HEU deal rather than the politically charged question of generating extra revenue for the Treasury in the near term.

When the foreign policy costs of allowing a privatized USEC to execute the HEU deal are added to the economic costs of selling off a government corporation for less than its discounted present value, the case against privatization becomes compelling. As a government-owned corporation, USEC could be instructed to accept lower profits for the foreign policy gains associated with the purchase of Russian HEU, a trade the corporation would resist making if it were owned by profit-maximizing investors. This solution, of course, would work only so long as the government exercises more effective oversight of USEC's purchase of HEU from Russia than the Clinton administration did during 1994-95; there are, however, some promising signs that this would in fact be the case.

CONCLUSION

Whether the Clinton administration decides to privatize USEC is the single most fundamental question for the future of the HEU deal. If the White House decides against privatization, the procedure for implementing the HEU deal will be vastly simplified, involving little more than the establishment of a vigorous and powerful oversight inter-agency committee composed primarily of senior national security officials. This committee would have responsibility for instructing USEC on how much HEU to purchase from Russia each year, as well as the price to be paid. USEC's "profits" would be a meaningless concept, little more than an internal accounting measure for the government, and could be directly traded for the national security gains associated with aggressively implementing the HEU deal.

On the other hand, it is far from certain that the Clinton administration will decide against privatizing USEC. If privatization does in fact occur, then the Clinton administration and its successors will confront an interminable problem of trying to coax a reluctant executive agent into implementing the HEU deal, a foreign policy initiative that runs against USEC's commercial interests. There would be several different ways to do this, but all would run the risk of causing unnecessary legal and political problems for the government, such as lobbying pressure from USEC's owners against reforming the HEU deal, or even shareholder lawsuits.

At a deeper level, however, one should ask why the government would ever want to vest executive authority for implementing a foreign policy initiative as important as the HEU deal in a privately owned company whose commercial interests run directly against the success of that initiative when there are numerous other companies that would welcome the opportunity to act as Russia's uranium broker. Fortunately, senior members of the Clinton administration appeared to have begun asking precisely this question in late 1995.

[1] For a complete discussion of these issues, see Richard A. Falkenrath, "The HEU Deal," in Graham T. Allison, Owen Cote, Richard A. Falkenrath, and Steven E. Miller, *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material* (Cambridge, Mass.: The MIT Press, 1996), appendix 3, pp. 229-292.

[2] Finding a means of selling the natural uranium component on the U.S. market without undermining the anti-dumping suspension agreement or depressing the price of uranium (and thus the welfare of U.S. uranium miners) is a serious technical, legal, and political problem, but one for which there is a relatively simple solution: "forward sales" in which payment is made in the present but delivery takes place in the future. Over the course of 1995, Senator Pete Domenici (R.-N.M.) worked to develop a forward sales mechanism for the uranium component of the Russian HEU, though this effort was initially opposed by the USEC and the Clinton administration. In the fall of 1995, the administration changed its policy and a compromise forward sales mechanism was developed between the executive and legislative branches. Enactment of this compromise formula, however, was delayed by the budget crisis of November 1995. For further detail on the issues related to the suspension agreement, see *Ibid., passim*.

[3] The standard measure of uranium enrichment service is a "separative work unit," or SWU. Thus, when someone in the nuclear industry speaks of "producing SWU" or "selling SWU," they are referring to the enrichment of natural uranium and the sale of "enriched uranium product" to utilities, which use it for power generation.

[4] Global demand for SWU is essentially flat, and USEC cannot readily increase its market share. Thus, importing Russian LEU necessarily displaces USEC's own production.

[5] Ann MacLachlan, "Euratom Has Approved Some CIS U Contracts Under $13/lb. to Block 'Undue' Trader Profits," *Nuclear Fuel*, June 7, 1993.

[6] On this process generally, see Peter Passell, "U.S. Goals at Odds In a Plan to Sell Off Nuclear Operation," *The New York Times*, July 25, 1995, pp. A1, D4.

[7] Jessica Mathews, "National Security Blunder," *The Washington Post*, May 5, 1995, p. A25; William J. Broad, "Deal for U.S. to Buy Bomb Grade Fuel From Russia Said to be in Peril," *The New York Times*, June 12, 1995, p. A1; "An Endangered Nuclear Bargain," *The New York Times*, June 13, 1995, p. A24; "Mutually Assured Cooperation," *The Boston Globe*, June 15, 1995, p. 20; and "Nuclear Weapons: Always With Us," *The Economist*, June 17, 1995, p. 48.

[8] In brief, the plan developed at the Moscow GCC called only for changes in the mechanism for dealing with the uranium component of the Russia HEU deal, which was complicated by problems with the anti-dumping suspension agreement. No changes in USEC's role in the HEU deal were envisioned, and indeed, the policy changes proposed at the Moscow GCC could well have increased USEC's influence over the implementation of the HEU deal. See Thomas W. Lippman, "U.S. Vows Faster Payment To Russia in Uranium Deal," *The Washington Post*, July 6, 1995, p. A17.

[9] See Michael Isikoff, "With Friends Like Hillary," *Newsweek*, August 14, 1995, p. 35.

[10] U.S. GAO, *Uranium Enrichment: Process to Privatize the U.S. Enrichment Corporation Needs to Be Strengthened*, RCED-95-245 (Washington, D.C.: U.S. GAO, September 1995); on the administration's views, see the letter by Mozelle W. Thompson (p. 66-68).

[11] U.S. GAO, *Uranium Enrichment: Process to Privatize the U.S. Enrichment Corporation Needs to Be Strengthened*, p. 7.

[12] *Ibid.*, p. 48.

[13] *Ibid.*, p. 2. J.P. Morgan estimated that the proceeds from privatizing USEC would be $1.5 to $1.8 billion, but the GAO modified this estimate to calculate the total return from privatization by subtracting transaction costs and cash transfers, and by adding future tax revenues.

[14] The most important source of difference between net present value of USEC as a government-owned corporation and the market value of USEC if it were sold is the use of a discount rate that is based on the government's cost of borrowing rather than a private corporation's rate of return. *Ibid.*, pp. 48-49.

[15] *Ibid.*, p. 5.