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GAO
United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

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September 23, 1992

The Honorable Philip R. Sharp
Chairman
Subcommittee on Energy and Power
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

This letter responds to your request that we provide additional information to supplement the cash flow projection previously presented in our letter UEC Cash Flow Projection (GAO/RCED-92-292R, Sept. 17, 1992) and that we provide a figure for the present value of the net operating income of the Uranium Enrichment Corporation (UEC) as would be established by the version of H.R. 776 passed by the House. In addition, because the provisions of H.R. 776 require certain payments to the U.S. Treasury, we are providing the net present value of these projected future payments.

In summary, we generated a cash flow projection similar to the projection in our September 17, 1992, letter. We extended the cash flow projection through 2011[1] and made some other minor changes. We then computed the present value of the revised projected net operating income to be about $5.2 billion in 1993 dollars. We note, however, that any estimate of earnings from uranium enrichment operations, whether performed by the UEC or the Department of Energy (DOE), is subject to major uncertainties because of the inherent difficulty in determining the amount and selling price of the enrichment services. Important market developments that are presently unforeseen could imply significant changes in the estimate. We used recent DOE revenue and cost estimates, which are subject to these uncertainties, for its uranium enrichment enterprise and adjusted them to reflect the requirements that would be established under H.R. 776.

[1]DOE had no projections beyond 2011.

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Using the cash flow projections through 2011, we also computed the net present value of the UEC's projected future payments to the U.S. Treasury under H.R. 776 to be about $3.2 billion in 1993 dollars.[2] This estimate is subject to the same uncertainties as the estimate of projected earnings. In making this estimate, we again used the recent DOE revenue and cost estimates; furthermore, we also used the assumptions utilized by the Timbers Corporation in its March 1992 financial analysis of the UEC that would have been created by H.R. 776 as reported by the House Committee on Energy and Commerce. We adjusted some of the Timbers Corporation's assumptions to reflect recent changes in H.R. 776 as passed by the full House, and for other technical reasons.[3]

PRESENT VALUE DETERMINATION OF PROJECTED NET OPERATING INCOME

To determine the present value of the projected net operating income of the UEC, we started with DOE's most recent estimated revenues and expenses associated with uranium enrichment operations from 1993 through 2011. We adjusted the DOE estimates to exclude a number of expenses that would not be paid by the UEC as established under H.R. 776. For example, costs related to the cleanup of DOE's gaseous diffusion plants, estimated at up to $31.3 billion,[4] would be paid by the federal government and domestic nuclear utilities under H.R. 776 and should not be included in determining the value of future

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[2]This includes the initial loan from the U.S. Treasury of $364 million and the repayments of the loan to the U.S. Treasury through 2011.

[3]For a discussion of these adjustments see our letter UEC Cash Flow Projection (GAO/RCED-92-292R, Sept. 17, 1992).

[4]Several studies requested by DOE estimated (1) the cost for removing radioactive and hazardous materials and decontaminating the gaseous diffusion building, (2) the remedial action costs for cleaning up the ground and water surrounding the facilities, and (3) the costs of disposing of depleted uranium. We concluded from these studies that these costs could range from $15.6 billion to $31.3 billion. These estimates are in constant 1992 dollars.

earnings of the UEC. In addition, payments to be made to the Tennessee Valley Authority (TVA) under a past interagency agreement remain liabilities of the federal government and should also not be included. After these adjustments, we then took the resulting net operating income during the period from 1993 through 2011 and discounted it using a 4-percent real interest rate; this gave us a present value of about $5.2 billion. Enclosure I contains a revised cash flow projection that reflects these adjustments. The notes to enclosure I explain the assumptions built into the cash flow projection and their source.

However, any estimate of earnings from uranium enrichment operations, whether performed by the UEC or DOE, is subject to major uncertainties because of the inherent difficulty of determining the amount and selling price of the enrichment services. Because of time constraints, we were unable to derive our own data or construct our own model to predict future operating income of the UEC. Rather, we used the figures that DOE officials characterized as the "best estimate of future earnings and costs," and we did not fully evaluate the reasonableness of the estimates. We note, however, important market developments that are presently unforeseen could imply significant changes in the estimate. For example, DOE's earnings projections assume that there will be no market impact from the commercial sale of blended-down highly enriched uranium obtained from the disarmament of nuclear weapons either in the United States or in the former Soviet Union. Similarly, decisions yet to be made in the current legislative process could have a significant impact on the estimates. However, in the time available, we were not able to conduct a sensitivity analysis to determine the effect of these uncertainties on the DOE model used to obtain these results.

DETERMINATION OF NET PRESENT VALUE OF UEC PAYMENTS TO THE TREASURY

H.R. 776 provides for the Treasury to lend the UEC $364 million and refers to this as the initial debt. In addition to requiring the repayment of this debt, H.R. 776 also provides for UEC payments to the Treasury for (1) the leasing of DOE's gaseous diffusion plants and related properties; (2) royalties resulting from the use of the commercial right to deploy and use any Atomic Vapor Laser

Isotope Separation (AVLIS) patents, processes, and technical information owned or controlled by the federal government; and (3) dividends in excess of operating costs and working capital account requirements. On the basis of our cash flow projections extended through 2011, we computed a net present value of about $3.2 billion.

This estimate is subject to the same uncertainties as the estimate of projected earnings. In making this estimate, we again used the recent DOE revenue and cost estimates, and we used the assumptions utilized by the Timbers Corporation in its March 1992 financial analysis of the UEC that would have been created by H.R. 776 as reported by the House Committee on Energy and Commerce. We also adjusted some of the Timbers Corporation's assumptions to reflect recent changes in H.R. 776 as passed by the full House and made a number of technical adjustments, such as revising the cash flow projection to reflect not only UEC funds paid to the Treasury but also the initial Treasury loan to the UEC (the initial debt). Enclosure I contains a revised cash flow projection that reflects these changes. The notes to enclosure I explain the assumptions built into the cash flow projection and their source.

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We conducted our work in September 1992 in accordance with generally accepted government auditing standards, except as noted above. As requested, we did not obtain written agency comments on the revised cash flow projection.

Unless you publicly announce its contents earlier, we plan no further distribution of this letter until 30 days after the date of this letter. At that time, we will send copies to the appropriate congressional committees; the Secretary of Energy; and the Director, Office of Management and Budget. We will also make copies available to others upon request.

We hope you and your staff find this information of assistance in your work with the conference committee considering the uranium enrichment operations restructuring provisions of the energy policy bills passed by the House and the Senate. If you have any questions, please call me on (202) 275-1441 or Robert E. Allen, Jr., on (301) 903-3712. Ronald E. Stouffer and Michael S. Sagalow were major contributors to this letter.

Sincerely yours,

Victor S. Rezendes
Director, Energy and Science Issues

Enclosure

GAO REVISIONS TO THE TIMBERS CORPORATION CASH FLOW PROJECTIONS FOR THE UEC[a] AS PROPOSED BY H.R. 776 EXTENDED THROUGH 2011 INCLUDING THE NET PRESENT VALUE OF PROJECTED NET OPERATING INCOME AND NET UEC FUNDS TO TREASURY

(Dollars in Constant 1993 Millions)

Fiscal Year

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOE'S[b] FINANCIAL PROJECTIONS														
Gross revenues		$1,462.0	$1,547.4	$1,565.5	$1,355.8	$1,508.7	$1,572.4	$1,524.0	$1,384.2	$1,305.2	$1,216.2	$1,345.7	$1,365.5	$1,330.3
Operating costs		1370.7	1413.4	1267.6	1220.0	1280.0	1236.9	1113.2	1199.8	1161.3	1111.4	1198.1	1183.5	1172.1
		--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
Net operating income		$91.3	$134.0	$297.9	$135.8	$228.7	$335.5	$410.8	$184.4	$143.9	$104.8	$147.6	$182.0	$158.2
Adjustments (not paid by UEC)														
TVA[c] payments		160.0	160.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste management		31.0	49.0	54.0	56.0	51.0	48.0	50.0	47.0	49.0	43.0	42.0	42.0	42.0
Corrective actions		135.0	120.0	127.0	134.0	131.0	107.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D&D[d] fund		0.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
AVLIS[e] R&D[f]		105.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power cost adjustment		77.0	8.8	21.9	22.7	23.1	24.3	24.9	26.4	26.9	27.9	27.8	27.4	-62.0
		--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
Total adjustments		$508.0	$412.8	$277.9	$287.7	$280.1	$254.3	$149.9	$148.4	$150.9	$145.9	$144.8	$144.4	$55.0
Revised net operating income		$599.3	$546.8	$575.8	$423.5	$508.8	$589.8	$560.7	$332.8	$294.8	$250.7	$292.4	$326.4	$213.2
Present value of revised net operating income is $5,211.6														
UEC PAYMENT DEDUCTIONS														
Lease payments - A		73.1	77.4	78.3	67.8	75.4	78.6	76.2	69.2	65.3	60.8	67.3	52.8	51.1
Initial debt		26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8
AVLIS royalties		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5	15.5
AVLIS predeployment		122.3	122.3	122.3	122.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVLIS debt service		0.0	0.0	0.0	0.0	109.3	109.3	109.3	109.3	109.3	109.3	109.3	109.3	109.3
		----	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
Total deductions		$222.2	$226.5	$227.4	$216.9	$211.5	$214.7	$212.2	$205.3	$201.3	$196.9	$203.3	$204.3	$202.6

ENCLOSURE I

GAO REVISIONS TO THE TIMBERS CORPORATION CASH FLOW PROJECTIONS FOR THE UEC[a] AS PROPOSED BY H.R. 776 EXTENDED THROUGH 2011 INCLUDING THE NET PRESENT VALUE OF PROJECTED NET OPERATING INCOME AND NET UEC FUNDS TO TREASURY

(Dollars in Constant 1993 Millions)

		Fiscal Year						Average
		2006	2007	2008	2009	2010	2011	1993-2011
DOE'S FINANCIAL PROJECTIONS								
Gross revenues		$1,312.6	$1,335.5	$1,336.6	$1,151.8	$1,226.7	$1,031.0	$1,362.0
Operating costs		1168.1	1191.9	1140.0	1059.2	1044.9	969.4	$1,184.3
		--------	--------	--------	--------	--------	--------	--------
Net operating income		$144.5	$143.6	$196.6	$92.6	$181.8	$61.6	$177.7
Adjustments (not paid by UEC)								
TVA payments		0.0	0.0	0.0	0.0	0.0	0.0	$16.8
Waste management		42.0	42.0	42.0	42.0	42.0	42.0	$45.1
Corrective actions		0.0	0.0	0.0	0.0	0.0	0.0	$39.7
D&D fund		75.0	75.0	75.0	75.0	75.0	75.0	71.1
AVLIS R&D		0.0	0.0	0.0	0.0	0.0	0.0	$5.5
Power cost adjustment		0.0	0.0	0.0	0.0	0.0	0.0	$14.6
		------	------	------	------	------	------	------
Total adjustments		$117.0	$117.0	$117.0	$117.0	$117.0	$117.0	$192.7
Revised net operating income		$261.5	$260.6	$313.6	$209.6	$298.8	$178.6	$370.4
Present value of revised net operating income is $5,211.6								
UEC PAYMENT DEDUCTIONS								
Lease payments - A		50.2	51.3	51.4	42.1	45.9	36.1	$61.6
Initial debt		26.8	26.8	26.8	26.8	26.8	26.8	$26.8
AVLIS royalties		15.5	15.5	15.5	15.5	15.5	15.5	$6.5
AVLIS predeployment		0.0	0.0	0.0	0.0	0.0	0.0	$25.8
AVLIS debt service		109.3	109.3	109.3	109.3	109.3	109.3	$86.3
		--------	--------	--------	--------	--------	--------	------
Total deductions		$201.7	$202.8	$202.9	$193.6	$197.4	$187.6	$206.9

GAO REVISIONS TO THE TIMBERS CORPORATION CASH FLOW PROJECTIONS FOR THE UEC[a] AS PROPOSED BY H.R. 776 EXTENDED THROUGH 2011
INCLUDING THE NET PRESENT VALUE OF PROJECTED NET OPERATING INCOME AND NET UEC FUNDS TO TREASURY

(Dollars in Constant 1993 Millions)

Fiscal Year

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Net income (after deductions)		$377.1	$330.3	$348.4	$206.6	$297.3	$375.1	$348.5	$127.5	$93.5	$53.8	$89.1	$122.1	$10.6
Retained earnings		54.6	54.6	54.6	54.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lease payment - B		322.5	265.7	293.8	152.0	297.3	375.1	348.5	127.5	93.5	53.8	89.1	122.1	10.6
Cumulative retained earnings		54.6	109.3	163.9	218.5	218.5	218.5	218.5	218.5	218.5	218.5	218.5	218.5	218.5
NET UEC FUNDS TO TREASURY														
Lease Payment - A		73.1	77.4	78.3	67.8	75.4	78.6	76.2	69.2	65.3	60.8	67.3	52.8	51.1
Initial debt and repayment	-364	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8
AVLIS royalties		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5	15.5
Lease payment - B		322.5	265.7	293.8	152.0	297.3	375.1	348.5	127.5	93.5	53.8	89.1	122.1	10.6
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Total net UEC funds to Treasury	($364.0)	$422.4	$369.9	$398.9	$246.6	$399.5	$480.5	$451.4	$223.5	$185.5	$141.4	$183.1	$217.1	$103.9
Total cumulative	($364.0)	$58.4	$428.2	$827.1	$1,073.6	$1,473.2	$1,953.7	$2,405.1	$2,628.7	$2,814.2	$2,955.7	$3,138.8	$3,355.9	$3,459.9
Net present value of net UEC funds to Treasury is $3,165.7														

ENCLOSURE I

GAO REVISIONS TO THE TIMBERS CORPORATION CASH FLOW PROJECTIONS FOR THE UEC[a] AS PROPOSED BY H.R. 776 EXTENDED THROUGH 2011 INCLUDING THE NET PRESENT VALUE OF PROJECTED NET OPERATING INCOME AND NET UEC FUNDS TO TREASURY

(Dollars in Constant 1993 Millions)

		Fiscal Year						Average
		2006	2007	2008	2009	2010	2011	1993-2011
Net income (after deductions)		$59.8	$57.8	$110.7	$16.0	$101.4	($9.0)	$163.5
Retained earnings		0.0	0.0	0.0	0.0	9.0	-9.0	$11.5
Lease payment - B		59.8	57.8	110.7	16.0	92.4	0.0	$152.0
Cumulative retained earnings		218.5	218.5	218.5	218.5	227.5	218.5	
NET UEC FUNDS TO TREASURY								
Lease Payment - A		50.2	51.3	51.4	42.1	45.9	36.1	$61.6
Initial debt and repayment		26.8	26.8	26.8	26.8	26.8	26.8	$26.8
AVLIS royalties		15.5	15.5	15.5	15.5	15.5	15.5	$6.5
Lease payment - B		59.8	57.8	110.7	16.0	92.4	0.0	$152.0
		--------	--------	--------	--------	--------	--------	------
Total net UEC funds to Treasury		$152.2	$151.3	$204.3	$100.3	$180.5	$78.3	$216.4
Total cumulative		$3,612.1	$3,763.4	$3,967.8	$4,068.1	$4,248.7	$4,327.0	
Net present value of net UEC funds to Treasury is $3,165.7								

[a]Uranium Enrichment Corporation.

[b]Department of Energy.

[c]Tennessee Valley Authority.

[d]Decontamination and decommissioning.

[e]Atomic vapor laser isotope separation process.

[f]Research and development.

Note 1. Gross revenues, operating costs, and net operating income. Projections use DOE's Uranium Enrichment Enterprise financial projections dated August 13, 1992. Net operating income equals gross revenues less operating costs.

Note 2. Adjustments. The following costs are included in DOE's operating costs, but because they are not the responsibility of UEC, the costs are added back: TVA payments, waste management, corrective actions, D&D fund, and AVLIS R&D costs. Power cost adjustments update DOE's operating costs using the most current costs for power.

Note 3. Debt repayment. Annual debt service (principal and interest) for initial debt of $364 million to be repaid over 20 years as established under H.R.776. GAO used a 4-percent real interest rate to determine the principal and interest payments.

Note 4. Lease payments. This projection uses the Timbers Corporation assumptions:

Lease payment A: 5 percent of Gross Revenues.

Lease Payment B: A second payment which is variable each year equal to remaining cash flow after the UEC has established a retained earnings level appropriate for its operations (i.e., net income less retained earnings equals lease payment B).

Note 5. AVLIS royalties. This projection uses the Timbers analysis assumption that the UEC will construct a 3-million separative work unit (SWU) plant. The output of this facility will be sold at $100/SWU. This equals $300 million per year, with a 5-percent royalty. AVLIS is assumed to be operational, starting in 2004. GAO escalated the $100/SWU to 1993 constant dollars by using a 3-percent inflation rate.

Note 6. AVLIS predeployment. This analysis uses the Timbers assumptions:

DOE's estimate of $638 million less the fiscal year 1992 appropriation of $163 million equals $475 million allocated evenly over 4 years. GAO escalated the $475 million to 1993 constant dollars using a 3-percent inflation rate.

Note 7. AVLIS debt service. This analysis uses the Timbers assumptions:

The corporation will build a 3-million SWU plant for a capital cost of $1 billion amortized over 30 years at a risk-adjusted real interest rate of 10 percent. AVLIS construction assumed to start in 1997.
GAO escalated the AVLIS capital costs of $1 billion to 1993 constant dollars using a 3-percent inflation rate.

Note 8. Net income (after deductions). Net operating income less total deductions (except lease payment B).

Note 9. Retained earnings. This analysis uses the Timbers assumption:

An amount up to 2 times the debt service anticipated for AVLIS capital construction is required.

Note 10. Other DOE assumptions:

Two gaseous diffusion plants (GDP) operate throughout the period.
No government purchases of enrichment services.
No market impact from the commercial sale of blended-down highly enriched uranium (HEU).
No increase in efficiencies as a result of operating the enrichment enterprise under a corporation.

Note 11. Other assumptions:

No profit margin impact from AVLIS sales.
DOE estimated power costs are paid by the UEC.
No additional costs due to liability insurance.