September 14, 2001

Mr. Steven A. Toelle
Director, Nuclear Regulatory Affairs
United States Enrichment Corporation
2 Democracy Center
6903 Rockledge Drive
Bethesda, MD 20817-1818.

SUBJECT: INSTALLATION AND OPERATION OF A CENTRIFUGE TEST LOOP AT A GASEOUS DIFFUSION PLANT

Dear Mr. Toelle:

On August 3, 2001, the Nuclear Regulatory Commission (NRC) and United States Enrichment Corporation (USEC) discussed advanced enrichment technology plans and potential applicable regulations. At the meeting, USEC requested NRC feedback on regulatory requirements for a potential gas centrifuge enrichment testing and training facility, which was also referred to as a "lead cascade." This letter responds to your request.

In our letter of June 8, 2001, we provided feedback to you on regulatory requirements for installation and operation of a SILEX test loop at a gaseous diffusion plant (GDP). In that letter, the NRC concluded that a SILEX test loop at a GDP would require licensing under 10 CFR Part 70. From the discussions during the August 3rd meeting, we similarly conclude that a centrifuge test loop or testing and training facility located at a GDP would also require licensing under 10 CFR Part 70. Our reasoning is described below.

Your presentation provided useful insights into the potential scope of a gas centrifuge test facility, including its size and operations relative to both the previously discussed SILEX test loop and a GDP, such as either the Paducah or Portsmouth plants. The centrifuge facility would contain approximately 250 kg of uranium hexafluoride and a sufficient number of centrifuges to determine technical, operating, and economic parameters that would be beneficial for construction of a subsequent larger facility producing enriched uranium for commercial purposes. USEC indicated approximately 3-5 g of uranium would be removed daily for sampling. Apart from the samples, no enriched uranium product would be withdrawn; after sampling, the enriched and depleted streams are to be blended and reintroduced as recycled feed material to the test centrifuges. The process area handling radioactive materials would be approximately 15,000 square feet, with another 45,000 square feet for support facilities (i.e., without radioactive materials). Risk-informed and performance based safety information was not included in the discussion. However, USEC believes the centrifuge test facility will also provide insights about safety associated with gas centrifuge enrichment. While the proposed centrifuge facility appears to be somewhat larger than the proposed SILEX test loop discussed in our June 8th letter, it would still be small in comparison to a GDP. A centrifuge test facility would also be outside the scope of GDP operations and their associated regulations in 10 CFR Part 76, and, thus, would require licensing under 10 CFR Part 70. However, the NRC anticipates that many of the programs reviewed and approved by the NRC in the certification of the Portsmouth and Paducah GDPs (i.e., under 10 CFR Part 76) could be incorporated or

referenced in any application for a gas centrifuge test facility. The enclosed Table 1 provides a preliminary comparison of 10 CFR Part 76 requirements for the GDP certificates that might be used to support a 10 CFR Part 70 application.

Our preliminary review also indicates the centrifuge testing facility, as described at the August 3rd meeting, is essentially a closed loop to be used for experimental or analytical purposes and not for commercial production. As such, it is not likely to be considered a "uranium enrichment facility" as defined in 10 CFR 70. Under these circumstances, the environmental reporting and formal hearing provisions for licensing a uranium enrichment facility [e.g., 10 CFR 51.97(c), 70.21(h), 70.23a, and 70.31(e)] required by Section 193 of the Atomic Energy Act are not applicable. This significantly simplifies the review process for a gas centrifuge testing facility as compared to a full-scale production facility.

The NRC believes that the regulatory review can be performed in a reasonable period of time if high quality submittals are received from USEC. First, it is beneficial for USEC to submit the environmental report and the license application at around the same time. As we discussed at the meeting, a significant time period between the NRC's receipt of an environmental report and the actual license application at a later time is not desirable and would delay the reviews. Second, the length of time for the staff's review of the environmental report depends upon the potential impacts and documentation requirements; an environmental assessment (EA) is likely to require 9 to 12 months, while an environmental impact statement (EIS) will take longer and is likely to require 16-20 months. Tables 2 and 3 provide median estimates based upon the NRC's experience with the necessary activities and public participation associated with an EA and an EIS. The NRC cannot, at this time, *a priori* determine whether an EA or an EIS is required without significant additional information about USEC's proposed action (i.e., constructing and operating the centrifuge test facility). Third, the staff estimates 12-16 months for the safety review of a high-quality license application (including safety analyses) and issuance of a safety evaluation report (SER). Note that the staff's safety review of an application would occur simultaneously with the environmental review activities.

The time estimates for the safety and environmental reviews include public participation and assume high-quality submittals, with one round of requests for additional information (RAIs), no significant issues, and the current resource allocations at the NRC. An additional round of RAIs, significant issues, or NRC resource changes (e.g., due to other licensing activities and priorities at the NRC) might extend the schedule estimates.

Finally, we note that Part 70 was recently revised to accommodate licensing of fuel cycle facilities, like enrichment plants.

We would be pleased to meet with you as necessary to assist you with regulatory questions and the application of 10 CFR Part 70 as you develop your plans further. Please contact me on (301) 415-7485 or Alex Murray on (301) 415-7854 if you have any questions.

Sincerely,

/RA/

Joseph G. Giitter, Chief
Enrichment Section
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Dockets: 70-7001
70-7002
70-7003

Enclosures:
1. Table 1-Comparison of Part 70 and Part 76 Requirements
2. Table 2- Estimated Schedule for EA
3. Table 3- Estimated Schedule for EIS

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Table 1: Comparison of Part 70 and Part 76 Requirements

Required Contents of Part 70 Application	Part 70 reference	Part 76 reference	Applicable Section(s) of Part 76 Certification	Contents of new Part 70 Application for the centrifuge test facility
General Information	70.22(a)(2)	76.35(a)(8)	SAR Chapter 1, General Description of the Facility	Description of the principle structures, systems and components of the gas centrifuge facility.
Corporate information	70.22(a)(1)	76.33(a)(2)	SAR Chapter 6, Organization and Operating Programs	Description of any deviations from SAR Chapter 6.
SNM activity, the place of the activity, general plan for activity, special exemptions/authorizations	70.22(a)(2)	76.35(a)(1) (2)	----------	Description of the activity for which the SNM is requested, or in which SNM will be produced, the place at which the activity is to be performed, the general plan for carrying out the activity and any special exemptions or special authorizations.
Funding	70.22(a)(9)	76.35(n)	Paducah Decommissioning Funding Program	May require a revision of the site Program to include specific information applicable to the gas centrifuge process.
Time for license	70.22(a)(3)	----------	----------	The period of time for which the Part 70 license is requested.
Type and form of SNM	70.22(a)(4)	76.35(a)(2)	----------	The name, amount, and specifications (including the chemical and physical form and isotopic content) of the SNM .
Technical qualifications	70.22(a)(6)	76.35(a)(3)	Possible overlap with SAR Chapter 6, Organization and Operating Programs	The technical qualifications, including training and experience of the applicant and members of staff who will be involved with the gas centrifuge process.
Description of equipment and facilities	70.22(a)(7)	76.35(a)(6)	SAR Chapter 3, Facility and Process Descriptions	A description of the equipment and facilities which will be used to protect health and minimize danger to life or property (specific to the gas centrifuge process).
FNMC Plan	70.22(b)	76.35(h)	FNMC Plan	May require a revision of the site Plan to include specific information applicable to the gas centrifuge process.
Physical Security Plan	70.22(h)(1)		Site Physical Security Plan	May require a revision of the site Plan to include specific information applicable to the gas centrifuge process.

Physical Protection Plan for material in transit	70.22(g)(1)	76.35(i)	Transportation Security Plan	May require a revision of the site Plan to include specific information applicable to the gas centrifuge process.
Emergency Plan	70.22(h)(1)	76.35(f)	Site Emergency Plan	May require a revision of the site EP to include specific effects from new process(es) (e.g. types of accidents, assessment of releases, safe shutdown, mitigation of consequences...).
Classified Matter Security Plan	70.22(m)	76.35(k)	Site Classified Matter Security Plan	May require a revision of the site Plan to include specific information applicable to the gas centrifuge process.
Integrated Safety Analysis	70.64	----------	SAR Chapter 4, Accident Analysis	Perform an ISA and provide an ISA Summary which complies with Part 70, Subpart H.
Radiation Safety Program	70.22(a)(8)	76.35(a)(6)	Radiation Protection Program SAR Chapter 5, Section 5.3	May require a revision of the site SAR and/or Rad Safety Plan to include specific information applicable to the gas centrifuge process.
Nuclear Criticality Safety Program	70.22(a)(8)	76.35(a)(6)	Nuclear Criticality Safety Program SAR Chapter 5, Section 5.2	May require a revision of the site SAR and/or NCS Plan to include specific information applicable to the gas centrifuge process.
Chemical Process Safety Program	70.22(a)(8)	76.35(a)(6)	SAR Chapter 5, Section 5.6	May require a revision of the SAR to include specific information applicable to the gas centrifuge process.
Fire Safety Program	70.22(a)(8)	76.35(a)(6)	Site Fire Safety Plan SAR Chapter 5, Section 5.4	May require a revision of the site SAR and/or Fire Safety Plan to include specific information applicable to the gas centrifuge process.
Radwaste Management Program	70.22(a)(8)	76.35(m)	Site Radioactive Waste Management Plan SAR Chapter 3, Section 3.10	May require a revision of the site SAR and/or Radwaste Plan to include specific information applicable to the gas centrifuge process.
Emergency Management Program	70.22(i)(1)	76.35(f)	Site Emergency Plan	May require a revision of the site Plan to include specific information applicable to the gas centrifuge process.

Management Controls	70.62(d)	76.35(a)(7)	SAR Chapter 6, Organization and Operating Programs	May require a revision of the SAR to include specific information applicable to the gas centrifuge process.
Environmental Report	70.21(f)	76.35(c)	DOE EIS SAR Chapter 5, Section 5.1	Include additional information of sufficient detail to allow the Commission to prepare the appropriate NEPA documentation.
Quality Assurance Program	70.64(a)	76.35(d)	Site Quality Assurance Program	May require a revision of the site Plan to include specific information applicable to the gas centrifuge process.

Table 2: Estimated Schedule (Median) for Preparation of EA for an Application for a Gas Centrifuge Test Facility

ACTION	TIME ALLOTED	TIME FROM RECEIVING APPLICATION	RESPONSIBLE PARTY	ASSUMPTIONS OR COMMENTS
Receive Environmental Report/Application		0 days	USEC	
Acceptance review and letter	30 days	1 month	NRC	
Publish Notice of Intent to prepare EA in Federal Register	30 days	2 months	NRC	
Prepare and Issue RAI	60 days	4 months	NRC	
Response to RAI	60 days	6 months	USEC	
Incorporate RAI responses into draft EA	60 days	8 months	NRC	Assumes responses are adequate
Publish draft EA in Federal Register for public comments	14 days	8 months, 2 weeks	NRC	Includes management and OGC/DWM review of draft EA
Draft EA to State/DOE/other agencies for comment	14 days	8 months, 2 weeks	NRC	concurrent with public comment period
Incorporate public comments	30 days	9 months, 2 weeks	NRC	
Issue final EA, FONSI in Federal Register	2 weeks	10 months	NRC	

Table 3: Estimated Schedule (Median) for Preparation of an EIS for an Application for a Gas Centrifuge Test Facility

ACTION	TIME ALLOTED	TIME FROM RECEIVING APPLICATION	RESPONSIBLE PARTY	ASSUMPTIONS or COMMENTS
Receive Environmental Report/Application		0 days	USEC	
Acceptance review and letter	30 days	1 month	NRC	
Publish Notice of Intent to prepare EIS in Federal Register (including tentative schedule of public meetings)	30 days	2 months	NRC	
Notice of Scoping	30 days	4 months		
Public Scoping Meeting(s)	30 days	5 months		
Prepare and Issue RAI	90 days	8 months	NRC	
Response to RAI	90 days	11 months	USEC	
Incorporate RAI responses into draft EIS	60 days	13 months	NRC	Assumes adequate responses
Publish draft EIS in Federal Register for public comments	30 days	14 months	NRC	Includes management and OGC/DWM review of draft EIS
Draft EIS to State/DOE/other agencies for comment	30 days	14 months	NRC	concurrent with public comment period
Incorporate public comments	30 days	15 months	NRC	
Issue final EIS, ROD in Federal Register	30 days	16 months	NRC	