

May 26, 1999

FOR: The Commissioners May 26, 1999

FROM: William D. Travers /s/
Executive Director for Operations

SUBJECT: PADUCAH SEISMIC UPGRADES CERTIFICATE AMENDMENT REQUEST

PURPOSE:

To inform the Commission that the United States Enrichment Corporation (USEC) submitted an amendment request for the Paducah Gaseous Diffusion Plant (PGDP) requesting a 1-year extension of the completion date from June 30, 1999, to June 30, 2000, for Compliance Plan Issue 36, "Seismic Capability of Buildings C-331 and C-335." The current Compliance Plan due date of June 30, 1999, was affirmed by Commission Memorandum and Order, CLI-98-02, dated March 19, 1998. The staff has completed its review and plans to issue the Director's Decision to approve USEC's amendment request to extend the completion date until June 30, 2000.

BACKGROUND:

The September 15, 1995, application from USEC for the initial certification of the PGDP contained an analysis of the potential impacts of earthquakes that was based on a 1985 Department of Energy (DOE **EXIT**) Safety Analysis Report (SAR). At that time, DOE was in the process of conducting new studies to update the 1985 SAR. The new studies determined that significant plant damage could occur in two of the main cascade buildings, C-331 and C-335, for an earthquake magnitude below the evaluation basis earthquake (EBE) analyzed in the 1985 SAR. Thus, DOE determined that an unreviewed safety question (USQ) existed involving potential large uranium hexafluoride releases coincident with a loss of structural confinement, and Compliance Plan Issue 36, "Seismic Capability of Buildings C-331 and C-335," was written to address this USQ. Issue 36 called for continuation of interim compensatory measures until the structural modifications were completed, and it required the modifications to be completed by December 31, 1997. The modifications were to strengthen the building structures to improve the seismic resistance of these buildings.

By letter dated April 23, 1997, USEC submitted an amendment request to obtain the Nuclear Regulatory Commission's (NRC's) approval, among other things, to extend the completion date until 15 months after NRC's approval of the amendment request. On July 31, 1997, USEC revised its amendment request to further delay the completion of the seismic modifications until 18 months after NRC had completed numerous reviews USEC had requested in support of the modifications.

By letter dated June 30, 1997, USEC informed NRC that it would stop work on seismic modifications pending NRC's review of its request. In a subsequent letter dated July 24, 1997, the staff informed USEC that actions taken that might jeopardize completing the modifications as scheduled would be taken at USEC's own risk. Despite this, USEC did not resume seismic modification work at that time.

After staff review of the April 23, 1997, amendment request from USEC, and after coordination with DOE, the Director's Decision on the amendment appeared in the Federal Register on December 16, 1997. The decision announced the intention to, among other things, deny USEC's amendment request of April 23, 1997, as revised by letter dated July 31, 1997, to delay completion of the structural modifications until 18 months after the staff had completed reviews of all other seismic material requested by USEC. Instead, the staff established a completion date for the structural modifications of June 30, 1999, which was approximately 18 months after issuance of the Director's Decision and the original completion date of December 31, 1997 (USEC had originally estimated that it would take 18 months to install the modifications).

On December 30, 1997, USEC submitted to the Commission a "Petition Requesting Commission Review of Director's Decision Denying In Part USEC Certificate Amendment Request Regarding Paducah Plant Seismic Upgrades." In the petition, USEC requested that the Commission review only that portion of the Director's Decision that denied parts of USEC's application of April 23, 1997, as revised by letter dated July 31, 1997, for amendment to its Certificate of Compliance for the PGDP. Specifically, USEC requested that the Commission extend the deadline for the completion of the seismic modifications until 18 months after NRC had completed the reviews and approvals described in USEC's April 23, 1997, certificate amendment application, as revised by letter dated July 31, 1997.

In SECY-98-022, dated February 13, 1998, the staff recommended that the Commission deny USEC's petition requesting Commission review of the Director's Decision and approve and issue a Memorandum and Order responding to the petition. In Memorandum and Order CLI-98-02, dated March 19, 1998, the Commission found that USEC had offered no sustainable basis for its request for the review of the Director's Decision. The Commission found that, in the interest of protecting public and worker health and safety at PGDP, the seismic modifications required by the Compliance Plan needed to be implemented without delay, as stated in the Director's Decision published in the Federal Register on December 16, 1997.

After the issuance of the March 19, 1998, Memorandum and Order, USEC resumed its seismic modification work. The cessation of the modification work resulted in approximately 8 months of delay.

By letter dated January 12, 1999, USEC submitted a certificate amendment request to extend the completion date of Compliance Plan Issue 36 from June 30, 1999, to June 30, 2000. USEC submitted this Compliance Plan schedule change to DOE on December 11, 1998, and DOE approved the request on January 8, 1999. NRC acknowledged receipt of the amendment request and issued requests for additional information (RAIs) in letters dated January 27 and April 7, 1999. USEC responded to the RAIs in letters dated February 17, February 18, April 27, and May 14, 1999.

DISCUSSION:

In the January 12, 1999, certificate amendment request, USEC stated that the reason for requesting the additional delay was that unanticipated construction problems were encountered that had caused delays in the construction schedule. USEC described these problems as follows:

1. Removal and subsequent installation of replacement steel in an individual bay could not be accomplished in two shifts as had been originally estimated. High ambient temperature at the work sites severely curtailed the amount of time that heavy labor could be performed.
2. Demolition of existing bracing and gusset plates was taking more time than initially projected. Great care had to be taken to ensure that the remaining structures, systems, and components were not damaged by construction activities. Erections of protective structures, guards, and drop nets in congested areas were taking more time than initially projected.
3. As the project progressed, more interferences had been identified than had been accounted for in the initial design, requiring increased engineering, drafting, planning, scheduling, procuring, and construction time. Plant maintenance personnel had originally been identified as the only workforce to move the interferences. USEC had to hire additional workers to support the expanded workload.

In its April 27, 1999, letter, USEC stated that, based on the construction progress expected as of June 30, 1999, the EBE is not expected to cause a general collapse (i.e., total collapse of the gross structural frame) in any of the building's eight sections. Based on its review of USEC's submittals, the staff concluded that this is reasonable. As a result, the staff has only considered the consequences associated with partial building collapse (i.e., roof-to-ground collapse of building bays, approximately 20 feet wide, in which the rocker arm expansion joints are located). In its May 14, 1999, submittal, USEC indicated that the worst-case consequences to onsite workers for partial building collapse of both buildings were 31 workers experiencing 60 to 70 mg uranium intake and 667 workers experiencing 20 to 40 mg uranium intake. The worst-case analysis was based on: (a) partial building collapse in all eight building sections; (b) the worst-case meteorological assumptions; (c) no aerosol deposition; (d) the highest expected source term; and (e) no credits taken for emergency response and sheltering. The risk to the public would remain low, as indicated in the Compliance Plan and USEC's February 17 and 18, 1999, letters. Actual risks and consequences would likely be less since no credit was taken in the analysis for the structural improvements already made to the buildings, any aerosol deposition that may occur, and other than worst-case meteorological conditions and wind directions.

USEC has implemented construction efficiencies to improve its installation of the structural modification and believes that the 1-year extension is sufficient to complete the modifications. To support this new schedule, USEC had committed to maintaining the compensatory measures of the existing justification for continued operation (JCO) until the modifications are completed. These measures include limiting the operations in the buildings to subatmospheric pressure within the cascade equipment, instructing operations personnel on emergency procedures for shutting down applicable equipment, and limiting building access to essential personnel.

CONCLUSIONS

Based on the construction progress expected by June 30, 1999, the staff has concluded that total building collapse is not expected to occur as a result of the EBE. Currently, only partial collapse is considered to be associated with the EBE; the staff concludes that the consequences from such a failure are acceptably low for the 1-year period until the modifications are complete. In fact, the consequence values discussed above would be expected to be lower since those values assumed complete partial collapse in all sections.

Based on USEC's modification status, the staff concludes that the June 30, 2000, completion date is one that USEC can reasonably be expected to meet. During the 1-year delay, USEC has committed to continue implementing the compensatory measures of the JCO for Compliance Plan Issue 36. The staff concludes that these compensatory actions would contribute to minimizing potential exposure to onsite workers and offsite releases. However, the staff believes that the consequences can be lower if USEC ensures that onsite personnel are aware of what response to take in the event of a seismic event. Therefore, the staff plans to include a certificate condition to require USEC to communicate emergency response actions for potential seismic events to onsite workers by July 31, 1999.

Based on: (1) the construction progress expected by June 30, 1999, and the associated consequence values should an EBE occur; (2) the likelihood that the modifications would be completed by June 30, 2000; (3) USEC's commitment to continue implementing the Compliance Plan JCO compensatory measures; and (4) the inclusion of a certificate condition that requires USEC to communicate appropriate emergency response actions to onsite workers by July 31, 1999, the Director's Decision will approve changing the date for completion of the seismic modifications in Buildings C-331 and C-335 from June 30, 1999, to June 30, 2000.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection to its contents.

original /s/ by
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