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JAMES H. MILLER
VICE PRESIDENT, PRODUCTION

June 30, 1997

Dr. Carl J. Paperiello, Director
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SERIAL: GDP 97-0101

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001
Seismic Risks and Modifications at PGDP, Compliance Plan Issue 36

Dear Dr. Paperiello:

The United States Enrichment Corporation (USEC) is currently preparing to make structural modifications to the C-331 and C-335 buildings at the Paducah Gaseous Diffusion Plant (PGDP) in accordance with a commitment made to the Department of Energy (DOE) by USEC in January 1996, and subsequently affirmed to NRC in August 1996 in Seismic Risks and Modifications at PGDP, Compliance Plan Issue 36. The technical basis for these modifications is the recently completed DOE site-wide Safety Analysis Report (KY/EM-174). DOE, with NRC's agreement, directed these modifications before regulatory oversight transferred to NRC. However, these modifications, although costly, may not be the only steps needed for acceptable management of seismic risk. Compliance Plan Issue 36 already indicates that additional modifications could be recommended as a result of yet to be completed evaluations and analyses.

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New information has been received during 1997 as the work on the committed modifications has proceeded. Although our reviews of this data is not yet completed, and not all of the new information is available yet, enough is known to raise serious question about the committed modifications as an effective element in management of seismic risk at PGDP. This is discussed at length in Enclosure 1.

The substantial costs associated with these modifications are being funded by DOE through the Nuclear Safety Upgrade Program. Although the costs are borne by DOE, USEC has a responsibility to make an independent judgment that the directed upgrades are an effective way to manage seismic risk at PGDP. There is sufficient question now raised that USEC has concluded that work on the committed modifications should be stopped immediately, preserving about $17M of the $23M cost, until the remaining evaluations and analyses are completed. If the committed modifications are

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shown to be effective they can be installed within about 18 months from release of the project. If they are not shown to be effective, the bulk of their cost will have been preserved.

As we discussed with you in our meeting on June 27, 1997, USEC will provide under separate cover an amendment request for a change to Compliance Plan Issue 36 to reflect these actions. In the meantime, USEC will stop work on these modifications pending NRC's review of our request.

Should you have any questions, please contact Mr. Robert Woolley at 301-564-3413. Commitments identified in this submittal are listed in Enclosure 2.

Sincerely,

James H. Miller
Vice President, Production

Enclosures:
1. Seismic Risk and Modifications at PGDP
2. Commitments Identified in this Submittal
3. LLNL Report: Paducah Gaseous Diffusion Plant Seismic Risk Study

cc:
NRC Region III Office
NRC Resident Inspector - PGDP

Enclosure 1

Seismic Risk and Modifications at Paducah Gaseous Diffusion Plant

In January, 1996, in response to a directive from the Department of Energy (DOE), USEC committed to complete structural modifications to upgrade the seismic capacity of the '00' process buildings at Paducah, C-331 and C-335. This commitment was re-affirmed and transferred to the NRC as part of the certification process by incorporation into the DOE's Plan for Achieving Compliance (Compliance Plan) as Issue 36.

Design of the modifications is based on an Evaluation Basis Earthquake (EBE) producing 0.15g. The modifications will stiffen the building structure in order to prevent collapse of portions of the C-331 and C-335 roofs. Although the conceptual designs and supporting seismic analysis were performed by DOE, USEC is responsible for the final design and installation of the modifications. Overall, USEC's activities in support of the modifications will cost about $23 million that is being funded by the DOE through the Nuclear Safety Upgrade Program. Final design of the structural modifications is nearing completion and the steel has been procured. Fabrication of the steel into appropriate shapes and relocation of interfering wiring, piping, and other systems and components have begun. About $17 million of work remains to be completed on the project.

New information and considerations have caused USEC to question whether the committed modifications will effectively manage seismic risk at PGDP.

First, in February, 1997, USEC received DOE's upgraded Safety Analysis Report for the Paducah plant (KY/EM-174). The analysis was provided to USEC by DOE pursuant to Compliance Plan Issue 2 in support of USEC's updated SAR which is due to NRC very soon (by August 17, 1997). The DOE upgraded analysis identifies a seismic vulnerability for the liquid UF_6 condensers and accumulators at the withdrawal facilities. These facilities would not benefit from the modifications being made to the C-331 and C-335 buildings, yet these postulated failures may constitute a dominant risk sequence for the EBE. USEC is currently reviewing these analyses.

Second, in March 1997, USEC received a copy of a DOE-sponsored study by Lawrence Livermore National Laboratory (LNLL), URCL-ID-126275, dated February 1997. The study was commissioned by the DOE to review the health risks to the site workers and the public in the surrounding area that would result from potential releases of uranium hexafluoride (UF_6) during a seismic event. The study used the consequence models contained in the DOE's Upgraded SAR to evaluate the impact of the planned structural modification on this risk. The study found that the planned modifications would result in a modest reduction in the probability of more than 30 individuals (onsite and offsite) being injured by a release of UF_6 due to a seismic event, (4×10^{-4}/year to 2×10^{-4}/year). The LLNL study treated the C-331 and C-335 building failures as the dominant risk scenario and affirmed the earlier conclusion of the analysis documented in the Compliance Plan, that the seismic risk is low. The study also concluded "there is no reason to perceive the seismic risk to the public at the PGDP to be unacceptably high compared to other industrial risks." The LLNL did not examine the risk that may be posed by the condenser and accumulator failures described above. A copy of DOE's LLNL report is included for your information as Enclosure 3.

Third, on April 23, 1997, USEC submitted to NRC a Certificate Amendment Request asking for NRC review and approval of three unreviewed safety questions identified in the course of conducting reviews

of the proposed structural modifications. The most significant of these questions involves the long term impact of the modifications on the increased stiffness of the buildings and the resulting increase in seismic loading on the cascade piping and equipment. The other two shorter term issues deal with the impact on the buildings seismic capacity during the installation of the structural modifications, and the increase in probability of equipment failures due to postulated load handling accidents during the modification process. In addition, USEC requested a change to the scheduled completion date of Compliance Plan Issue 36 and proposed a change to the corresponding Justification for Continued Operation (JCO).

Fourth, the seismic risk from the postulated failures of the '00' building roofs is minimized by maintaining system pressure in the '00' buildings below atmospheric pressure. With the UF_6 below atmospheric pressure, there is no driving force behind the release of material if the cascade piping is opened by a seismically-induced failure. This was the basis for approval of the compensatory measure developed for the Compliance Plan JCO. Although unattractive to USEC due to resulting operational constraints, this measure could be used almost indefinitely to mitigate the seismic risk from the postulated C-331 and C-335 roof section collapse.

Finally, Compliance Plan Issue 36 also requires USEC to provide NRC an updated seismic risk analysis for the PGDP. The revised analysis is due to NRC by December 1, 1997, and is to consider all available regional and site-specific data published by the U.S. Geological Survey and provide an estimate of the peak ground acceleration for a seismic event with a 250-year return period. The results of this analysis could significantly alter our understanding of the seismicity of the site and, therefore, the dominant UF_6 release mechanism resulting from a major seismic event. The revised analysis may indicate the need for different modifications than those currently committed for the C-331 and C-335 buildings.

Compliance Plan Issue 36 already states: "Additional modifications to equipment could be recommended depending on the findings of the remaining equipment evaluations and the analyses of the HF and UO_2F_2 projected releases." As presented above, new information from several remaining evaluations and analyses has already been received and more will be available soon. The new information raises questions about whether the committed modifications to C-331 and C-335 will be effective elements in the management of overall seismic risk at PGDP. The commitment to perform these modifications derives from the DOE-sponsored seismic safety analysis work as of 1996. The substantial costs of these committed modifications are being funded by DOE through the Nuclear Safety Upgrade Program. However, USEC has a responsibility, in compliance with 10 CFR 76.85 as cited in the Compliance Plan, to make an independent judgment that "[considers] natural phenomena in ensuring adequate protection of the public health and safety."

In consideration of this new information, USEC has concluded that work on the committed modifications should be suspended immediately, preserving the design and the bulk of the funding, pending the completion of the following activities:

Unreviewed Safety Questions

(a) NRC completes review of the three unreviewed safety questions identified in USEC letter GDP 97-0062, dated April 23, 1997.

Final Design of C-331 and C-335 Modifications

(b) USEC prepares and submits the final design of the C-331 and C-335 structural modifications as required by Item 3 of the Plan of Action and Schedule for Compliance Plan Issue 36. Forecast completion date: July 31, 1997.

(c) NRC completes review of the final design of the C-331 and C-335 structural modifications.

SAR Update

(d) USEC completes review of the DOE Upgraded SAR and incorporates the seismic analyses into USEC's Updated Safety Analysis Report as required by Compliance Plan Issue 2. Forecast completion date: August 17, 1997.

(e) NRC completes review of the seismic analyses included in USEC's Updated SAR.

Updated Seismic Risk Analysis

(f) USEC completes the updated seismic risk analysis required by Compliance Plan Issue 36. Forecast completion date: December 1, 1997.

If the current modifications are confirmed by these analyses, USEC will proceed with the modification of C-331 and C-335.

If activities (a) through (f) indicate that a different set of modifications than those currently planned should be pursued, USEC will proceed with development of a recommendation for a new set of actions as follows:

Final Analysis

(g) USEC identifies to NRC the need for a different set of modifications and operating controls and proposed a general design approach. Forecast completion date: December 1, 1997.

(h) NRC completes review of the updated seismic risk analysis and USEC's planned approach in (g).

(i) USEC identifies necessary structural modifications and operating controls for effective management of the dominant seismic risk at PGDP and submits for NRC approval. Forecast completion date: 4 months following completion of item (h).

(j) NRC completes review of USEC's submittal described in (i).

USEC has reviewed the JCO provided in Compliance Plan Issue 36 as revised by our letter of April 23, 1997. USEC will continue to abide by the commitments contained in the JCO including maintaining the cascade below atmospheric pressure in the '00' buildings and restricting access to essential personnel only until the modifications are completed or the issue addressed in the Compliance Plan is otherwise resolved with NRC. As noted in the LLNL study, the risk to the public posed by a seismic event at PGDP is small and the reduction in risk that will result from the current set of modifications is modest. Postponement of the modifications pending resolution of the issues discussed above does not pose an undue risk to the public or our workers.

Enclosure 2

UNITED STATES ENRICHMENT CORPORATION (USEC)
LIST OF NEW COMMITMENTS 70-7002, GDP 97-0101

1. USEC will provide an amendment request for a change to Compliance Plan Issue 36 to reflect the actions described in this letter. Completion date: July 31, 1997.