



October 5, 1998
GDP 98-0199

Dr. Carl J. Paperiello
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Portsmouth Gaseous Diffusion Plant (PORTS)
Docket Nos. 70-7001 & 70-7002
Response to NRC Request for Additional Information (TAC NOS. L32043 & L32044)

Dear Dr. Paperiello:

By letter dated June 1, 1998 (Reference 1), the U.S. Nuclear Regulatory Commission (NRC) forwarded to the United States Enrichment Corporation (USEC) various questions on the certificate amendment requests to Update the Application Safety Analysis Reports (SARUP) for the Paducah, Kentucky and Portsmouth, Ohio gaseous diffusion plants. By letter dated July 20, 1998 (Reference 2), USEC submitted responses to a number of the NRC questions/comments from the June 1, 1998 letter.

Verbal comments were provided to USEC on the response to Chapter 3 - Question 8 by Messrs. Ken O'Brien and Charlie Cox of the NRC. A revised response to this question that is intended to resolve these comments is provided in Enclosure 1.

Enclosure 2 provides a status of the response to each of the NRC questions/comments on the SARUP submittals. Responses to the remaining questions/comments will be submitted at a later date.

If you have any questions on the enclosed question response, please call me at (301) 564-3250 or Steve Routh at (301) 564-3251. There are no new commitments contained in this submittal.

Sincerely,

S. A. Toelle 11/1/98

Steven A. Toelle
Nuclear Regulatory Assurance and Policy Manager

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- References:
1. Letter from Charles Cox (NRC) to Mr. James H. Miller (USEC), "Paducah and Portsmouth Certificate Amendment Requests-Update of the Application Safety Analysis Reports (TAC Nos. L32044 & L32043)," dated June 1, 1998.
 2. Letter from Steven A. Toelle (USEC) to Dr. Malcolm R. Knapp (NRC), "Response to NRC Request for Additional Information (TAC NOS. L32043 & L32044)," Letter No. GDP 98-0140, July 20, 1998.

- Enclosures:
1. Response to Chapter 3 - Q8 (NRC 6/1/98 Letter), Revision 1.
 2. Status of Responses to NRC Questions/Comments on SARUP

cc: Mr. Robert C. Pierson, NRC-HQ
NRC Region III
NRC Resident Inspector - PGDP
NRC Resident Inspector - PORTS
Mr. Randall M. DeVault (DOE)

Chapter 3 - Q8 (NRC 6/1/98 Letter)

PGDP/PORTS - §3.8/3.15.2.5

- a. The description should include a diagram identifying key components.
- b. A numerical analysis should be included demonstrating that the probability of the (now mitigated) system not performing its safety function is incredible (less than $1E-6$).
- c. This system has two safety functions, NCS and personnel protection. While it may be considered to preserve initial conditions in an accident analysis, more justification is needed to explain why this system is not considered as a system to prevent or mitigate an accident since the water inventory does provide a mitigation factor for the pressure inside of the autoclave during the scenario and therefore would warrant a Q categorization.

Response:

- a. Current SAR Chapter 3 provides diagrams for various SSCs. Diagrams will also be included in the rewrite of SAR Chapter 3 to support SARUP Section 3.8/3.15, the SARUP Chapter 4 accident analysis, and the SARUP TSRs.
- b. A numerical analysis was not performed to demonstrate that the system would perform its safety function at any particular failure frequency. The capability of SSCs to perform their safety function was determined in the SARUP based on engineering analyses, engineering judgement, and plant operating history (supplemented in some cases with qualitative fault tree analyses). This process identified the SSC quality and operability requirements to provide adequate assurance that the SSC could be expected to perform its safety function. The process used in the SARUP is consistent with the approach described in Section 1.d of the Plan of Action and Schedule for Compliance Plan Issue 2. There were no criteria in the SARUP analyses for demonstrating that the probability of a system not performing its safety function is incredible (less than $1E-6$).
- c. The amount of water in the autoclave does not initiate any accident sequence nor does it act to mitigate an accident once one occurs. The modeling of the autoclave release pressure transient was based on the steam within the autoclave and the condensate on surfaces accessible to the postulated UF_6 release; the assumption was that the water in the drain line was maintained below the autoclave level by this system. The model assumed instantaneous reaction of the steam/condensate with UF_6 as it is released, thus providing a bounding analysis. Water in the drain pipe was factored into the overall condensate volume assumed to exist in the autoclave prior to the event. This was accomplished by assuming a higher than expected differential temperature between the autoclave shell wall and the steam. This higher differential temperature (purposely) resulted in a higher level of condensate on the autoclave wall. The analysis factored this additional condensate on the walls into the accident model as a way to make up for possible sources of condensate that were not specifically accounted for, such as in the drain line. The analysis also recognized that not all of the water that could possibly exist in the drain line would contribute to the initial reaction pressure peak. The analysis concluded that as long as water does

not accumulate at the bottom of the autoclave (i.e., above the top of the drain line), the initial conditions of the accident analysis would be satisfied.

Accordingly, the autoclave water inventory control system (PGDP)/autoclave high condensate level cutoff system (PORTS) is credited in SARUP Section 3.8.2.5.4/3.15.2.5.4 with establishing an initial condition for the accident analysis and for providing a nuclear criticality safety active engineered feature (NCS AEF). Thus, these systems do not satisfy the Q classification criteria in SARUP Section 4.2.2. Consequently, the system is classified as AQ-NCS in SARUP Table 3.8-3/3.15-3 in accordance with the AQ classification criteria in SARUP Section 4.2.2.

SARUP Revision:

No revision required.

**STATUS OF RESPONSES TO
NRC QUESTIONS/COMMENTS ON SARUP**

1. 2/5/98 NRC Questions

Letter from Robert C. Pierson (NRC) to Mr. James H. Miller (USEC), "Paducah Certificate Amendment Request - Update of the Application Safety Analysis Report-(TAC NO. L32043)," dated February 5, 1998.

Submitted 2/27/98: Q1, Q2, Q3, Q4
Working: None

2. 2/25/98 NRC Questions

Letter from Charles Cox (NRC) to Mr. James H. Miller (USEC), "Paducah and Portsmouth Certificate Amendment Requests-Update of the Application Safety Analysis Reports (TAC Nos. L32043 & L32044)," dated February 25, 1998.

Submitted 3/27/98: Q4, Q8, Q10, Q11, Q12, Q13, Q14, Q15, Q19
Submitted 4/21/98: Q1, Q2, Q3, Q5, Q6, Q7, Q9, Q16, Q18
Submitted 5/1/98: Q17
Working: None

3. 6/1/98 NRC Questions

Letter from Charles Cox (NRC) to Mr. James H. Miller (USEC), "Paducah and Portsmouth Certificate Amendment Requests-Update of the Application Safety Analysis Reports (TAC Nos. L32044 & L32043)," dated June 1, 1998.

Submitted 7/20/98: Ch 2: Q1
Ch 3: Q4(a, f), Q5, Q6(a, g), Q7(a, d), Q8, Q9, Q11(a, b), Q12, Q16(a, b), Q17(a, b), Q18(a, b), Q22(c), Q24(a, g)
Ch 4: Q2, Q5
Revised 10/5/98: Ch 3: Q8
Working: Ch 3: Q1-Q3, Q4(b-e), Q6(b-f, h), Q7(b, c), Q10, Q11(c-f), Q13, Q14, Q15, Q16(c-f), Q17(c, d), Q18(c, d), Q19-Q21, Q22(a, b, d-f), Q23, Q24(b-f), Q25-Q35, Q37
Ch 4: Q1, Q3, Q4, Q6-21

**STATUS OF RESPONSES TO
NRC QUESTIONS/COMMENTS ON SARUP**

4. 7/9/98 NRC Questions

Letter from Charles Cox (NRC) to Mr. James H. Miller (USEC), "Paducah and Portsmouth Certificate Amendment Requests-Update of the Application Safety Analysis Reports (TAC Nos. L32044 & L32043)," dated July 9, 1998.

Working: Ch 1: Q1
Ch 3: Q1, Q2
Ch 4: Q1, Q2
TSR: Q1 - Q130

5. 7/14/98 NRC Questions

Letter from Charles Cox (NRC) to Mr. James H. Miller (USEC), "Paducah and Portsmouth Certificate Amendment Requests-Update of the Application Safety Analysis Reports (TAC Nos. L32044 & L32043)," dated July 14, 1998.

Working: Q1 - Q15