USEC
A Global Energy Company

April 5, 2012
GDP 12-0013

Ms. Catherine Haney
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001, Certificate No. GDP-1

Certificate Amendment Request (CAR):
Tails and Withdrawal Facilities Technical Safety Requirements (TSR Section 2.3 for C-310 and C-315 buildings), 2.3.4.8 Fire Protection System – Building Sprinkler System, Enrichment Cascade Facilities (TSR Section 2.4 for C-331, C-333, C-335, and C-337 buildings), 2.4.4.5 Fire Protection System – Building Sprinkler System.
Administrative Controls, Table 3.2.2-1, Minimum Staffing Requirements.

Dear Ms. Haney:

On February 3, 2012, USEC submitted a Certificate Amendment Request pertaining to the High Pressure Fire Water System building sprinkler system TSRs. On page 6 of enclosure 2 of the CAR (GDP 12-0001) a statement was made that the facility sprinkler system provides essentially no mitigation capability for a roof deck fire since all the sprinkler heads are below the roof deck. Our subsequent review of this CAR revealed that the C-333, C-337, and C-310 buildings contain lube oil penthouse structures and roof vents which include limited sprinkler heads above the roof deck level. In addition, the C-333 and C-335 buildings have limited sprinkler heads in the roof vents. Since the lube oil has been drained down to the ground floor drain tanks, the potential for a roof level fire is minimized and this error in sprinkler head locations does not adversely affect the justification presented in the CAR. However, we believe that it is appropriate to correct this statement of fact. One other CAR page (page 7 enclosure 2) has minor editorial changes. Enclosure 1 includes the amended pages.

Should you have any questions related to this matter, please contact me at (301) 564-3250.

Sincerely,

S. A. Toelle

Steven A. Toelle
Director, Regulatory Affairs

Enclosure: Amended Pages to GDP 12-0001

cc: J. Calle, NRC Region II Office
M. Chitty, NRC Sr. Resident Inspector - PGDP
T. Liu, NRC Project Manager - HQ

NMSS01
A006

USEC Inc.
6903 Rockledge Drive, Bethesda, MD 20817-1818
Telephone 301-564-3200 Fax 301-564-3205 www.usec.com

Enclosure 1
GDP 12-0013

Amended Pages to GDP 12-0001, Enclosure 2, Pages 6 and 7 of 18

The PGDP SAR Section 5.4, Fire Protection, discusses a second major fire hazard beside a lube oil fire in the process buildings. The second major fire hazard is the roof deck as the construction is a typical metal deck roof assembly with a combustible vapor barrier/adhesive, insulation board, built-up tar and felt covering, covered with ballast gravel. The roof deck fire is not discussed individually or as part of the SAR accident analysis discussed above. It is assumed by this absence that a fire only involving the roof deck is not a significant risk and does not require controls such as sprinkler systems. SAR Section 5.4 supports this position as it states that the sprinklers are provided throughout the process buildings primarily in response to the fire hazard of the combination of lube oil use and combustible roof assembly. Without the lube oil fire potential, a roof deck fire is not a significant risk. The facility sprinkler system provides essentially no mitigation capability for a roof deck fire since, with the exception of the limited heads in the lube oil penthouses and roof vents in C-310/C-333/C-337 and the roof vents in C-331/C-335, the sprinkler heads are below the roof deck. In addition, with the lube oil drained to the ground floor tank any potential risk for a roof deck fire is significantly reduced. This is sufficient justification to exclude this as criteria that would require the facility sprinkler system to be operable for roof deck fire mitigation.

The SAR fire hazard discussion in SAR Section 5.4, Fire Protection, acknowledges that there is the potential for small fires due to hazards due to normal industrial activities (e.g., combustibles, switch-gear/transformers, lift-trucks/tow-motors, maintenance work/welding, etc.). The combustible loading is considered low and the normal industrial fire hazards are identified and controlled with periodic facility surveys or by the building custodian. With the isolation or removal of the lube oil from any source of ignition, the potential for these small fires to grow to a large fire is considered an insignificant risk and does not require mitigation by the facility sprinkler system.

A large fire is considered to be a potential threat to the integrity of the UF_6 primary system either (1) directly from over-temperature or, (2) directly by weakening of the support structures and causing primary system failure due to falling debris. Primary system integrity could also be indirectly damaged due to control system failure due to the large fire. In order for the large fire event to produce a release of UF_6 to atmosphere, the failure must be in the cascade cells or near equipment piping.

Currently, the HPFWS building sprinkler system TSRs for the cascade and withdrawal facilities require sprinkler system operability during all modes of operation, even if the cells/equipment are shutdown and the lube oil is isolated or the lube oil is drained. The proposed changes to the cascade and withdrawal TSRs 2.3.4.8 and 2.4.4.5 will add the exemption as supported by the PGDP accident analysis, as delineated below, to exempt the HPFWS building sprinkler systems from operability requirements if the facility enrichment cascade is shutdown (no stage/booster motors running) or facility withdrawal operations are shutdown and the lube oil is isolated or removed from the lube oil system for the equipment/cell covered by a specific sprinkler system. Lube oil is considered isolated when it has been drained from the lube oil system piping and gravity supply tank. The lube oil is contained in the ground floor drain tank with isolation valves shut. Insignificant quantities of oil may remain in the piping and gravity supply tank. Lube oil is considered removed when the lube oil has been drained from the lube oil system piping and gravity supply tank and the ground floor drain tank has been pumped out/drained. Insignificant quantities of oil may remain in the piping and tanks. During these conditions the risk of a large fire is significantly reduced.

The accident analysis documented in SAR Sections 4.3.2.1.9 and 4.3.2.2.16 and discussed above determined that a lube oil fire could cause a large fire in the cascade and withdrawal facilities that could threaten the UF_6 primary system integrity. When the enrichment cascade or withdrawal operation is shutdown and the lube oil supply is isolated or removed from the lube oil system for cells/equipment, then the fuel supply (lube oil) is isolated or eliminated and initiator (rotating stage/booster motors/compressors and lube oil pumps) is eliminated and the potential for a large fire is significantly reduced. In addition, if the facility enrichment cascade or withdrawal operation is shutdown, the quantity of UF_6 in the equipment and piping is significantly reduced. Long term shutdown of the equipment will

result in removal of all but insignificant quantities of UF_6 thus the potential amount of UF_6 available for a release is significantly reduced. As a result, the building sprinkler system is not required to prevent/mitigate a large fire if the facility enrichment cascade is shutdown and lube oil is valved off or removed from the shutdown system.

The cascade and withdrawal HPFWS TSR Bases were revised to add a discussion of the TSR applicability exemption with respect to potential for large fire and UF_6 release to support the above change. The expected lube oil system conditions for "lube oil isolated" and "lube oil removed" as defined above were added to the Bases for clarity. The added Bases text provides a discussion and link to the accident analysis as justification for the exemption. In addition, a discussion was added to the Cascade HPFWS TSR Basis to address the requirements for operation of equipment containing small quantities of below atmospheric pressure UF_6 (e.g., P&E pumps) without the need for an operable sprinkler system. The Basis states that if there is an approved fire hazard evaluation that demonstrates that a large fire is not credible based on other elements of the fire protection program, then the UF_6 equipment can be operated without requiring an operable sprinkler system in accordance with the cascade HPFWS TSR. Lesser risk activities (e.g., P&E pump operation) may be controlled with fire protection program elements such as the on-site fire department, compensatory measure controls, hotwork controls, fire watches, and pre-fire plans.

The NCS program in SAR 5.2 and Section 1.1 of SAR 5.2A credits the PGDP Fire Protection program described in TSR 3.12 to provide detection and mitigation features that minimize the potential for incipient fires to grow to the point where structural integrity of the facility or fissile material components could be compromised. The controls and features of TSR 3.12 are also credited to help maintain moderation control by minimizing the potential for moderator intrusion into openings in process equipment. As noted above, with the facility enrichment cascade shutdown (no stage/booster motors running) and the lube oil isolated or removed (no lube oil pumps running), the potential for a large fire that could challenge the structural integrity of process equipment is significantly reduced. Additionally, beyond the sprinkler system operability exemption, no changes are being made to the fire protection requirements identified in TSR 3.12. Therefore, the change will maintain the effectiveness of the fire protection program relied upon for the nuclear criticality safety (NCS) program.

ii) Enrichment Cascade Minimum Staffing Requirements

SAR Section 6.5, Operations, states that staffing levels for the shifts for operation and support are not fixed but are based on expected or planned activities for the upcoming period. The staffing levels are based on evaluation of the needs for efficient operation and take into account the routine monitoring of plant equipment including operator rounds, expected operational activity level, facility size, and TSR specified minimum staffing levels. When special or complicated activities are included in the work plans for an upcoming work period, the staffing levels will be increased as required to perform the planned activities. TSR Section 3.2.2, Facility Staff, and TSR Table 3.2.2-1, Minimum Staffing Requirements, specifies the minimum staffing level for each Facility/Function for specific modes/operations. The minimum staffing is based on the personnel required for the necessary and sufficient operator actions required to meet the expectations and/or assumptions made in the accident analysis.

As discussed in the **Reason for the Change** above, the TSR minimum staffing requirements listed in Table 3.2.2-1 delineates the staffing requirements by Mode. The current minimum staffing levels for the enrichment cascade buildings (C-331, C-333, C-335 and C-337) is the same regardless of the mode the cells and freezer/sublimers (F/S) are in. The C-331 and C-335 facilities with "00" size equipment and the C-333 and C-337 facilities with "000" size equipment have different minimum staffing requirements. The "00" facilities have a minimum staffing requirement of two operators and the "000" facilities have a