April 14, 2010

Mr. Steven A. Toelle, Director
Nuclear Regulatory Affairs
U. S. Enrichment Corporation
2 Democracy Center
6903 Rockledge Drive
Bethesda, MD 20817

SUBJECT: APPROVAL OF CERTIFICATE AMENDMENT REQUEST RELATED TO TECHNICAL SAFETY REQUIREMENTS REVISION TO THE FIRE PROTECTION SYSTEM – BUILDING SPRINKLER SYSTEM, PADUCAH GASEOUS DIFFUSION PLANT (TAC NO. L32735)

Dear Mr. Toelle:

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the October 5, 2009, certificate amendment request (CAR), submitted by the United States Enrichment Corporation (USEC or certificate holder), Paducah Gaseous Diffusion Plant (PGDP), regarding revision of Technical Safety Requirements (TSRs) Sections 2.3.4.8 and 2.4.4.5, Fire Protection System-Building Sprinkler System, and an associated definition in TSR Section 1.2, Definition of Terms. The proposed changes remove the High Pressure Fire Water System sprinkler waterflow alarms from TSR Sections 2.3.4.8 and 2.4.4.5, delete an associated definition in TSR Section 1.2.7, and relocate the alarm response time criterion to the safety analysis report. The CAR from USEC dated October 5, 2009, is available via NRC's Agencywide Documents Access and Management System (ADAMS), Accession Number ML092870624.

The staff has completed the review of the CAR and found the proposed revision to its TSRs acceptable. The staff's Certificate Evaluation Report is contained in Enclosure 1. Enclosure 2 contains Revision 5 to the PGDP's Certificate of Compliance reflecting the revisions approved for this request. The approval of this amendment request is documented in the Certificate of Compliance GDP-1 by the addition of a reference to the October 5, 2009, letter from USEC regarding this CAR.

Neither an environmental assessment nor an environmental impact statement is required for the proposed action because the requested amendment is subject to the categorical exclusion provided in Title 10 of the *Code of Federal Regulations* (10 CFR) 51.22(c)(19) and will not have a significant impact on the human environment.

If you have any questions regarding this action, please contact Ms. Tilda Liu at (301) 492-3217 or via e-mail at Tilda.Liu@nrc.gov.

In accordance with 10 CFR, Section 2.390 of the NRC's Rules of Practice, a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Marissa G. Bailey, Deputy Director
Special Projects and Technical
Support Directorate
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Enclosures: As stated

Docket No.: 70-7001
Certificate No.: GDP-1

cc: Vernon Shanks, USEC-Paducah
Paducah Gaseous Diffusion Plant
PO Box 1410
Paducah, KY 42001

Randall M. DeVault
U.S. Department of Energy – Oak Ridge
PO Box 2001
Oak Ridge, TN 37832

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DOCKET NUMBER: 70-7001

CERTIFICATE NUMBER: GDP-1

CERTIFICATE HOLDER: United States Enrichment Corporation
Paducah Gaseous Diffusion Plant
Paducah, Kentucky

SUBJECT: COMPLIANCE EVALUATION REPORT FOR CERTIFICATE AMENDMENT REQUEST RELATED TO TECHNICAL SAFETY REQUIREMENTS CHANGE TO REVISE THE FIRE PROTECTION SYSTEM - BUILDING SPRINKLER SYSTEM

## 1.0 PROPOSED CHANGES

By letter dated October 5, 2009 (Agencywide Documents Access and Management System [ADAMS] Accession Number ML092870624), United States Enrichment Corporation (USEC or certificate holder) submitted a certificate amendment request (CAR) to the U.S. Nuclear Regulatory Commission (NRC) regarding its Paducah Gaseous Diffusion Plant (PGDP). The proposed CAR would revise PGDP Technical Safety Requirement (TSR) Section 2.3.4.8, Fire Protection System – Building Sprinkler System, and Section 2.4.4.5, Fire Protection System – Building Sprinkler System, and an associated definition in TSR Section 1.2, Definition of Terms. Specifically, the proposed changes would revise the Limiting Conditions for Operation (LCO), Actions, Surveillance Requirements, and Basis statements in TSR Sections 2.3.4.8 and 2.4.4.5, and an associated definition in TSR Section 1.2.7, to apply only to the "automatic fire suppression systems," and not to the associated waterflow alarms (fire detection), and relocate the alarm response time criterion to the Safety Analysis Report (SAR).

## 2.0 BACKGROUND

In its letter dated October 5, 2009, the certificate holder stated that the proposed changes are needed because the current TSRs is interpreted that High Pressure Fire Water System (HPFWS) waterflow alarms are required to meet the LCO that are established to guarantee that the fire protection – building sprinkler systems will actuate to suppress a fire. In USEC's view, this creates an unnecessary burden on plant operations because the TSR required actions must be taken for HPFWS waterflow alarm inoperability, even though the fire protection – building sprinkler system is fully capable of performing its TSR-required function. The certificate holder stated that its Fire Protection Program is not changed by the proposed TSR changes and continues to provide the level of safety credited in its SAR Section 4.3.2.1.9, Large Fire (External Event), and Section 4.3.2.2.16, Large Fire (External Event).

## 3.0 DISCUSSION

Section 5.4, Fire Protection, Subsection 5.4.1, Program, of PGDP SAR, describes that PGDP is complying with the 1989 edition of NFPA (National Fire Protection Association) 13, "Standard for the Installation of Sprinkler Systems," 1989 (NFPA 13-1989), for modifications to the plant following certification. Waterflow alarms are discussed in Section 3-12, "Sprinkler Alarms," of NFPA 13-1989 and are required to be installed on wet pipe sprinkler systems having more than 20 sprinkler heads, for which the HPFWS at PGDP would qualify. The purpose of these waterflow alarms is two fold. First, it is necessary to initiate an alarm signal whenever the

sprinkler system actuates so that personnel may respond promptly and take appropriate action (NFPA Fire Protection Handbook, 18th Edition, 1997). A suppression system relies on personnel response to extinguish the fire and determine when it is safe to terminate waterflow to prevent undue damage. Secondly, waterflow alarms, to some extent, verify that there are no obstructions in the water supply. Waterflow alarms are required by Section 12.7.3 of NFPA 13-1989 to be tested by an actual waterflow through the use of a test connection, which verifies that waterflow is present and that the alarms are functioning properly. The main drain test, as described by TSR Sections 2.3.4.8 and 2.4.4.5, ensures sprinkler system operability and satisfies the NFPA requirements.

USEC stated that its current TSRs are interpreted such that HPFWS waterflow alarms are required to meet the LCO that are established to ensure the building sprinkler systems will actuate to suppress a fire. Consequently, it creates an unnecessary burden on plant operations by requiring TSR actions for HPFWS waterflow alarm inoperability, even though the building sprinkler system alone is fully capable of performing its TSR-required function (sprinkler system operability is established by TSR Sections 2.3.4.8 and 2.4.4.5). By placing the descriptions of the waterflow alarms into the Fire Protection Program (SAR Section 5.4.2, Fixed Fire Suppression and Fire Detection System), the proposed changes would modify the HPFWS waterflow alarm inoperability compensatory action from a TSR-controlled, with 1-hour fire patrol, to a Fire Protection Impairment Program, with 4-hour fire patrol, which, in turn, would result in the HPFWS waterflow alarms being treated the same as the inoperability of any other plant fire alarm system.

Although there would be a reduction in frequency of the compensatory measure as a result of the proposed change under this CAR, using 4-hour fire patrols for sprinkler waterflow alarm inoperability is consistent with NFPA 25, “Standard for the Inspection, testing, and Maintenance of Water-Based Fire Protection Systems,” 1995, and industry practice. The proposed change would also make the treatment of the PGDP HPFWS waterflow alarms consistent with its treatment at the Portsmouth Gaseous Diffusion Plant (PORTS)—which the NRC has previously approved in the original PORTS certification (PORTS SAR Section 5.4, Fire Protection).

The staff noted that there are several other commitments that remain unmodified for the proposed change which are applicable to the safety considerations of this review. The fire suppression capability of the sprinkler systems remains unchanged, and an inoperability of the suppression system will continue to require a 1-hour fire patrol (TSR Sections 2.3.4.8 and 2.4.4.5, Fire Protection System – Building Sprinkler Systems). Sprinkler waterflow alarms continue to be operated, maintained, inspected, tested, and controlled under new language to be added to the Fire Protection Program (SAR Section 5.4.4, Testing and Inspection). The HPFWS provides the maximum required waterflow rate of 3200 gallons per minute for at least 73 minutes without human actions due to gravity feed from the 300,000-gallon elevated storage tank at its TSR minimum level of 90% full (SAR Section 3.15.7.2, Fire Protection System). Additional indicators will alert personnel of a fire within the 73 minutes that the HPFWS can provide full sprinkler flow without human actions (SAR Section 3.15.7.2). Among these indicators are building personnel seeing/smelling smoke from the fire; building personnel seeing water from the sprinkler discharge; HPFWS tank level decreases and automatic pump starts alerting operators to investigate; and Process Gas Leak Detection System smoke detectors, which are located throughout the process buildings, detecting smoke from the fire and alerting operators to investigate.

The staff considers that PGDP’s commitment to NFPA 13-1989, as discussed in Section 5.4.1 of the SAR, to be a cornerstone to the effectiveness of the Fire Protection Program. The staff

noted that HPFWS waterflow alarms are not credited with a safety function, and USEC stated that its HPFWS waterflow alarms will continue to be maintained, tested, inspected, and controlled by its Fire Protection Program (SAR Section 5.4) along with several additional means of fire detection available on site. The staff concludes that removing the HPFWS waterflow alarms from the PGDP TSRs and placing them into the Fire Protection Program would continue to provide adequate protection of public health, safety, safeguards, security, and the protection of the environment.

## 4.0 ENVIRONMENTAL REVIEW

Issuance of the requested amendment to Certificate of Compliance GDP-1 is subject to the categorical exclusion provided in the Title 10 of the *Code of Federal Regulations* (10 CFR 51.22(c)(19) and will not have a significant impact on the human environment. Therefore, in accordance with 10 CFR 51.22.b, neither an environmental assessment nor an environmental impact statement is required for the proposed action.

## 5.0 CONCLUSION

Based on its review and evaluation of the information provided by USEC in its CAR dated October 5, 2009, the staff finds that the proposed revisions to PGDP TSR Section 2.3.4.8, Fire Protection System – Building Sprinkler System, and Section 2.4.4.5, Fire Protection System – Building Sprinkler System, and an associated definition in TSR Section 1.2, Definition of Terms, would not have a significant increase in risk to the workers, and would continue to provide adequate protection of public health, safety, safeguards, security, and the protection of the environment. Therefore, the staff concludes that the proposed revisions are acceptable and consistent with the requirements of 10 CFR Part 76.

## PRINCIPAL CONTRIBUTOR

James Downs