USEC
A Global Energy Company

December 13, 2005
GDP 05-0046

Mr. Jack R. Strosnider
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 – Revise TSR 2.2, Appendix A

Dear Mr. Strosnider:

In accordance with 10 CFR 76.45, the United States Enrichment Corporation (USEC) hereby submits a request for amendment to the Certificate of Compliance for the Paducah, Kentucky, Gaseous Diffusion Plant (PGDP). This Certificate Amendment Request (CAR) proposes to revise TSR 2.2, Appendix A to allow heating two UF_6 cylinders that are not currently authorized for heating.

Enclosure 1 contains the Oath and Affirmation. Enclosure 2 to this letter provides a detailed description and justification of the proposed change. Enclosure 3 is a copy of the revised TSR page associated with this request for NRC approval. Enclosure 4 contains the basis for USEC's determination that the proposed changes associated with the CAR are not significant.

USEC requests NRC review of this CAR by March 31, 2006, so that the feed material contained in the two cylinders can be recovered to support customer schedules. The amendment should become effective 30 days after issuance.

NMSS01

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Any questions related to this submittal should be directed to Mark Smith at (301) 564-3244. There are no new commitments contained in this submittal.

Sincerely,

S. A. Toelle

Steven A. Toelle
Director, Nuclear Regulatory Affairs

Enclosures:
1. Oath and Affirmation
2. United States Enrichment Corporation (USEC), Certificate Amendment Request, Revise TSR 2.2, Appendix A, Detailed Description and Justification of the Changes
3. Certificate Amendment Request, Paducah Gaseous Diffusion Plant, Letter GDP 05-0046, Removal/Insertion Instructions
4. United States Enrichment Corporation (USEC), Certificate Amendment Request, Revise TSR 2.2, Appendix A, Significance Determination

cc: M. Thomas, NRC Senior Resident Inspector, PGDP
J. Hensen, NRC Region II Office
D. Martin, NRC Project Manager, PGDP

Enclosure 1
GDP 05-0046

Oath and Affirmation

OATH AND AFFIRMATION

I, Steven A. Toelle, swear and affirm that I am the Director, Nuclear Regulatory Affairs of the United States Enrichment Corporation (USEC), that I am authorized by USEC to sign and file with the Nuclear Regulatory Commission this Certificate Amendment Request for the Paducah Gaseous Diffusion Plant addressing revisions to TSR 2.2, Appendix A described in USEC letter GDP 05-0046, that I am familiar with the contents thereof, and that the statements made and matters set forth therein are true and correct to the best of my knowledge, information, and belief.

S. A. Toelle

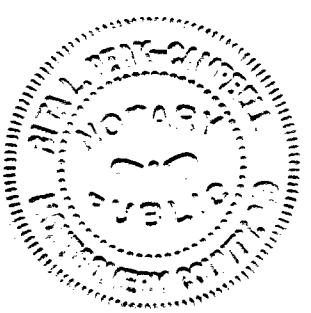
Steven A. Toelle

On this 13th day of December 2005, the individual signing above personally appeared before me, is known by me to be the person whose name is subscribed to within the instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof I hereunto set my hand and official seal.

Rita Peak-Campbell

Rita Peak-Campbell, Notary Public
State of Maryland, Montgomery County
My commission expires December 1, 2009



Enclosure 2
GDP 05-0046

USEC-01
Certificate Amendment Request
Revise TSR 2.2, Appendix A

United States Enrichment Corporation (USEC)
Certificate Amendment Request
Revise TSR 2.2, Appendix A
Detailed Description and Justification of the Changes

Description of Change

This proposed change will modify TSR 2.2, Appendix A to add cylinder number UK0481 to the list of cylinders that may be heated, and to add a new Footnote 4 that will apply to 48Y cylinders. The wording that will be added to TSR 2.2 Appendix A is shown as underlined text.

TSR 2.2 Appendix A
Maximum weight limit for UF_6 cylinders.

Model No.	Cylinder Nos. or Type	Max. Fill Limit for Shipment[1] (lbs UF_6)	Max. Fill Limit for In-Plant Tails Storage[2] (lbs UF_6)
48F	UK0481	27030	—
48Y	All[4]	27560	28000

4. Cylinder number UK0690 has an actual volume of 142.06 ft^3 which is less than the minimum volume required by ANSI N14.1. To maintain 5% free volume at a temperature of 250°F, the maximum weight limit for this cylinder is reduced to 27,436 lbs UF_6. This cylinder will not be re-filled after it is emptied.

Reason for the Changes

USEC has two customer owned cylinders of natural UF_6 that were not designed and fabricated to meet all ANSI N14.1 requirements. As a result, the cylinders do not meet current TSR requirements for heating and feeding to the cascade. USEC has performed an evaluation of the cylinder deficiencies and determined that they can be safely heated. This proposed change will allow USEC to recover the uranium feed material within these cylinders.

Justification of the Changes

Cylinder numbers UK0481 and UK0690 were received at PGDP in June 1997. Statistical sampling performed at the time the cylinders were received confirmed the cylinders contain commercial natural uranium meeting ASTM Standard C787. Although the material contained in the cylinders is acceptable for feeding to the cascade, cylinder inspections performed at PGDP determined that

the cylinders do not meet all ANSI N14.1 requirements. The requirements of ANSI N14.1 are important to safety since they ensure that cylinders are designed, fabricated, inspected, tested and cleaned to withstand the pressures/temperatures assumed in the PGDP accident analysis. The following discussion describes each cylinder's deficiencies, and the results of USEC's evaluation that demonstrates the cylinders can be safely heated.

Cylinder UK0481

Cylinder UK0481 is a model 48F cylinder that was not certified to meet ANSI N14.1, but was designed and fabricated as an ASME pressure vessel. The documentation provided with the cylinder includes the Data Book, which contains Form U-1A Manufacturer's Data Report For Pressure Vessels, and other documents that provide evidence of the materials used, tests performed, and welding certification. Form U-1A indicates the cylinder was manufactured in accordance with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, 1974 and summer 1977 addenda.

An analysis was performed to evaluate differences between ANSI N14.1 and the as-built information provided for cylinder UK0481. For type 48F cylinders ANSI N14.1 specifies basic requirements such as volume, fill limit, tare weight, and minimum wall thickness, but does not provide the same level of design, material, fabrication, inspection and testing requirements that are provided for similar type 48Y cylinders. In cases where ANSI N14.1 does not provide detailed requirements for 48F cylinders, the analysis compared cylinder UK0481 as-built information to the ANSI N14.1 requirements for 48Y cylinders.

The analysis determined that cylinder UK0481 meets or exceeds ANSI N14.1 requirements for all parameters except lifting lug material. For the lifting lugs, the documentation provided with the cylinder did not identify the material type. As a result, the evaluation could not confirm the lifting lugs meet ANSI N14.1 requirements. To compensate for this deficiency an alternate method of lifting the cylinder will be used. PGDP's procedures for overhead crane operation in the C-333A and C-337A buildings currently provide an alternate lifting method through the use of a special lifting fixture. The lifting fixture utilizes bands that allow a cylinder to be lifted without reliance on the lifting lugs. This alternate lifting procedure was previously established to compensate for other cases where cylinder lifting lug reliability was uncertain.

Cylinder UK0481 contains 25046 pounds of UF_6 which is less than the maximum fill limit of 27030 pounds of UF_6 required by ANSI N14.1 to maintain a void volume $\geq$5% at 250°F. In addition, the cylinder has an as-built volume of 142.7 ft^3, which exceeds the minimum volume of 140 ft^3 required by ANSI N14.1. Calculations using the as-built cylinder volume and actual weight of 25046 pounds of UF_6 that is contained in the cylinder were performed to determine if the ANSI N14.1 required void volume $\geq$5% at 250°F is met. The calculation demonstrates that

the actual void volume of the cylinder will exceed 13% at 250°F and 15% at 235°F. This indicates the cylinder may be heated as a Category A cylinder (void volume ≥5% at 235°F) in accordance with TSR 2.2.4.4.

Based on the above, cylinder UK0481 meets all the requirements of ANSI N14.1 except for lifting lug material. The cylinder will withstand the pressures/temperatures assumed in the PGDP accident analysis and is safe to heat in accordance with the TSRs. An alternate lifting method that does not rely on the lifting lugs will be used as described above to compensate for the unknown composition of the lifting lug material.

Cylinder UK0690

Cylinder UK0690 is a model 48Y cylinder that meets the requirements of ANSI N14.1 with the exception that the cylinder's volume is less than the minimum required. ANSI N14.1 requires a minimum volume of 142.7 ft^3 and establishes a maximum fill limit of 27560 pounds of UF_6. The as-built cylinder volume is 142.06 ft^3, which is less then the minimum required. Based on this as-built cylinder volume, to maintain 5% free volume at a temperature of 250°F, the maximum weight limit for this cylinder must be less than or equal to 27,436 lbs UF_6. Calculations using the as built cylinder volume and actual weight of 26792 pounds of UF_6 that is contained in the cylinder were performed to determine if the ANSI N14.1 required void volume ≥5% at 250°F is met. The calculations demonstrate that the void volume will be greater than 7% at 250°F and greater than 8% at 235°F. This indicates the cylinder may be heated as a Category A cylinder (void volume ≥5% at 235°F) in accordance with TSR 2.2.4.4.

Certificate Amendment Request Paducah Gaseous Diffusion Plant Letter GDP 05-0046 Removal/Insertion Instructions	
Remove Pages	**Insert Pages**
APPLICATION FOR UNITED STATES NUCLEAR REGULATORY COMMISSION CERTIFICATION VOLUME 4	
TSR Section 2.2 Page 2.2-34	**TSR Section 2.2** Page 2.2-34

SECTION 2.2 SPECIFIC TSRs FOR UF_6 FEED FACILITIES (C-333-A AND C-337-A)

TSR 2.2 Appendix A
Maximum weight limits for UF_6 cylinders.

Model No.	Cylinder Nos. or Type	Max. Fill Limit for Shipment[1] (lbs UF_6)	Max. Fill Limit for In-Plant Tails Storage[2] (lbs UF_6)
12B	All	460	475
30A	Concave Hd.	4950	5150
30B	All	5020	—
48A	1-1,000	21030	21870
48A	3,001-3,365	21030	21870
48F	UK0481	27030	—
48F	9,501-9,530	27030	28000
48F	9,601-9,660	27030	28000
48G	121,926 - 149,999	26840	27920[3]
48G	160,000 and up	26840	27920[3]
48H	151,001- 154,144	27030	28000
48HX	150,001-151,000	27030	28000
48Y	All[4]	27560	28000
48OM	111,821-121,925	26840	27920[3]
48OM Allied	AC-1 - AC-400	27030	—
48X	All	21030	21870

1. All fill limits for shipments are based on 5% free volume, 99.5% purity, and a maximum vaporization temperature of 250°F per USEC-651.
2. Fill limits for in-plant tails storage cylinders are based on 3% free volume and a maximum vaporization temperature of 235°F except for 48F, 48Y, 48HX, and 48H cylinders whose in-plant tails storage limits have been further reduced to ensure the maximum amount of UF_6 assumed in the accident analysis (28,000 lbs) is not exceeded.
3. The maximum fill limit for in-plant tails storage for the 48OM and 48G cylinders may be increased to the maximum of 28,000 lbs provided the cylinder will maintain a minimum 3 percent free volume when heated to 235°F based on the actual certified cylinder volume. Cylinders with 8,695-lb water capacity or greater may be filled with 28,000 lbs of high purity UF_6 tails and maintain a minimum 3 percent free volume when heated to 235°F.
4. Cylinder number UK0690 has an actual volume of 142.06 ft^3 which is less than the minimum volume required by ANSI N14.1. To maintain 5% free volume at a temperature of 250°F, the maximum weight limit for this cylinder is reduced to 27,436 lbs UF_6. This cylinder will not be re-filled after it is emptied.

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Revise TSR 2.2, Appendix A
Significance Determination

The United States Enrichment Corporation (USEC) has reviewed the proposed changes associated with this certificate amendment request and provides the following Significance Determination for consideration.

1. No Significant Change to Any Conditions to the Certificate of Compliance

   None of the Conditions to the Certificate of Compliance specifically address the subject TSR sections that are being revised. Thus, the proposed change will have no impact on any of the Conditions to the Certificate of Compliance.

2. No Significant Change to Any Condition of the Approved Compliance Plan

   All Compliance Plan Issues have been closed. As a result, the conditions specified in the compliance plan are no longer in effect. Thus, this proposed revision does not represent a significant change to any condition of the approved Compliance Plan.

3. No Significant Increase in the Probability of Occurrence or Consequences of Previously Evaluated Accidents

   The accidents of concern associated with this change are those events where cylinders have a safety function to maintain primary system integrity. The requirements of ANSI N14.1 are important to safety since they ensure that cylinders are designed, fabricated, inspected, tested and cleaned to withstand the pressures/temperatures assumed in the PGDP accident analysis. Engineering evaluation of the as-built and as-filled condition of cylinder UK0481 demonstrate that the cylinder meets or exceeds ANSI N14.1 requirements for all parameters except lifting lug material. This indicates the cylinder is capable of meeting the safety function requirement to maintain primary system integrity when heated to the pressures/temperatures assumed in the PGDP accident analysis. The void volume in cylinders UK0481 and UK0690 exceeds the minimum required by TSR 2.2.4.4 for cylinder heating. To compensate for the unknown composition of the lifting lug material on cylinder UK0481, an established and proven alternate lifting method will be used to ensure safe cylinder handling. Since the procedures for the feed facilities where the cylinders will be handled only permit handling cylinders that are empty or contain solid UF_6, there is no potential for an accident involving the drop of a full liquid UF_6 cylinder. Based on the above, this proposed change will not result in a significant increase in the probability of occurrence or consequences of previously evaluated accidents.

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4. No New or Different Type of Accident

   No new or different activities are being proposed by this change. Cylinder numbers UK0481 and UK0690 will be handled and fed to the cascade in accordance with existing procedures. The cylinders have been shown to meet or exceed ANSI N14.1 requirements and have a free volume that meets TSR requirements for cylinder heating. As a result, the proposed changes do not create any new failure modes or create initiating events that are different than previously evaluated in the SAR. Therefore, this proposed change will not create a new or different type of accident.

5. No Significant Reduction in Margins of Safety

   The margins of safety associated with this proposed change are the UF_6 cylinder temperature limits that are established to ensure that a cylinder does not rupture when heated. Cylinder numbers UK0481 and UK0690 have sufficient free volume to ensure that UF_6 within the cylinders can be heated to the established temperature safety limits without causing hydraulic rupture to due UF_6 expansion. The cylinders have been shown to meet or exceed the ANSI N14.1 requirements needed to ensure the cylinders will withstand the pressures/temperatures assumed in the PGDP accident analysis. Therefore, there is no significant reduction in margins of safety associated with the proposed change

6. No Significant Decrease in the Effectiveness of Any Programs or Plans Contained in the Certificate Application

   The proposed changes will not result in a change to any of the programs or plans contained in the Certificate Application. Cylinder numbers UK0481 and UK0690 will be handled and fed to the cascade in accordance with existing procedures and programs. Therefore, the proposed changes will not decrease the effectiveness of any programs or plans contained in the Certificate Application.

7. The Proposed Changes do not Result in Undue Risk to 1) Public Health and Safety, 2) Common Defense and Security, and 3) the Environment

   Due to the fact that there is no significant increase in the probability or consequences of any accident previously analyzed and no new or different type of accident, there will be no undue risk to the public health and safety because of the proposed change. In addition, the proposed change will have no impact on plant effluents or on the programs and plans in place to implement physical security, protection of classified matter, transportation security, or special

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nuclear material accountability. Consequently the proposed change to the TSR will not pose any undue risk to the public health and safety, common defense and security, or the environment.

8. No Change in the Types or Significant Increase in the Amounts of Any Effluents that May be Released Offsite

   The proposed change does not involve any physical change to the plant, or plant operations that could change the types or increase the amounts of any effluents that may be released offsite. Therefore, the proposed change does not change the type or significantly increase the amount of effluents that may be released offsite.

9. No Significant Increase in Individual or Cumulative Occupational Radiation Exposure

   The proposed change does not significantly increase the probability or consequences of a UF_6 release. The proposed changes will not effect the radiological protection program description or the actions in place to minimize occupational exposures. Therefore, there is no increase in individual or cumulative occupational radiation exposure as a result of this change.

10. No Significant Construction Impact

    This proposed change does not involve any construction activities. Therefore, there are no significant construction impacts associated with this change.