

DOCKET NUMBER: 70-7002

CERTIFICATE NUMBER: GDP-2

CERTIFICATE HOLDER: United States Enrichment Corporation
Portsmouth Gaseous Diffusion Plant
Piketon, Ohio

SUBJECT: COMPLIANCE EVALUATION REPORT FOR CERTIFICATE
AMENDMENT REQUEST REGARDING DELETION OF SPECIFIC
TECHNICAL SAFETY REQUIREMENTS FOR THE X-342, X-343,
X-344, X-326, X-330 AND X-333 FACILITIES AND THEIR
RELATED OPERATIONS, PORTSMOUTH GASEOUS
DIFFUSION PLANT (TAC NO. L32746)

1.0 INTRODUCTION

By letter dated February 24, 2010 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML100610588), the United States Enrichment Corporation (USEC) submitted a certificate amendment request (CAR) requesting a modification to Portsmouth Gaseous Diffusion Plant (PORTS) Technical Safety Requirements (TSRs). This CAR request was submitted to support the required de-lease of the PORTS facilities X-342, X-343, X-344, X-325, X-330 and X-333 to accommodate the planned decontamination and decommissioning (D&D) of these facilities. Specifically, to support the pending de-lease, USEC requested that Sections 2.1, 2.1, 2.3, 2.4, 2.5 and 2.7, (specific TSRs for the above facilities); Section 1.0 Use and Application of the TSR; Section 3.0 Administrative Controls of the TSR; and Condition 16 of the Certificate of Compliance be revised or deleted.

Uranium enrichment operations at the PORTS site were discontinued in 2001. Since then, a major portion of the site has been placed in cold shutdown. Surveillance and maintenance activities are being performed as needed to maintain the safety basis of the facility until the start of D&D. In preparation for the de-lease of the X-342, X-343, X-344, X-326, X-330 and X-333 facilities, activities such as uranium hexafluoride (UF₆) feed cleanup, uranium deposit removal, UF₆ cylinder repackaging, and cascade lube oil removal have been performed. These cleanup and deposit removal activities, combined with the plant shutdown conditions have substantially reduced the risk of a UF₆ release, criticality accident or large cascade fire at the Portsmouth Facility.

Prior to the de-lease of these facilities, the changes to the TSRs identified in this Compliance Evaluation Report must be made to enable USEC to turnover the specific facilities identified to the U. S. Department of Energy (DOE). In the CAR, USEC requested that the effective date for the change to the TSRs be established to coincide with the date that DOE officially accepts turnover of the specified facilities. Following the de-lease, the DOE will be in full possession of the specific facilities identified within this Compliance Evaluation Report and will be responsible for regulatory oversight of the operations performed within the facilities. The operations to be performed by DOE and DOE subcontractors during the transition to prepare the facilities for D&D will be under the regulatory jurisdiction of the DOE, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 830, rather than the U.S. Nuclear Regulatory Commission (NRC) under 10 CFR Part 76.

2.0 PROPOSED CHANGES

The CAR includes proposed changes to the technical safety requirements and proposed changes to the conditions listed in the Certificate of Compliance. These changes include revisions to PORTS TSRs Sections 2.1, 2.2, 2.3, 2.4, 2.5 and 2.7, *Specific TSRs for Miscellaneous Facilities*; Section 1.0 *Use and Application of the TSR*; Section 3.0 *Administrative Controls of the TSR*; and Condition 16 of the Certificate of Compliance as described below.

2.1 Changes to the Technical Safety Requirements

The CAR requested changes to the TSRs for the following systems: X-342/X-343/X-344 Autoclaves, X-326/X-330/X-333 Cascade Facilities, X-333 Freezer Sublimers, X-330/X-333 Cold Recovery, X-326 Extended Range Product (ERP), X-333 Low Assay Withdrawal (LAW) Operations and X-330 tails or depleted uranium (TAILS) Withdrawal Stations. These proposed changes include both deletions and revisions.

2.1.1 Deletions

The following TSRs are to be **completely deleted** from the "Application for United States Nuclear Regulatory Commission Certification, Volume 4, Portsmouth Gaseous Diffusion Plant, Technical Safety Requirements" document, Section 2.0, Facility Specific Technical Safety Requirements:

Section 2.1 Specific TSRs For X-342, X-343, And X-344 Facilities;

- 2.1.1 X-342, X-343, X-344 Autoclave Operational Modes,
- 2.1.2 Safety Limits, including TSRs 2.1.2.1 and 2.1.2.2
- 2.1.3 Limiting Control Settings, Limiting Conditions for Operation, Surveillances, including TSRs 2.1.3.1 through 2.1.3.21
- 2.1.4 General Design Features, including TSRs 2.1.4.1 through 2.1.4.7

Section 2.2 Specific TSRs For X-330 And X-333 Cascade Facilities;

- 2.2.1 X-330 / X-333 Cascade Operational Modes
- 2.2.2 Safety Limits, including TSRs 2.2.2.1 and 2.2.2.2
- 2.2.3 Limiting Control Settings, Limiting Conditions for Operation, Surveillances, including TSRs 2.2.3.1 through 2.2.3.17
- 2.2.4 General Design Features, including TSRs 2.2.4.1 and 2.2.4.2

Section 2.3 Specific TSRs For X-333 Freezer Sublimers;

- 2.3.1 Freezer Sublimers Operational Modes
- 2.3.2 Safety Limits, including TSR 2.3.2.1
- 2.3.3 Limiting Control Settings, Limiting Conditions for Operation, Surveillances, including TSRs 2.3.3.1 through 2.3.3.3
- 2.3.4 General Design Features (none listed)

Section 2.4 Specific TSRs For X-330 And X-333 Cold Recovery;

- 2.4.1 Cold Recovery Operational Modes
- 2.4.2 Safety Limits (none listed)
- 2.4.3 Limiting Control Settings, Limiting Conditions for Operation, Surveillances, including TSRs 2.4.3.1 through 2.4.3.5
- 2.4.4 General Design Features (none listed)

Section 2.5 Specific TSRs For X-326 ERP, X-333 LAW, And X-330 TAILS Withdrawal Stations;

- 2.5.1 Withdrawal Station Operational Modes
- 2.5.2 Safety Limits, including TSR 2.5.2.1
- 2.5.3 Limiting Control Settings, Limiting Conditions for Operation, Surveillances, including TSRs 2.5.3.1 through 2.5.3.15
- 2.5.4 General Design Features, including TSRs 2.5.4.1 through 2.5.4.6

Section 2.7 Specific TSRs For X-326 Cascade Facility;

- 2.7.1 X-326 Cascade Operational Modes
- 2.7.2 Safety Limits, including TSRs 2.7.2.1 and 2.7.2.2
- 2.7.3 Limiting Control Settings, Limiting Conditions for Operation, Surveillances, including TSRs 2.7.3.1 through 2.7.3.15
- 2.7.4 General Design Features 2.7.4.1

2.1.2 Revisions

The following TSRs contained in the "Application For United States Nuclear Regulatory Commission Certification, Volume 4, Portsmouth Gaseous Diffusion Plant, Technical Safety Requirements" document, are being **revised** as described below:

Section 1.0, Use And Application of the TSR is being revised to eliminate reference to terminology specific to the facilities that are being delayed and operations that are being discontinued. The definition of "cascade minimum suction pressure," will become obsolete by this amendment.

Definition of Terms:

- Delete 1.2.4, Cascade Minimum Suction Pressure

Section 3.0, Administrative Controls of the TSR is being revised to eliminate reference to facilities being de-leased, eliminate modes and operations within these facilities that are no longer applicable, and revise minimum staffing requirements for specific modes and operations, such as enrichment, that are no longer being performed. Specific changes are identified below.

Table 3.2.2-1, On-site Functional Staffing Requirements

- Change superscript No. 6 at the title of the table to No. 4 and remove references to Area Control Rooms (ACRs) 1, 2, 3, 4, and 6
- Delete X-342, X-343, X-344, Mode/Operation and Staffing Requirements
- Delete ERP, LAW, TAILS Mode/Operation and Staffing Requirements
- Change X-300/APSS Staffing Requirements superscript No. 9 to No. 6
- Delete X-326, X-330, X-333, Mode/Operation and ACR Staffing Requirements
- Delete X-326, X-330, X-333, Mode/Operation and Operator Staffing Requirements
- Delete Freezer/Sublimers X-333, Mode/Operation I, II and Operator Staffing Requirements
- Delete Freezer/Sublimers X-333, Mode/Operation III, and Operator Staffing Requirements
- Delete Cold Recovery X-330/X-333, Mode/Operation and Operator Staffing Requirements

- Change Power Operations Staffing Requirements from 2 to 1 and delete superscript No. 8
- Change Process Services/Mass Spectrometry Analytical Functions Staffing Requirements from 2 to 1, change superscript No. 7 to No. 5 and delete superscript No. 8
- Delete descriptions for superscript Nos. 4, 5, 8 and 10, then renumber superscript Nos. 6, 7, and 9 accordingly as Nos. 4, 5 and 6.

Section 3.19, Operations

- Deleted second bullet, Cascade Operations Organization and Administration

Section 3.23, Worker Protection from Uranium Hexafluoride (UF₆) Process Hazards, item (g)

- Deleted reference to buildings X-326, X-330, X-333, X-342, X-343, and X-344

2.2 Changes to the Certificate of Compliance

The proposed change to the GDP-2 Certificate of Compliance for the PORTS includes deleting Condition 16 in its entirety.

2.3 Facilities to be Removed from the Regulatory Jurisdiction of the NRC

A detailed listing of the facilities that are currently leased to USEC from the DOE is provided in Figure 2.1-5a of the Safety Analysis Report (SAR). The proposed change to the Certificate of Compliance for the PORTS would allow the planned de-lease of the buildings/facilities listed below in preparation for decommissioning of the site. This de-lease is scheduled to occur on October 1, 2010. Following this turnover, these facilities would no longer be within the regulatory jurisdiction of the NRC. Instead, DOE will be in full possession of the facilities and will be responsible for their regulatory oversight.

Primary Facilities

X-326	Process Building
X-330	Process Building
X-333	Process Building
X-342A	Feed, Vaporization Fluorine Generation Building
X-342B	Fluorine Storage Building
X-343	Feed, Vaporization and Sampling Facility
X-344A	UF ₆ Sampling Facility
X-344B	Maintenance Storage Building
X-232C1	Tie Line No. 1 X-342 to X-330
X-232C2	Tie Line No. 2 X-330 to X-326
X-232C3	Tie Line No. 3 X-330 to X-333
X-232C4	Tie Line No. 4 X-326 to X-770
X-232C5	Tie Line No. 5 X-343 to X-333

Auxiliary Facilities

X-111A	Special Nuclear Material (SNM) Monitoring Portal (X-326)
X-111B	SNM Monitoring Portal (NW X-326)
X-230G	Recirculating Cooling Water (RCW) System (except for blowdown line)
X-626-1	Recirculating Water Pump House
X-626-2	Cooling Tower

X-630-1	Recirculating Water Pump House
X-630-2A	Cooling Tower
X-630-2B	Cooling Tower
X-630-3	Acid Station Pad

2.4 Facilities Remaining within the Regulatory Jurisdiction of the NRC

Following the approval of this CAR and the de-lease of the specified facilities, the facilities listed in Section 2.3 will no longer be regulated by the NRC. The most significant portions of the PORTS site that would remain within the jurisdiction of the NRC in accordance with the Certificate of Compliance are listed below.

Facilities with TSRs

X-705 Decontamination Building
X-700 Converter Shop and Cleaning Building
X-710 Technical Services Building (Laboratory)
X-720 Maintenance and Stores Building
XT-847 Waste Management Staging Facility

Facilities without TSRs, but identified in SAR as containing hazards

X-747-C Material Storage Yard
X-747-D Material Storage Yard
X-745-B Cylinder Storage – Toll Enrichment Process Gas Yard - UEA
X-745-D Cylinder Storage – Feed Storage Yard
X-745-F Cylinder Storage – North Process Gas Stockpile Yard - UEA
X-745-G Cylinder Storage Yard

3.0 REGULATORY REQUIREMENTS

Title 10, Section 76.45, “Application for Amendment of Certificate,” of 10 CFR 76.45 states, in part, that “the Corporation may at any time apply for an amendment of the certificate to cover proposed new or modified activities,” and 10 CFR 76.87(d) states, in part, that the TSR must include an evaluation of the proposed changes encompassing, at a minimum, items in the following categories: (1) safety limits; (2) limiting control settings; (3) limiting conditions for operation; (4) design features; (5) surveillance requirement; and (6) administrative controls. As the requested amendment would require a change in a TSR, USEC must obtain approval of the change from the NRC.

10 CFR 76.83 (b)(2) states, in part, that the Corporation may transfer radioactive material to the Department [of Energy]. However, 10 CFR 76.83 (c) states that before transferring radioactive material, the Corporation shall verify that the transferee is authorized to receive the type, form, and quantity of radioactive material to be transferred.

4.0 DISCUSSION

In order to ensure that public health and safety would be adequately protected, the staff reviewed the proposed amendment and assessed whether the potential hazards within the buildings to be de-leased have been adequately evaluated by USEC in the existing SAR. The staff’s review also addressed whether the probability of occurrence of any potential accidents will be increased, or if any new hazards will be introduced by this action.

As previously stated, the PORTS enrichment operations have been shutdown since 2001 and most of the cascade equipment is shutdown. No UF₆ enrichment is being performed at the PORTS facility at this time. In preparation for D&D of the site, certain clean-up operations have been and are being performed. The planning and control of work activities within the de-leased areas and avoidance of impacts to NRC-certified spaces is evaluated below. The operational status and current conditions of each facility to be de-leased is also discussed. The elimination of the TSRs for those facilities as requested in the CAR and reviews of safety, security and safeguards aspects of this CAR are also discussed in the following sections.

4.1 Work Control and the Shared Site Review Process

Decommissioning of a nuclear site or a portion of a site typically results in multiple activities occurring at various areas, many of which are unique, never-before-done activities. The potential impacts from these activities can result in disruption to routine activities and potentially lead to accidents if preparation and planning are not adequate. Control of these multiple activities must be centralized to ensure all portions of the site remain safe and accident-free. During a public meeting held on April 6, 2010, to discuss this CAR (see ADAMS Accession No. ML100980507), USEC explained the “shared site review process” which was implemented at PORTS for work planning. (This process was also mentioned on page 5 of the CAR.)

USEC explained that the purpose of the shared site review process is to keep all of the various site tenants abreast of the proposed activities and to enable each tenant to independently evaluate the proposed activity for impacts and report concerns before the work is authorized. This shared site review process is currently being used at the PORTS to identify and avoid negative impacts to other site tenants from unique or significant work. USEC stated in the CAR that any changes in DOE activities or operations that would have a potential to impact operations in portions of the site under NRC regulation would be submitted to the affected tenant(s) for review and evaluation in accordance with this process. NRC staff finds this shared site review process for work planning provides reasonable assurance that adequate protection of public health and safety will be maintained at PORTS after this amendment is implemented and the above listed facilities are de-leased.

4.2 Facilities to be De-leased

4.2.1 X-333 Process Building

As described in the SAR for the PORTS, the X-333 Process Building houses 640 stages of X-33 (the largest) size enrichment cascade equipment, such as converters, compressors, motors, coolers, valves, piping and instrumentation, as well as the LAW Facility. Enrichment operations in the X-333 Process Building ended in 2001. The X-333 enrichment equipment is currently in a cold shutdown condition with minimal inventory of uranium material remaining.

As USEC stated in the CAR, various operations to remove residual material have been performed in the X-333 Process Building. This includes cell treatments for removal of cascade deposits, UF₆ cleanup, and transfer of material to the ERP withdrawal station for material repackaging operations.

According to the SAR, cascade cells in the X-333 Process Building have been shutdown and evacuated of UF₆ to a UF₆ negative and a dry gas buffer applied at 14.0 psia or greater. The shutdown cells are isolated from the RCW system. The R-114 coolant is either stored in the cell coolant system, in the coolant storage tanks or in railcars. Lube oil is drained and isolated from

shutdown cells. The unit lube oil systems are shutdown. In some cases, the system oil has been removed from the facility.

As stated in the CAR, the X-333 Freezer Sublimator systems are located within the X-333 facility and are currently inoperable. Major portions of the Freezer Sublimator have been physically removed while other portions are stored in place until decommissioning or until needed in the future for the centrifuge plant.

The X-333 Cold Recovery facility is shutdown. Some residual UF₆ and/or other uranium materials may exist in the system piping and associated equipment.

The X-333 LAW facility is in a shutdown condition. Some residual UF₆ and/or other uranium products may remain in the associated piping and equipment.

Within the X-333, X-330 and X-326 Process Buildings, the public address (PA) and the criticality accident alarm systems (CAAS) will remain in operation and available for DOE to use. The de-lease isolation point for these systems will be within DOE's area. The systems will be modified if necessary to ensure any DOE action that can disable the PA and CAAS would not impact these systems in areas of the PORTS site under NRC regulation. The responsibility for the PA and CAAS within the X-333, X-330 and X-326 buildings will shift from USEC to DOE when the facility is de-leased.

As USEC stated in the CAR, the following utilities will remain in operation and available for DOE use: sanitary water, HPFW, electrical power, steam, dry air and nitrogen. The de-lease demarcation for isolation of the utilities from the DOE facilities will be at a defined point outside the facility.

The PORTS SAR lists the principal hazards in the X-333, X-330 and X-326 process buildings as UF₆ and its reaction products, toxic gases (ClF₃ and F₂), light cascade gases (e.g., combinations of coolant, ClF₃, F₂), and miscellaneous waste storage areas. The SAR states that the risk of all accidents described in the accident analysis is lower for the shutdown condition. Accidents resulting in a potential release of toxic materials have a reduced probability and the consequences of such accidents are also reduced as a result of reduced inventories of UF₆ and depressurization of the cascade systems to below atmospheric pressure. The potential risk of a criticality accident is also lower due to the greatly reduced inventory of uranium and the reduction in the potential sources of moderation. The risk of a fire is lower due to the removal of the lube oil from process equipment, the shutdown of the compressors and the reduction of energized electrical equipment.

4.2.2 X-330 Process Building

As described in the SAR, The X-330 Process Building houses 500 stages of X-31 size enrichment cascade equipment and 600 stages of X-29 size equipment and the Tails Withdrawal Facility. The type of process equipment in the X-330 Building is essentially the same as the equipment in the X-333 Building, only smaller in size. Tie-lines link the process buildings to enable process gas to flow between X-330 and X-333 and between X-330 and X-326. The tie-lines are in elevated, steam-heated housings.

As in the case of X-333, enrichment operations in the X-330 Process Building ended in 2001. The X-330 enrichment equipment is currently in a cold shutdown condition with minimal inventory of uranium material remaining.

Also similar to X-333, various operations to remove residual material have been performed in the X-330 Process Building. Cell treatments are performed for removal of cascade deposits. The cell treatment gases are routed to the Cold Recovery facility for recovery of UF₆ or are routed to the X-326 building for processing in the isotopic/purge cascade cells. The X-330 Conditioning Gas Storage Area is in service to support potential X-326 chemical treatments.

Cascade cells have been shutdown and evacuated of UF₆ to a UF₆ negative and a dry gas buffer applied at 14.0 psia or greater. The shutdown cells are isolated from the RCW system. The R-114 coolant is either stored in the cell coolant system, in the coolant storage tanks or in railcars. Shutdown cells are isolated from the unit lube oil system and the oil is drained from the cell. The unit lube oil systems remain operable where still required. Elsewhere, the lube oil systems are shutdown and in some cases the system oil has been removed.

The X-330 Cold Recovery facility is shutdown. Some residual UF₆ and/or other uranium materials may exist in the system piping and associated equipment.

The X-330 Tails Withdrawal facility is in a shutdown condition. Some residual UF₆ and/or other uranium products may remain in the associated piping and equipment.

4.2.3 X-326 Process Building

The X-326 Process Building houses 720 stages of X-27 size enrichment cascade equipment, 1440 stages of X-25 size equipment and the purge cascades, and the ERP Withdrawal Facility.

As in the case of X-333 and X-330, enrichment operations in the X-326 Process Building ended in 2001. Since that time, a few cells have been operated in order to transfer material to the ERP for material repackaging purposes and for down blending of UF₆ material. The majority of the X-326 enrichment equipment is in a cold shutdown condition with minimal inventory of uranium material remaining. However, Unit X-25-7 and selected cells in Unit X-27-1 are in operation or in standby as needed to support the deposit recovery operations, the UF₆ material transfer/repackaging and the venting operations from the X-340 complex. Shutdown and standby cells have been evacuated of UF₆, a UF₆ negative obtained, and a dry gas buffer applied at 14.0 psia or greater. The shutdown cells are isolated from the RCW system and the lube oil has been drained from the system to the storage tanks (or has been removed) and the R-114 coolant has been removed. The standby cells are also isolated from the RCW system. In the standby cells, the R-114 coolant is either stored in the cell coolant system, in the coolant storage tanks, or in railcars. The standby cells are isolated from the unit lube oil system and the lube oil has been drained from the cells. The unit lube oil system is operable. Withdrawal facilities are in standby or operated as required to support the above-mentioned deposit removal operations.

The X-326 ERP withdrawal facility is in a shutdown condition. Some residual UF₆ and/or other uranium products may remain in the associated piping and equipment.

4.2.4 X-342A Feed Vaporization and Fluorine Generation Building

The PORTS SAR groups several similar facilities together as “UF₆ Feed, Withdrawal, Sampling, Handling, and Cylinder Storage Facilities.” The X-342A, X-343, and X-344A buildings are all in this category. The primary operations for these facilities consist of liquid UF₆ handling and large UF₆ cylinder handling and storage.

As described in the SAR, the X-342A Feed Vaporization and Fluorine Generation Building was formerly the primary facility for feed sampling and cascade feed vaporization. This facility has two large autoclaves for feed and sample operations and cranes for handling the cylinders. Due to the shutdown of the enrichment process, the uranium feed operations have been significantly curtailed. At this time, the X-342A facility is used as needed for material transfer and venting to the cascade equipment to support deposit removal, Tc-reduction and UF₆ material repackaging. Autoclaves are used in X-342A for these operations.

In the CAR, USEC states that at the time of the de-lease, no NRC certified operations will be performed within the facility. There will be some residual UF₆ and other uranium products contained in process piping.

The PORTS SAR lists the principal hazards in the group of UF₆ Feed, Withdrawal, Sampling, Handling, and Cylinder Storage Facilities as UF₆ and its reaction products. The SAR states that the shutdown of uranium enrichment operations has reduced the overall risk associated with these 3 facilities because of the reduced quantity of cascade feed. The cylinder handling and processing activities in these facilities are bounded by the operations originally analyzed for PORTS.

As USEC stated in the CAR, within the X-342, X-343 and X-344 buildings the following utilities will remain in operation and available for DOE use: sanitary water (including fire water), electrical power, steam, dry air and nitrogen. The de-lease demarcation for isolation of the utilities from the DOE facilities will be at a defined point outside the facility.

The fire protection system in the X-342A building is a wet sprinkler system supplied from the Sanitary and Fire Water System. The sprinklers in this building function to protect against property damage and monetary loss.

USEC also stated in the CAR that within the X-342A, X-343 and X-344A Buildings, the PA and the CAAS will remain in operation and available for DOE to use. The de-lease isolation point for these systems will be within DOE's area. The systems will be modified as necessary to ensure any DOE action that can disable the PA and CAAS would not impact these systems in areas of the PORTS site under NRC regulation.

4.2.5 X-342B Fluorine Storage Building

As described in the SAR, the X-342B Fluorine Storage Building houses three nominal 1000 ft³ capacity F₂ storage tanks and associated piping and valves. The valves are equipped with extension rods that extend through the walls to allow operation from outside the building. Instrumentation for the F₂ storage tanks is also mounted on the outside wall of the building. This building is equipped with hydrofluoric acid (HF) vapor detectors.

The SAR lists the hazards in the X-342B Fluorine Storage Building as chemical compounds (HF, fluorine, and hydrogen) and associated toxic gases.

4.2.6 X-343 Feed Vaporization and Sampling Facility

The X-343 Feed Vaporization and Sampling Building is in the same category of facilities as the X-342A building. Prior to shutdown of the enrichment operations, the primary operations in this facility were liquid UF₆ handling and large UF₆ cylinder handling and storage.

Due to the shutdown of the enrichment process, the uranium feed operations have been significantly curtailed. The X-343 facility was used for receipt, sampling, Tc reduction, transfer and shipping of uranium material. Autoclaves in the X-343 building were used to heat non-compliant cylinders of UF₆ and feed the material into the cascade equipment for processing into ANSI N14.1 compliant cylinders. There are seven steam-heated autoclaves in X-343, although only five are still operable.

According to the PORTS SAR, X-343 is in a cold shutdown condition. There are no plans to restart any of the autoclave operations in the building. All UF₆ cylinders have been removed from the building and adjacent storage areas.

In the CAR, USEC states that at the time of the de-lease, no NRC certified operations will be performed within the facility. There will be some residual UF₆ and other uranium products contained in process piping.

The status of the utilities in this building at the time of the turnover was discussed above for X-342A. The status of the PA and CAAS in this building at the time of the turnover were also addressed above.

4.2.7 X-344A Toll Enrichment Services Facility

The X-344A Toll Enrichment Services Building is in the same category of facilities as the X-342A building. Prior to shutdown of the enrichment operations, the primary operations in this facility were liquid UF₆ handling and large UF₆ cylinder handling and storage. The X-344A building was the processing and usual shipping/receiving point for low assay product UF₆ and contains four large autoclaves.

As described in the SAR, with the shutdown of the enrichment process, the uranium processing and packaging operations have been significantly curtailed. At this time, the X-344A facility is used to support deposit removal, Tc-reduction and UF₆ material repackaging.

As discussed above for building X-342A, the principal hazards in the X-344A building are UF₆ and its reaction products.

In the CAR, USEC states that at the time of the de-lease, no NRC certified operations will be performed within the facility. There will be some residual UF₆ and other uranium products contained in process piping.

The status of the utilities in this building at the time of the turnover was discussed above for X-342A. The status of the PA and CAAS in this building at the time of the turnover were also addressed above.

4.2.8 X-344B Maintenance Storage Building

The X-344B Maintenance Storage Building does not have complex operations or control systems and is listed in the SAR as having no hazards that exceeded the process hazard analysis threshold.

4.2.9 Summary of Facilities to be De-leased

NRC staff has reviewed the accident potentials listed in the SAR for the above facilities and concurs that the shutdown of enrichment operations, reduction of inventory of UF₆, reduction (and in some cases cold shutdown) of cascade and autoclave operations, have resulted in a reduction in potential hazards in the above facilities. In addition, staff concurs that the current operations are bounded by the originally analyzed operations, and there are not likely to be any increases in hazards as a result of this amendment. For those facilities and operations remaining under NRC regulatory authority, the staff finds reasonable assurance that adequate protection of public health and safety will continue to be maintained at PORTS after this amendment is implemented and the X-333, X-330, X-326, X-342A, X-342B, X-343, X-344A and X-344B facilities are de-leased.

4.3 Revisions and Deletions to Specific Technical Safety Requirements

The PORTS SAR states that “technical safety requirements will be established as required by 10 CFR 76.87 to include safety limits, limiting control settings, limiting conditions for operation, design features, surveillance requirements, and administrative controls.” This amendment would eliminate a number of technical safety requirements for the PORTS facility. The deletion of these TSRs is not because all hazards have been removed or eliminated; it is because USEC will no longer have the responsibility for the safety of these facilities and the related operations within them after the de-lease occurs. Following the de-lease, these operations would fall under the DOE regulatory jurisdiction.

Under DOE regulations, a Basis for Interim Operation (BIO) will be required in accordance with 10 CFR 830 Part B to document the safety basis of the facilities being turned over to DOE. The BIO is being developed by USEC (under a contract with the DOE) using the existing safety analysis in the Certificate (under NRC regulations) as a basis, with requirements and guidance from DOE regulations. In the CAR, USEC stated that the BIO will address the activities to be performed during transition phases, including surveillance, maintenance, deactivation, decontamination and decommissioning.

USEC anticipates that the BIO will encompass the same accident scenarios as currently analyzed in the SAR, and would therefore require the same safety measures for prevention and mitigation of those accidents as currently stipulated in the TSRs. The BIO is not required to be reviewed or approved by the NRC, but USEC has indicated that the scope of the safety basis documentation in the BIO will be within the operations already analyzed in the SAR. USEC also states that none of the accidents described in the SAR for the facilities to be de-leased would have a significant impact to the facilities or operations that will remain under the NRC Certificate of Compliance, and no accident in the de-leased facilities to be regulated by the DOE would have the potential of causing an accident in NRC-regulated space. The staff concludes that, based on its understanding on the type of activities that will be conducted at PORTS following the de-lease, the existing accident scenarios are bounding and PORTS operations associated with NRC-regulated activities will continue to be conducted safely.

Based on this evaluation, staff finds that there is reasonable assurance that this amendment would not result in undue risk to the public health and safety, common defense and security, and the environment for the de-leased facilities.

4.4 Review of Potential Safety Impacts

4.4.1 Radiation Safety

The inventory of enriched uranium at the PORTS has been dramatically reduced (by 99%) in the years since enrichment operations were shutdown. Furthermore, ongoing clean-up operations to remove deposits have further lowered the radioactive material present and have reduced the dose rates within the process buildings. These factors combined with the proposed reduction in the number of operations staff required in TSR 3.0 will contribute to continued reductions in the radiological impact to plant workers at PORTS. Radiation safety in the facilities that are de-leased will continue to be addressed under DOE regulations. The safety of workers in the portions of the site that remain under the NRC jurisdiction will not be impacted by this amendment.

4.4.2 Nuclear Criticality Safety

As previously stated, the quantity of enriched uranium at PORTS has been reduced since shutdown of the enrichment operations. While this results in a reduced potential for a criticality accident, criticality monitoring and alarms are still necessary. The CAAS for each facility will remain in place and operable following the de-lease of the specific facilities. The responsibility for calibration, operation and maintenance of these alarms in the de-leased facilities will be transferred to DOE. The necessary alarms and controls for NRC-regulated areas will not be affected.

4.4.3 Chemical Safety

The process gas used in the enrichment operations is UF_6 , a dangerous chemical that reacts with water vapor to produce toxic and corrosive hydrofluoric acid. As previously stated, the quantity of enriched uranium, in the form of UF_6 at PORTS has been greatly reduced since shutdown of the enrichment operations. In addition, the UF_6 cylinder heating, feeding and transferring operations have been reduced, and there has also been a reduction in the liquid UF_6 operations at the ERP, LAW, and TAILS withdrawal stations. These reductions do not eliminate the potential chemical hazard from UF_6 and other chemicals at PORTS, but they do reduce the potential occurrence of a postulated accident. Chemical safety in the facilities that are de-leased will continue to be addressed under DOE regulations. The safety of workers in the portions of the site that remain under the NRC jurisdiction will not be impacted by this amendment.

4.4.4 Fire Safety

The process buildings, withdrawal stations, autoclaves and other supporting facilities all contain fire protection systems. Each building is protected by an automatic water sprinkler system that is supplied by the high pressure fire water system (HPFWS). Since the shutdown of the enrichment cascades greatly reduced the heat generated in the X-330 and X-333 Process Buildings, the wet-pipe sprinkler systems in these buildings were converted to dry-pipe systems to avoid freezing problems during the winter. Additional fire protection features and systems such as the fire alarms, portable fire extinguishers, fire hydrants and other fire suppression

systems on the PORTS will continue to function following the de-lease of the specified facilities until D&D begins. There is no change to the staffing of the fire brigade associated with this amendment. USEC stated that prior to D&D, portions of the fire alarm systems and HPFWS will be modified to ensure that future DOE D&D activities will not negatively impact fire protection systems in the NRC-regulated areas of the site.

4.4.5 Emergency Management

The PORTS Emergency Plan has been submitted and approved by the NRC. The elimination of specific TSRs as listed in the proposed amendment for the facilities to be de-leased does not impact the existing emergency plan. In addition to fire alarms and criticality alarms, the SAR for the PORTS site includes UF₆ release detection systems for the protection of site workers and a public warning system (sirens, etc.) for rapid notification of the public surrounding the site following an emergency at the plant. The PORTS site maintains a fully equipped fire department for emergency response. This amendment does not involve any changes to the emergency response at PORTS.

4.5 Review of Security and Safeguards

4.5.1 Material Control and Accounting

In preparation for the de-lease of the specified facilities, USEC shall prepare to transfer the physical inventory of special nuclear material and/or radioactive material contained within these facilities to the control of the DOE in accordance with Subpart E of 10 CFR Part 76. The transfer of the material shall coincide with the date of the de-lease and facility turnover.

4.5.2 Physical Security

The proposed amendment does not involve any decrease in physical security at the PORTS facility. The specific TSRs to be deleted and the other proposed revisions in the CAR do not impact physical security. The facilities to be de-leased will remain within the fenced, protected area following the turnover to the DOE. There is no change to the staffing of the protective security force associated with this amendment.

4.5.3 Classified Matter

The proposed amendment does not involve any decrease in information security or the protection of classified matter at the PORTS facility. Any classified materials related to the facilities to be de-leased will be transferred to the DOE.

4.6 Deletion of Certificate of Compliance Condition 16

Condition 16 of the Certificate of Compliance states that "The United States Enrichment Corporation (USEC) shall inform the Nuclear Regulatory Commission (NRC) in writing no less than 30 days before any planned reduction in the surveillance requirements of the Caretaker Project being conducted for the Department of Energy (DOE) for the installed shut-down and buffered cascade equipment in the X-326 Building. In addition, USEC shall inform the NRC in writing within 15 days of obtaining a result of a measurement, as part of the Caretaker Project, of a holdup quantity of uranium enriched in 235U equal to or above 10 weight percent in installed equipment leased by USEC from DOE that is outside the measuring instruments accuracy range."

This condition was relevant to down-blending operations for high-enriched and medium enriched uranium being conducted for the DOE through the Caretaker Project. Although these operations were shutdown prior to NRC Certification and are no longer being performed, there is a certain amount of hold-up material within the HEU/MEU X-326 cascade. After the de-lease of the X-326 facility, both the equipment and its contained HEU/MEU holdup material will be within DOE's control and this condition will no longer have any relevance to USEC.

5.0 ENVIRONMENTAL REVIEW

An environmental assessment for the proposed action is not required, since this action (an amendment to the Certificate of Compliance for GDP-2) is categorically excluded under 10 CFR 51.22(c)(19).

6.0 CONCLUSION

Based on the review and evaluation of the information provided by USEC in its CAR dated February 24, 2010, the staff concludes that adequate protection of public health and safety will be maintained for areas under NRC authority following the approval of this amendment. Accordingly, the staff finds the deletion of specific TSRs Sections 2.1, 2.2, 2.3, 2.4, 2.5, and 2.7 for buildings X-342, X-343, X-344, X-326, X-330 and X-333 acceptable.

In addition, for the reasons stated above, staff finds the revision of TSR Sections 1.0, Use and Application, and 3.0, Administrative Controls, to remove all reference to the above listed facilities and the process operations within these facilities acceptable.

Finally, for the reasons stated above, staff finds the deletion of Certificate of Compliance Condition 16 acceptable.

7.0 REFERENCES

(USEC 2009) Application for United States Nuclear Regulatory Commission Certification, Portsmouth Gaseous Diffusion Plant Technical Safety Requirements, Volume 4, Revision 97, September 1, 2009.

(USEC 2010) U.S. Enrichment Corporation letter to NRC, "Portsmouth Gaseous Diffusion Plant (PORTS) Docket No. 70-7002, Certificate No. GDP-2 Certificate Amendment Request- Deletion of Specific Technical Safety Requirements (TSRs) for the X-342, X-343, X-344, X-326, X-330 and X-333 Facilities and their Related Operations, Revision to TSR Sections 1.0, Use and Application, and 3.0, Administrative Controls, and Deletion of Certificate of Compliance Condition 16," February 24, 2010 (ADAMS Accession No. ML100610588).

(NRC 2010) U.S. NRC memorandum from R. Reeves to T. Hiltz, "Summary of April 6, 2010, Meeting Regarding Deleting/Modifying Technical Safety Requirements for De-Leasing Specific Facilities at Portsmouth Gaseous Diffusion Plant," May 6, 2010 (ADAMS Accession No. ML100980507).

(USEC 2010) Handouts for NRC Headquarters Site Familiarization Visit on July 13, 2010 (ADAMS Accession No. ML102010576).

(USEC 2010) Application for United States Nuclear Regulatory Commission Certification, Portsmouth Gaseous Diffusion Plant Safety Analysis Report, Volumes 1 & 2, Revision 101, April 8, 2010.

(USEC 2010) U.S. Enrichment Corporation letter to NRC, "New Facilities Required to Support PORTS/DOE De-Lease Activities", September 3, 2010 (ADAMS Accession No. ML102520210)

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List of Acronyms

ACR	Area Control Room
ADAMS	Agencywide Documents Access and Management System
BIO	Basis for Interim Operation
CAAS	Criticality Accident Alarm System
CAR	Certificate Amendment Request
CER	Compliance Evaluation Report
D&D	Decontamination and Decommissioning
ERP	Extended Range Product
GDP	Gaseous Diffusion Plant
HEU	High Enriched Uranium
HF	Hydrofluoric Acid
HPFWS	High Pressure Fire Water System
LAW	Low Assay Withdrawal
MEU	Medium Enriched Uranium
PA	Protected Area
PORTS	The Portsmouth Gaseous Diffusion Facility
RCW	Recirculating Cooling Water
SAR	Safety Analysis Report
SNM	Special Nuclear Material
TAILS	Tailings or Depleted Uranium
TSR	Technical Safety Requirements
UF ₆	Uranium Hexafluoride
USEC	United States Enrichment Corporation