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Enrichment Corporation

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June 9, 1997

Dr. Carl J. Paperiello
Director, Office of Nuclear Material
Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SERIAL: GDP 97-0092

Portsmouth Gaseous Diffusion Plant (PORTS)
Docket No. 70-7002
Certificate Amendment Request-Autoclave Containment Valve Pressure Decay Testing

Dear Dr. Paperiello:

In accordance with 10 CFR 76.45, the United States Enrichment Corporation (USEC or Corporation) hereby submits a request for amendment to the certificate of compliance for the Portsmouth, Ohio Gaseous Diffusion Plant (GDP). This certificate amendment request revises Technical Safety Requirement (TSR) Section 2.1.3.5, Autoclave Shell High Pressure Containment Shutdown, to reflect that both the inner and outer loop containment valves have the ability to be independently tested during the autoclave pressure decay test.

Issue 3 of the Plan For Achieving Compliance with NRC Regulations for the Portsmouth Gaseous Diffusion Plant, requires in part that the capability be provided to separately test both the inner and outer loop containment valves on the autoclaves in X-342A, X-343 and X-344A. The revision to TSR 2.1.3.5 provided in this Certificate Amendment Request reflects the capability to perform this testing.

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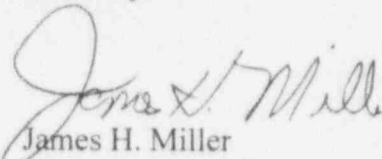
Dr. Carl J. Paperiello
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Enclosure 1 to this letter provides a detailed description and justification for the proposed changes to TSR 2.1.3.5. Enclosure 2 is a copy of the revised TSR pages for your review and approval. Enclosure 3 contains the basis for USEC's determination that the proposed change associated with this certificate amendment request is not significant.

Since this certificate amendment request is not required to support continued plant operation, USEC requests NRC review and approval of this certificate amendment request at your earliest convenience. The amendment should become effective 60 days from issuance.

Any questions related to this subject should be directed to Mark Smith at (301) 564-3244.

Sincerely,

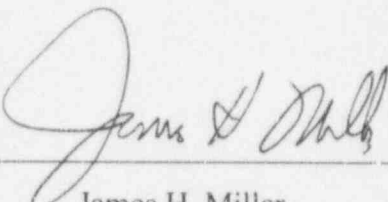

James H. Miller
Vice President, Production

Enclosures: As Stated

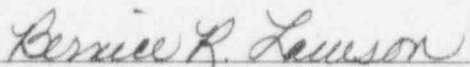
cc: NRC Region III Office
NRC Resident Inspector - PGDP
NRC Resident Inspector - PORTS
DOE Regulatory Oversight Manager

OATH AND AFFIRMATION

I, James H. Miller, swear and affirm that I am Vice President, Production, 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 Portsmouth Gaseous Diffusion Plant, 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.


James H. Miller

Subscribed to before me on this 9th day of June, 1997.



Notary Public

BERNICE R. LAWSON
NOTARY PUBLIC STATE OF MARYLAND
Certificate filed in Montgomery County
Commission Expires August 1, 1997

**United States Enrichment Corporation(USEC)
Proposed Certificate Amendment Request
Autoclave Containment Valve Pressure Decay Testing
Detailed Description of Change**

Specific TSR Sections Affected

The proposed change would revise TSR Section 2.1.3.5, Autoclave Shell High Pressure Containment Shutdown, to reflect that both the inner and outer loop containment valves will be independently tested during the autoclave pressure decay test. In addition, the Required Action table for TSR 2.1.3.5 will be revised to indicate that upon inoperability of a single containment valve on one or more autoclave penetrations, the operating cycle in progress may continue.

TSR 2.1.3.5, Required Action A.1 was revised to clarify the previous statements and to utilize the term "Operating Cycle", which is defined in TSR 1.2.14, instead of referring to the applicable operating modes.

A new Condition C was added to the Required Actions for the purpose of re-establishing the condition to address the times when there is only one containment valve within an autoclave penetration inoperable. Issue 3 of the Compliance Plan required that until such time as the inner and outer containment valves were tested separately, the TSR was to indicate that the inoperability of a single containment valve also required the autoclave to be declared inoperable. The existing Condition C was relabeled as Condition D and revised to apply to the inoperability of both containment valves in any one autoclave penetration. The existing Condition D was relabeled Condition E.

TSR 2.1.3.5 surveillance requirement SR 2.1.3.5.3 was revised to incorporate the requirement to test separately the inner and outer containment valve loops as part of the autoclave decay test.

Reason for Change

Issue 3 of the Plan For Achieving Compliance with NRC Regulations for the Portsmouth Gaseous Diffusion Plant, requires in part, that modifications be performed to allow separate pressure decay testing for both the inner and outer loop containment valves.

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Autoclave Containment Valve Pressure Decay Testing
Detailed Description of Change**

Justification of the Change

The autoclaves in buildings X-342, X-343 and X-344 were designed and constructed in accordance with ASME Section VIII and are utilized to contain the contents of a UF_6 cylinder in the event of a major UF_6 release within the autoclave. Each line which penetrates the autoclave boundary has isolation valve(s) which close to isolate the autoclave in the event of high autoclave pressure, preventing an external release of UF_6 , except that which may be released due to the proper operation of the autoclave pressure relief system. The containment function is in part, demonstrated by the periodic pressure decay test of the autoclaves as delineated in TSR 2.1.3.5.

As noted in Issue 3 of the Compliance Plan, the capability to test the containment valves (i.e., inner and outer loop valves) separately for the autoclaves in X-342, X-343 and X-344 was not provided. This certificate amendment request revises TSR 2.1.3.5 to require that the inner and outer loop containment valves be tested separately at the peak credible accident pressure that could be attained, based upon the existing accident analysis. The capability to separately test the inner and outer loop containment valves will enhance the TSR pressure decay test surveillance by providing additional assurances that the autoclave containment function will perform as assumed in the accident analyses.

Proposed Certificate Amendment Request Portsmouth Gaseous Diffusion Plant Letter GDP97-0092 Removal/Insertion Instructions	
Remove Page	Insert Page
VOLUME 4	
TSR 2.1.3.5 Page 2.1-11 and 2.1-12	TSR 2.1.3.5 Page 2.1-11 and 2.1-12

SECTION 2.1 SPECIFIC TSRS FOR X-342, X-343, AND X-344 FACILITIES

2.1.3 LIMITING CONTROL SETTINGS, LIMITING CONDITIONS FOR OPERATION, SURVEILLANCES

2.1.3.5 Autoclave Shell High Pressure Containment Shutdown

APPLICABILITY: Autoclave Operational Modes II, IV, VI

LCO: The autoclave shell high pressure containment system shall be operable:

ACTIONS:

Condition	Required Actions	Completion Time
A. One instrument channel inoperable	A.1 Restore instrument channel to operable status. NOTE The current Operating Cycle may be completed.	Prior to initiating a new Operating Cycle
B. Both instrument channels inoperable	B.1 Place autoclave in Mode VII	1 Hour
C. One containment isolation valve on one or more autoclave penetration inoperable	C.1 Restore containment isolation valve to operable status. NOTE The current Operating Cycle may be completed.	Prior to initiating a new Operating Cycle
D. All containment isolation valves on any one autoclave penetration inoperable	D.1 Place autoclave in Mode VII	1 Hour
E. Steam leakage around autoclave locking ring	E.1 Place autoclave in Mode VII	1 Hour

SECTION 2.1 SPECIFIC TSRs FOR X-342, X-343, AND X-344 FACILITIES

2.1.3 LIMITING CONTROL SETTINGS, LIMITING CONDITIONS FOR OPERATION, SURVEILLANCES

2.1.3.5 Autoclave Shell High Pressure Containment Shutdown (continued)

SURVEILLANCE REQUIREMENTS:

Frequency	Surveillance
Quarterly	SR 2.1.3.5.1 Perform channel functional test to verify the High Pressure Containment system will actuate at or below 15 psig
Semiannually	SR 2.1.3.5.2 Calibrate shell high pressure shutdown instrumentation at ≤ 15 psig
Quarterly	<p>SR 2.1.3.5.3 Leak rate the autoclave by pressurizing the autoclave to at least 90 psig and verify that the system pressure loss is less than or equal to 10 psig/hr for each of the following autoclave loop containment valve conditions:</p> <ol style="list-style-type: none"> 1. Inner loop valves closed and Outer loop valves open 2. Inner loop valves open and Outer loop valves closed <p style="text-align: center;">OR</p> <p>Perform a leak rate test where the maximum acceptable leakage shall not exceed 12 scfm at a minimum test pressure of 90 psig for each of the same conditions as stated above.</p>
<p>Note: Allowable test tolerance to cover instrument drift and uncertainties during normal operation = +2 psig</p>	

BASIS:

The steam used to heat a cylinder within an autoclave is controlled at approximately 5 psig. Therefore, when the autoclave internal pressure reaches 15 psig, the operating logic assumes that a UF_6 release has occurred within the autoclave and causes the containment valves to close, preventing an external release of UF_6 . The 15 psig represents the lowest pressure at which it can be assumed that it is not due to a steam control failure and yet gives the early indication that a UF_6 release is in progress. Testing the containment system at 90 psig is representative of the peak credible accident pressure that could be attained assuming functioning of safety systems, design features and administrative controls to prevent rupture of a cylinder or pigtail. The set point value corresponds to the trip set point established under DOE 5481.1B in 1985 and amended by DOE approval in 1995 to allow a 2 psi tolerance to comply with the definition of "Allowable Value" in ANSI/ISA-S67.04-1988 [SAR Section 3.2.1.1.1].

**United States Enrichment Corporation (USEC)
Proposed Certificate Amendment Request
Autoclave Containment Valve Pressure Decay Testing
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 Decrease in the Effectiveness of the Plant's Safety, Safeguards or Security Programs

The testing of the autoclave containment function by performing a pressure decay test of the autoclave and the inner/outer loop containment valves is not addressed in plant safety, safeguards or security programs contained in Volume 3 of the Application for United States Nuclear Regulatory Commission Certification for the Portsmouth Gaseous Diffusion Plant. Therefore, the effectiveness of these programs is unaffected by these changes.

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

None of the Conditions to the Certificate of Compliance for Operation of Gaseous Diffusion Plants (GDP-2) specifically address TSR required actions or related surveillances. Thus, the proposed change has no impact on any of the Conditions to the Certificate of Compliance.

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

Issue 3 of the Plan For Achieving Compliance with NRC Regulations for the Portsmouth Gaseous Diffusion Plant, requires in part, that modifications be performed to allow separate pressure decay testing for both the inner and outer loop containment valves. The proposed changes are submitted in accordance with the Compliance Plan and create no additional changes to the Compliance Plan nor to any conditions of the Compliance Plan.

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

Installing the capability to separately test the inner and outer loop containment valves will enhance the TSR pressure decay test surveillance by providing additional assurances that the autoclave containment function will perform as designed. The operation of the autoclave containment valves is not defined as an accident initiator in the SAR analysis and therefore,

**United States Enrichment Corporation (USEC)
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Autoclave Containment Valve Pressure Decay Testing
Significance Determination**

the testing of the valves will not affect the probability of occurrence of any postulated accident in the S.R. Since the proposed testing changes provide enhanced assurance that the containment function will be available, if required, the consequences of previously evaluated accidents for which credit was taken for the containment function, will remain unchanged.

5. No New or Different Type of Accident

The revision of TSR 2.1.3.5 to provide for the separate testing of the inner and outer loop containment valves will not create a new or different type of accident than those previously analyzed. The change will not add any new accident initiator or plant configuration that could lead to a new or different type of accident.

6. No Significant Reduction in Margins of Safety

Testing of the inner and outer loop containment valves demonstrates the ability to establish containment in the event of a UF_6 release within the autoclave. The proposed changes enhance the availability of the autoclave containment function and therefore, the proposed changes will increase the margin of safety over that previously experienced under the existing pressure decay testing criteria.

7. No Significant Decrease in the Effectiveness of any Programs or Plans Contained in the Certificate Application

The TSR changes that require the independent testing of the inner and outer loop containment valves are not specifically addressed in any programs or plans contained in the Certificate Application. Therefore, the revision of TSR 2.1.3.5 to enhance the testing of the autoclave containment function will not decrease the effectiveness of these programs or plans.

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

The proposed changes to TSR 2.1.3.5 permit the independent testing of the inner and outer loop containment valves. Independent testing of these valves demonstrates the ability to establish containment in the event of UF_6 leakage from the cylinder into the autoclave. As such, these changes represent a reduction in risk to the public health and safety. In addition, these revisions have no impact on plant effluents or on the programs and plans in place to

**United States Enrichment Corporation (USEC)
Proposed Certificate Amendment Request
Autoclave Containment Valve Pressure Decay Testing
Significance Determination**

implement physical security. Consequently, these proposed changes only enhance safety and pose no undue risk to the environment or the common defense and security.

9. There is No Change in the Types or Significant Increase in the Amounts of Any Effluents that may be Released Offsite.

This change has no effect on the generation of effluents and therefore, it does not change the type of effluents that may be released offsite. Since the independent testing of the inner and outer loop containment valves will provide added assurance that in the event of an internal autoclave UF_6 release the UF_6 will be contained, there should not be any increase in the amount of effluents released offsite.

10. There is No Significant Increase in Individual or Cumulative Occupational Radiation Exposure.

The consequences of a UF_6 release associated with any postulated accident currently identified in the SAR will not increase as a result of enhancing the autoclave containment valve testing. This change does not increase the probability of a UF_6 release in an autoclave. The independent testing of the inner and outer loop containment valves will not affect the radiological protection program actions in place to minimize occupational exposures. Therefore, there is no increase in individual or cumulative occupational radiation exposure as a result of this proposed change.

11. There is No Significant Construction Impact.

In order to perform the independent testing of the autoclave inner and outer loop containment valves, a plant modification is required. Since this change can only occur after the modification is complete, it will not impact construction, and, therefore, there is no significant construction impact.

12. There is No Significant Increase in the Potential for Radiological or Chemical Consequences from Previously Analyzed Accidents.

The revision of TSR 2.1.3.5 will not increase the probability of occurrence or consequences (radiological and/or chemical) of any postulated accident currently identified in the SAR. The enhancing of the autoclave containment valve testing does not alter the assumptions used in the accident analysis. Therefore, there is no significant increase in the potential for radiological or chemical consequences from previously analyzed accidents.

UNITED STATES ENRICHMENT CORPORATION

Two Democracy Center • 4th Floor • 6903 Rockledge Drive • Bethesda, MD 20817

Fax Memorandum

DATE: June 10, 1997

TIME: 12:37 pm

TO: Yawar Faraz

FAX:

PHONE:

FROM: Mark Lombard

FAX: 301 564-3210

PHONE: 301 564-3248

NUMBER OF PAGES (including cover sheet): 3

SUBJECT: Attached is an agenda for this afternoon's conference call at 1400 hours to discuss the HEU cylinder valve changeout issue, and a copy of the planned revision to SAR Section 3.7.1. Please call if you have any questions, otherwise we will talk this afternoon. Thank you.

Docket 70-7002

Agenda for 6/10/97 Conference Call

- Explanation of the issue-why change out of the HEU cylinder valves is necessary
- Why X-705 is the safest place to do the change out
- What are the Application changes that are necessary
 - SAR Section 3.7.1
- Changes can be done under 76.68
 - SAR Section 3.3.1.3.1.3 already discusses this activity

DRAFT

SAR-PORTS
Rev. 3

May 31, 1996

After a cylinder has been fed, it is removed from the feed position and weighed to determine the amount of uranium fed to the LEU enrichment process. A relatively small amount of non-volatile uranium typically remains in the cylinders after feeding. This "heel" is removed by a cleaning process conducted in a DOE-regulated X-705 Small Cylinder Cleaning area or shipped offsite for cleaning. Solutions resulting from the cleaning process are blended with solutions containing normal, depleted or LEU to reduce the assay to less than 10 wt-% ^{235}U . The solution is then transferred to the uranium recovery area where it is converted to uranium oxides; finally the oxides are stored for future disposition. The cleaned cylinders and any cylinders destroyed during the cleaning process are returned to DOE.

As a part of the normal operation of the gaseous diffusion process, cells are treated with oxidant gases to remove deposits of uranyl fluoride and other compounds from the cascade equipment surfaces in a manner described in Section 3.1.1.12. Generally, these treatments liberate a few hundred to several thousand grams of uranium from deposits. The treatment gases, including any uranium liberated from deposits as UF_6 , are evacuated to surge drums and then returned to the enrichment cascade at a point near its origin.

Cell treatment may result in the liberation of small quantities of residual HEU that was left in USEC process equipment following completion of the DOE cleanup process. This may occur at any point during the remaining operational life of the enrichment cascade. The liberated HEU material will mix with the LEU material in the process equipment and surge drums and the treatment gases will be returned to the cascade, where it will be mixed with the much larger quantities of uranium present in the interstage flow at LEU enrichments. This process ensures that the blended stream remains within the ^{235}U possession limits defined in Table 1-3. Analysis of uranium enrichment is not performed prior to returning the mixtures to the cascade. Any changes in uranium inventory due to "recovery" of the relatively small amounts of HEU would be reflected in USEC's enrichment cascade Inventory Difference (ID) during periodic inventories.

In addition to the HEU downblending activities, there may be occasions when equipment or components removed from the LEU cascade, X-705 Building or other leased areas contain moderately (10-20 wt-% ^{235}U) enriched or highly enriched uranium due to the presence of residual deposits of material that were not completely removed during the HEU Suspension program. On those limited occasions when this occurs, the equipment will be disassembled and decontaminated in an area in the X-705 Building which is placed temporarily under DOE regulation with appropriate safeguards in place. This procedure will also apply in those limited occasions when HEU cylinder valves require changeout due to bent stems or other valve problems which prevent the valves from being manipulated. The valve changeout will be handled in an area of the X-705 building which is temporarily turned over to DOE regulation with appropriate safeguards in place. Any material removed during these operations which exceeds 10 wt-% ^{235}U will be retained by DOE or will be blended with LEU solution until the overall enrichment is less than 10 wt-% ^{235}U . DOE regulation and associated safeguards will cease to be applied when material equal to or greater than 10 wt-% ^{235}U is no longer present. The blended-down solution would be processed through uranium recovery as described above.

3.7.2 Organization and Responsibilities

DOE will retain regulatory authority over HEU, except for inaccessible residual holdup and Category III quantities (or less) of other HEU. Up to 50 kg of ^{235}U , contained in uranium enriched from 10 wt-% up to 20 wt-% ^{235}U , may be present in Units X-25-7 and X-27-2, interconnecting piping and the X-326 surge drums in the gas phase during routine operations, as a result of HEU refeed. This equipment, its inventory