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July 1, 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 97-0111

Portsmouth Gaseous Diffusion Plant (PORTS)
Docket No. 70-7002
Certificate Amendment Request-Compliance Plan, Issue 3, Autoclave Upgrades

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 proposed certificate of compliance for the Portsmouth, Ohio Gaseous Diffusion Plant (GDP). This certificate amendment request revises the Plan for Achieving Compliance with NRC Regulations at the Portsmouth Gaseous Diffusion Plant (Compliance Plan), Issue 3, Autoclave Upgrades. This revision is required to accurately depict the configuration of the Autoclave Locking Ring Interlock System in the "Commitments" and "Justification for Continued Operation" sections of the Compliance Plan.

The Autoclave Locking Ring Interlock System is a system intended to protect operators and equipment from injury or damage related to opening an autoclave. The Compliance Plan presently describes the Autoclave Locking Ring Interlock System as having pressure "switches" set at 0.5 psig to ensure the autoclave shell cannot be opened while under pressure. Only one switch has ever been present to perform this function. A second pressure switch associated with the locking ring interlock system is included in the interlock system design. However, this switch is intended to protect the hydraulic system from unnecessary stresses that could be experienced if the autoclave was opened at a significant internal

vacuum. As such, only one pressure switch associated with the Autoclave Locking Ring Interlock System is provided to prevent opening the autoclave at positive internal pressure.

Enclosure 1 to this letter provides a detailed description and justification for the proposed change. Enclosure 2 is a copy of the revised Compliance Plan and SAR pages. The Compliance Plan pages are provided for your review and approval. The SAR pages have been evaluated in accordance with 10 CFR 76.68. Based on the results of the 10 CFR 76.68 evaluation, the enclosed SAR pages do not require prior NRC review and approval and are provided for information only. These revised SAR pages reflect revisions associated with this certificate amendment request and may not reflect other approved changes to these SAR pages. Enclosure 3 contains the basis for USEC's determination that the proposed changes associated with this certificate amendment request are not significant.

A copy of this letter is being provided to the Department of Energy, Regulatory Oversight Manager, to request DOE approval of the changes to the Compliance Plan described in this Certificate Amendment Request.

Since this proposed certificate amendment request is not required to support continued operation, USEC request NRC review and approval at your earliest convenience. The amendment should become effective 30 days from issuance.

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

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 1st day of July, 1997.

Notary Public

My Comm. Exps. 3/17 1998

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Detailed Description of Change

The purpose of this amendment request is to revise the description of the autoclave locking ring interlock system contained in the Compliance Plan, Issue 3, Autoclave Upgrades. This system is erroneously described in both the "Commitments" and "Justification for Continued Operation" sections of Issue 3, as having pressure "switches" set at 0.5 psig to ensure the autoclave shell cannot be opened while under pressure. Only one switch has ever been present to perform this function, as described in the AQ boundary definition in Section 3.8.2.23 of the SAR. Specifically, the following sections of the Compliance Plan, Issue 3 are revised:

- Under "Commitments", page 2, the first bullet in the second paragraph has been changed to read:

  "The Locking Ring Interlock contains a pressure switch which interlocks with the ..."

- Under "Justification for Continued Operation", item 4, the second sentence has been changed to read:

  "Also, the autoclave locking ring interlock contains a pressure switch which locks out the hydraulics..."

The Autoclave Locking Ring Interlock System is a system identified as important to safety and is primarily intended to protect operators and equipment from injury or damage related to opening an autoclave which has significant positive internal pressure (reference SAR section 3.8.2.23). This protection is provided by a pressure switch (currently referred to as PSH-*01) set at +0.5 psig. When above the setpoint, the switch opens and interrupts the circuit to the hydraulic control system to prevent operation of the hydraulics. Without power to the hydraulic control system, the autoclave cannot be opened. When autoclave pressure is below the setpoint, the switch closes and the circuit to the hydraulic control system is completed and normal hydraulic control functions are allowed.

Confusion has arisen over the existence of another pressure switch which works in a similar manner. However, this second switch (currently referred to as PSL-*01) is set at -0.5 psig. This switch is intended to protect the hydraulic system from unnecessary stress that would be experienced if an attempt to open the autoclave was made when the autoclave was at a significant internal vacuum. This switch is closed above its setpoint and open below it. As currently wired, both the positive pressure switch and the

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negative pressure switch need to be in the closed position for the autoclave hydraulic controls to operate. Therefore, the internal autoclave pressure must be within ±0.5 psi of atmospheric pressure to open the shell.

Both the positive pressure switch and the negative pressure switch have been in place for a considerable period of time. Apparently, during development of the SAR, the presence of these switches led writers to conclude the switches were "redundant" and that word was inserted into the SAR. The description of "redundant" switches was then carried through to other SAR text, and to Issue 3 of the Compliance Plan. The AQ Boundary definition of the system described in SAR Section 3.8.2.23 states in part, "The Autoclave Locking Ring Interlock System boundary includes the pressure switch and control relay." This description is correct, since it described that portion of the autoclave locking ring interlock system that is installed and credited as an enhancement to safety in SAR section 3.2.1.1.1.

The configuration of the autoclave locking ring interlock system is independent of the autoclave high pressure containment shutdown system, the primary system relied upon for high pressure isolation. The high pressure containment shutdown system isolates the autoclave when internal pressure reaches 15 psig. Also, this isolation system will provide a direct interlock with the locking ring when the autoclave Nuclear Safety Upgrades project (Compliance Plan Issue 3, action item 4) is completed. Until the modifications are complete, the Compliance Plan describes reliance primarily on administrative controls and the autoclave locking ring to a lesser extent. Section 3.8.2.23 of the SAR also refers to this reliance by stating "The Autoclave Locking Ring Interlock System prevents autoclave opening during high pressure containment when a possible UF_6 release may have occurred inside the autoclave."

Although two pressure switches are associated with the Autoclave Locking Ring Interlock System, only the high pressure switch is credited as an enhancement to safety as described in SAR section 3.2.1.1.1. Therefore, the Compliance Plan has been revised to clarify that the Autoclave Locking Ring Interlock System has a high pressure switch that is credited as an enhancement to safety.

Proposed Certificate Amendment Request Portsmouth Gaseous Diffusion Plant Letter GDP97-0111 Removal/Insertion Instructions	
Remove Page	**Insert Page**
Volume 1	
Section 3.2 Pages 3.2-9 through 3.2-12	**Section 3.2** Pages 3.2-9 through 3.2-12
PLAN FOR ACHIEVING COMPLIANCE WITH NRC REGULATIONS AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT (Compliance Plan)	
Issue 3 Pages 1 through 4	**Issue 3** Pages 1 through 4

Autoclave Upgrades

REQUIREMENTS

10 CFR 76.35(a)(6)—"The application for an initial certificate of compliance must include the information identified in this section. (a) A safety analysis report which must include the following information: . . . (6) A description of equipment and facilities which will be used by the Corporation to protect health and minimize danger to life or property . . ."

10 CFR 76.85—"The Corporation shall perform an analysis of potential accidents and consequences to establish the basis for limiting conditions for operation of the plant with respect to the potential for releases of radioactive material. Special attention must be directed to assurance that plant operation will be conducted in a manner to prevent or to mitigate the consequences from a reasonable spectrum of postulated accidents which include internal and external events and natural phenomena in order to ensure adequate protection of the public health and safety."

10 CFR 76.87(c)(5)—"(c) Appropriate references to established procedures and/or equipment to address each of the following safety topics must be included in technical safety requirements: . . . (5) Radiation protection."

COMMITMENTS

Source: Safety Analysis Report

3. Facility and Process Description

3.2 UF_6 Feed, Withdrawal, Sampling, Handling, and Cylinder Storage Facilities and Systems

3.2.1 Cascade UF_6 Feed and Sampling Systems

3.2.1.1 X-343 Feed Vaporization and Sampling Facility

3.2.1.1.1 Autoclaves [Rev. 3, 5/31/96]

"A seal is maintained between the [autoclave] head and shell with a Viton rubber O-ring located in a machined groove in the sealing face of the head. . . .

In summary, the following autoclave-related devices are identified as active safety systems:

- The High Condensate Level Cutoff System activates to stop the input of steam and sound appropriate alarms if the condensate approaches an unsafe level in the condensate drain line.

- The UF_6 Cylinder High Pressure Cutoff System activates to stop the input of steam to the autoclave and to sound appropriate alarms if the cylinder pressure approaches an unsafe level.

- The UF_6 High Temperature Cutoff System activates to stop the input of steam to the autoclave and [to] sound appropriate alarms if the cylinder temperature approaches an unsafe level.

- The Autoclave Shell High Steam Pressure Shutdown System activates to stop the input of steam and [to] sound appropriate alarms if a large release or other undesirable high pressure situation exists inside the autoclave.

- The Autoclave Shell High Pressure Relief System activates to prevent the internal autoclave pressure from exceeding the maximum allowable working pressure for the autoclave as determined by the ASME rating.

- The Autoclave Shell High Pressure Containment Shutdown System activates to stop the input of steam, close the containment valves, and sound appropriate alarms, if a large release or other undesirable high pressure situation exists inside the autoclave. . . .

In addition to the safety systems summarized above, the following systems and limits are present to enhance safety:

- The Locking Ring Interlock contains a pressure switch which interlocks with the hydraulic system to prevent opening the autoclave shell while under pressure (above 0.5 psig). Although only steam may be present in the autoclave, opening while the autoclave is under pressure may cause a thrust between the shell and the head with could cause equipment damage or personnel injury."

3.2.1.2 X-342A Feed Vaporization Facility
3.2.1.2.1 Autoclaves [Rev. 3, 5/31/96]

"See 3.2.1.1.1. The operation and safety systems are identical to X-343 Feed and Sampling Autoclaves."

3.2.1.3 X-344A Toll Enrichment Services Facility
3.2.1.3.1 Autoclaves
3.2.1.3.1.2 X-344A Autoclave Safety Systems [Rev. 3, 5/31/96]

"The safety systems for autoclaves at X-344A are functionally the same as described for autoclaves in the X-343 Feed Vaporization Facility (see 3.2.1.1.1)."

DESCRIPTION OF NONCOMPLIANCE

This issue involves a total of thirteen autoclaves. There are two autoclaves in X-342A, seven autoclaves in X-343, and four autoclaves in X-344A.

1. The capability to test the containment valves (i.e., inner and outer loop valves) separately for the autoclaves in X-342A, X-343, and X-344A is not provided.

2. The UF_6 feed isolation and flow control valves in X-342A and X-343 are not fail-safe on loss of air or electric power. The containment valves on the liquid UF_6 drain line are not fail-safe on loss of air or electric power on autoclaves 3 and 4 in X-344A. The daughter cylinder isolation valves on the autoclaves in X-344A do not fail closed on loss of air.

3. Autoclave 2 in X-344A does not have a low air pressure switch to initiate containment upon loss of air.

4. The High Pressure Containment Shutdown System control logic for the autoclaves in X-342A, X-343, and X-344A does not lock out the hydraulics to prevent the autoclaves from being inadvertently opened when the pressure in the autoclave exceeds the setpoint.

5. The internal autoclave and UF_6 cylinder pressure transmitters have too large of a pressure range and insufficient temperature compensation to perform within the operational accuracy and calibration tolerances needed.

6. There are no alarms to alert operators of possible upset conditions prior to the activation of the autoclave safety systems.

7. The design and configuration of the autoclave steam supply and condensate removal systems in X-342A, X-343, and X-344A are not adequate to prevent excess condensate from collecting in the autoclave, activating the High Condensate Level Cutoff System.

8. The head/shell sealing surfaces for the autoclaves in X-342, X-343, and X-344A are experiencing significant corrosion, which affects their ability to seal.

9. The UF_6 cylinders are not provided with pressure relief protection.

10. Pressure decay testing procedures and autoclave modifications that ensure that backpressure does not mask leak rate determinations have not been implemented.

JUSTIFICATION FOR CONTINUED OPERATION

1. In the event of a release of UF_6, the Smoke Detection System will actuate an alarm. In response to such an alarm, administrative controls require the operator to immediately investigate and take necessary action to mitigate the consequences of any UF_6 releases. This may include manual actuation of the autoclave containment valves to place the autoclaves into containment. In addition, the following surveillances will be performed: (1) quarterly system channel functional tests to verify the containment valve closure and (2) quarterly overall autoclave containment pressure decay or leak rate tests.

2. Until fail-safe containment valves can be added or replaced, the existing valves will either be cycled twice or verified operable prior to each cylinder heating cycle. In addition, the following surveillances will be performed: (1) quarterly system channel functional tests to verify the containment valve closure and (2) quarterly overall autoclave containment pressure decay or leak rate tests.

3. For autoclave 2 in X-344A, there is redundant instrumentation to initiate containment upon a high-pressure indication. One channel of this instrumentation is a pressure switch which is not dependent on instrument air to perform its containment initiation function. This is sufficient for safe operation until the low instrument air pressure switch is added.

4. The alarm response procedure for the autoclaves in X-342A, X-343, and X-344A only allow the operator to open the autoclaves after clearing the High Pressure Containment Shutdown System alarm condition. Also, the autoclave locking ring interlock contains a pressure switch which locks out the hydraulics to prevent the autoclaves from being opened when the internal pressure is greater than 0.5 psig. The autoclave locking ring interlock is tested quarterly to verify its ability to perform this function.

5. Until replaced, the present pressure transmitters that monitor internal autoclave and UF_6 cylinder pressure will continue to provide marginally acceptable accuracy. The high autoclave steam shutdown trip set point will be reduced to compensate for the known inaccuracies to prevent the autoclaves or the UF_6 cylinder from exceeding their allowable operating pressure as defined in the Technical Safety Requirements.

6. The operational alarms will not activate the safety system. Their sole purpose is as an early warning to the operator that the system is going off-normal. All unplanned activations of a safety system require autoclave shutdown and reporting.

7. The High Condensate Level Cutoff System is designed to limit the amount of water that can be present in an autoclave to react with or moderate UF_6 during a release. Until the steam supply and condensate removal systems are upgraded, a hose will be used during the first hour of heating to allow the condensate to drain to an open drain instead of a steam trap. This temporary modification has been shown to reduce the activation of the high condensate level alarms to almost zero. Those alarms that do occur will require autoclave shutdown and reporting.

8. Until the autoclave head/shell sealing surfaces are restored, thin strips of Viton "shim" will be used, as necessary, behind the O-ring gasket to compensate for irregularities in the sealing surfaces. In addition, the autoclaves will be pressure decay or leak rate tested quarterly and each time the O-ring gasket is replaced.

9. The design of the UF_6 cylinders was constrained by the need to protect against a catastrophic release of liquid UF_6 to the work or general environment. This constraint was addressed by providing administrative procedures, positive controls on the source of heat, and redundant steam cutoffs.

10. Until the autoclaves in X-342A, X-343, and X-344A are modified and testing procedures are revised to allow appropriate, separate leak testing of all inner and outer loop containment valves, an autoclave will be declared inoperable and taken out of service when any containment valve is determined to be inoperable.

The above discussion provides justification that the plant can continue to operate safely until the autoclave upgrades are installed as discussed in the Plan of Action and Schedule are completed.

of 100 psig whereas, heavywall cylinders are rated for 200 psig. Normal operation at 220°F to 230°F, however, produces UF_6 pressures in the range of 80-90 psia. Thus, it is practical and safe to keep the pressure switch set for the worst-case cylinders. UF_6 cylinders exhibiting an excessive cold pressure (greater than 10 psia) are cold burped to remove contaminant gases that can cause excessive pressure to result upon heating.

In order to ensure that the cylinder valve and pigtail are opened to the pressure monitoring circuit, a pressure switch and timer are employed. During initial heating of a UF_6 cylinder, if the pressure indicator indicates to the operator that cylinder pressure will be less than 20 psia within one hour, then the steam input will be checked. If steam flow had already been established, then steam flow will be shut off, the autoclave will be shut down and opened, and the cylinder safety valve and cylinder valve will be verified open. The autoclave is then reclosed and the heating cycle is reinitiated. A check of cylinder valve clarity is made; if valve clarity cannot be established, then the cause is investigated and corrected before further heating of the cylinder. The cylinder low pressure cutoff system serves as a backup to the operator and has been designated a Limiting Condition for Operation (LCO).

At the conclusion of a heating cycle, steam is exhausted from the autoclave through the blowdown exhaust system. This system consists of an air-jet ejector (aspirator) connected to the blowdown piping and is capable of exhausting steam from any one or all of the autoclaves simultaneously. A check valve located in each autoclave blowdown line prevents steam exhausted from one autoclave from entering another autoclave. A vacuum breaker is employed to allow a sweep of air through the autoclave. The Locking Ring Interlock system consists of a high and low pressure switch interlocked with the hydraulic locking ring to prevent the autoclave from being opened unless the autoclave pressure is within $\pm$ 0.5 psig. This feature is intended to prevent the mechanical damage and hazard to employees that would be expected to occur if the autoclave were unlocked while pressurized with steam or UF_6 release products.

UF_6 release detection and containment shutdown are accomplished by the steam-sampling/conductivity-monitoring system, the high autoclave pressure steam shutdown and the extreme high autoclave pressure containment shutdown. Each autoclave employs two independent steam sampling systems which withdraw steam through two small diameter lines each leading to a water-cooled condenser and reservoir. A conductivity cell is located in each reservoir to measure the conductivity of the condensate as the condensate flows through the reservoir. HF is formed by the reaction of UF_6 with water when released inside the autoclave. HF in the condensate causes the conductivity to increase. This system is designed to detect UF_6 releases (as small as 2 lbs/min) and cause the autoclave to automatically go into a containment-shutdown mode. This mode consists of appropriate alarms and closure of all the containment block valves. Additional features of the conductivity sampling system are a flow switch and a sanitary water supply tap. The flow switch will signal steam shutdown upon loss of cooling water flow to either condenser. The sanitary water tap is used to test the conductivity cells each time the autoclave is used. Sanitary water has sufficient conductivity to simulate a small UF_6 release. Although the steam condensate conductivity system can initiate autoclave shutdown it is not considered to be necessary for autoclave operation and is not a safety system.

In the event of a large release of UF_6 inside an autoclave, a faster reacting system is available to effect a containment-shutdown mode. That system is the Autoclave Shell High Pressure isolation system. During a large release, a massive amount of HF gas would be rapidly produced by the reaction of UF_6 with water. The HF gas will increase the pressure in the autoclave and upon the autoclave internal pressure reaching 15 psig, a redundant pressure sensor will trigger containment shutdown. The amount of HF gas produced is directly proportional to the amount of water available to react with UF_6. In order to limit the amount of water inside the autoclave, two independent and redundant water level probes are installed in the condensate drain line directly beneath the autoclave. These probes will trigger steam shutdown if the water level in the condensate drain should rise because of blockage downstream. This High Condensate Level Cutoff system has been designated a safety system. An initial water inventory test is performed on each new autoclave to determine the amount of water normally entrained within an operating autoclave. Past experience indicates that seven-foot feed and sampling and six-foot feed autoclaves can have excess entrained water during normal operation. Consequently, these six-foot autoclaves are not full containment vessels in the event of a catastrophic cylinder rupture in a closed autoclave because the stated pressure vessel limits will be exceeded and the pressure relief system will vent excess material outside the X-343 Facility.

Each autoclave is equipped with an Autoclave Shell High Pressure Relief system to prevent the internal pressure from exceeding the maximum allowable working pressure (MAWP) as determined by Section VIII of the ASME Pressure Vessel Code. This system consists of a pressure relief valve and rupture disc, each rated at or below the MAWP. The rupture disc is necessary only to prevent constant exposure of the pressure relief valve to steam during normal operation. Such constant exposure could cause undesirable corrosion and scaling of the valve. Pressure above the rating of the pressure relief valve would be vented. (In the X-342A and X-343 Buildings, the safety relief valve exhaust is outside the building. Due to the configuration of the equipment in the X-344A Building, the PRV exhaust is inside the building.) The valve is expected to re-seat at the MAWP to contain pressure (reaction products) up to that amount.

The autoclaves are equipped with a pressure switch which is interlocked with the hydraulic system to prevent opening the autoclaves at greater than 0.5 psig. Only steam pressure would be present under normal conditions; however, opening the autoclave may cause enough thrust between the head and shell to propel the shell and cause equipment damage. The X-342 and X-343 autoclaves have been fitted with an emergency hydraulic override switch. Using this switch, the shell can be opened at any time, as long as the internal pressure is below 0.5 psig.

The autoclave shells are thermally insulated. Under the insulation and against the outer surface shell is tubing (tracing) through which steam or cold water can be passed. Heating or cooling an autoclave may be necessary during clean-up operations following a release.

In summary, the following autoclave-related devices are identified as active safety systems:

- The High Condensate Level Cutoff System activates to stop the input of steam and sound appropriate alarms if the condensate approaches an unsafe level in the condensate drain line.

- The UF_6 Cylinder High Pressure Cutoff System activates to stop the input of steam to the autoclave and to sound appropriate alarms if the cylinder pressure approaches an unsafe level.

- The UF_6 High Temperature Cutoff System activates to stop the input of steam to the autoclave and sound appropriate alarms if the cylinder temperature approaches an unsafe level.

- The Autoclave Shell High Steam Pressure Shutdown System activates to stop the input of steam and sound appropriate alarms if a large release or other undesirable high pressure situation exists inside the autoclave.

- The Autoclave Shell High Pressure Relief System activates to prevent the internal autoclave pressure from exceeding the maximum allowable working pressure for the autoclave as determined by the ASME rating.

- The Autoclave Shell High Pressure Containment Shutdown System activates to stop the input of steam, close the containment valves, and sound appropriate alarms, if a large release or other undesirable high pressure situation exists inside the autoclave.

Containment and pressure systems include the code rating on the autoclave vessel and all associated piping appendages up to the second containment block valve (if present).

In addition to the safety systems summarized above, the following systems and limits are present to enhance safety:

- The Locking Ring Interlock contains a pressure switch which interlocks with the hydraulic system to prevent opening the autoclave shell while under pressure (above 0.5 psig). Although only steam may be present in the autoclave, opening while the autoclave is under pressure may cause a thrust between the shell and the head which could cause equipment damage or personnel injury.

- The Conductivity Monitoring cells cause containment shutdown and appropriate alarms if a small UF_6 release occurs inside of an autoclave.

- A Cylinder Safety Valve is installed between the cylinder valve and pigtail connection prior to heating and serves as one of the redundant containment valves in the process piping.

- Void Volume kequirements are established to prevent hydraulic rupture of a cylinder at maximum allowable heating temperatures.

- A UF_6 Low Cylinder Pressure Cutoff system activates to stop the input of steam to the autoclave and to sound appropriate alarms if a predetermined UF_6 pressure is not achieved within a specified time after heating begins. Failure to achieve the specified pressure could indicate a plugged or closed cylinder valve. This system is not a Limiting Condition for Operation when dumping sample bombs directly to the cascade or when cold feeding.

- A Cylinder Assay Limitation of 5% is established for any cylinder to be heated in an autoclave.

- The Steam Interlock System is designed to prevent admitting steam to an autoclave unless the locking ring is closed and locked. The position of the locking ring is monitored by limit switches. When these switches confirm locking ring closure, contacts in the electric power supply to the solenoid valve are closed. This permits opening the steam regulating valve.

- The Roll/Tilt Interlock System prevents the use of the roll or tilt motors on 84 in. autoclaves (and 96 in. autoclaves in the X-344A Toll Enrichment Facility) unless the autoclave shell is more than 3 ft. open. The safety function of this system is to ensure the operator has a clear view of the pigtail during roll/tilt operations. The shell position is monitored by limit switches. If the shell is open more than 3 ft, the motors will operate.

General Surveillance Requirements are in place to specify safety system/components testing after maintenance or when autoclaves are taken out of service for an extended period of time. Also, surveillance requirements provide for testing the Roll/Tilt System and the Steam Interlock System.

3.2.1.1.2 Scales

The fill limits for all UF_6 cylinders are set at a value to allow the cylinders to be heated within the specified limits without causing hydraulic rupture of the cylinder. It is therefore necessary to have accurate weighing devices available to ensure that the cylinders are filled within acceptable limits before the processing begins. Production quality scales are used to check fill limits, and are calibrated annually to a tolerance of ± 10 pounds from 0-6,600 pounds and ± 20 pounds from 6,600 pounds upward.

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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 proposed change involves a correction to the Compliance Plan description of the existing autoclave locking ring interlock system. This change does not involve a change to any plant safety, safeguards, or security programs.

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

   The proposed change involves a correction to the Compliance Plan description of the existing autoclave locking ring interlock system. This change does not involve a change to any conditions in the Certificate of Compliance.

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

   The SAR accident analysis assumes an autoclave will detect an internal pressure increase and isolate at 15 psig. Above 15 psig, the analysis assumes that the autoclave remains closed, although the specific means that accomplish this assumption are not defined. The system that isolates the autoclave is called the autoclave high pressure containment shutdown system and it does have two redundant switches to isolate the autoclave. Ideally, these same two switches would provide the hydraulic lockout function currently found on the autoclave locking ring interlock system. As described in the Compliance Plan, this lockout function will be provided to these switches during the autoclave Nuclear Safety Upgrades project. This aspect of the Compliance Plan is not effected by this change. Until then, the Justification for Continued Operation section of Issue 3, item 4, assumes administrative controls will prevent an operator from opening the shell above 15 psig. As a secondary consideration, the autoclave locking ring interlock is mentioned as an additional control. Redundancy in the pressure switches for the locking ring interlock system was never provided. The administrative controls provided to ensure that the locking ring system is not operated until the containment signal has cleared are judged to be sufficient redundant controls. Therefore, the fact that the locking ring interlock system has only one pressure switch calibrated to permit locking ring motion when pressure is less than 0.5 psig is not considered a significant change to the Compliance Plan.

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

Accidents previously evaluated in the SAR (pigtail rupture, cylinder rupture, cylinder valve failure, hydrocarbon oil reaction) are independent of the autoclave locking ring interlock system. The number of switches in the locking ring interlock system has no significant impact on the existing analyzed accidents. This protective system is not an accident initiator and therefore does not increase the probability of occurrence of any analyzed accidents.

Several autoclave related accidents evaluated in the SAR assume the autoclave is closed and remains closed throughout the accident. With the autoclave closed, the consequences of an accident are greatly reduced. As described in the Justification for Continued Operation section of Issue 3 of the Compliance Plan, the alarm response procedure does not allow the operator to open the autoclave unless the containment signal is cleared first. Although failure of the locking ring interlock system might allow an operator to open the shell and increase the consequences of an accident, this is judged to be highly improbable since both the engineered controls and the administrative controls would have to fail simultaneously. These administrative controls, combined with the presence of the locking ring interlock, ensure the autoclave remains closed throughout an accident. Therefore, the consequences of an accident are not increased.

5. No New or Different Type of Accident

No change has been made to the function or configuration of any equipment on the autoclaves. New accident scenarios due to the condition of only having one pressure switch are therefore not credible. A possibility of an accident of a different type than previously evaluated is therefore not created.

6. No Significant Reduction in Margins of Safety

Accidents previously evaluated in the SAR (pigtail rupture, cylinder rupture, cylinder valve failure, hydrocarbon oil reaction) are independent of the autoclave locking ring interlock system. The number of switches in the locking ring interlock system has no significant impact on the existing analyzed accidents. As described in the Justification for Continued Operation section of Issue 3 of the Compliance Plan, the alarm response procedure does not allow the operator to open the autoclave unless the containment signal is cleared first. Although failure of the locking ring interlock system might physically permit an operator to open the shell and increase the consequences of an accident, this is judged to be highly improbable since both the engineered controls and the administrative controls would have to fail simultaneously. These administrative controls, combined with the presence of the locking ring interlock, provide adequate margin of safety and ensure the autoclave remains closed as assumed in the accident

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analysis. The autoclave locking ring interlock system is not referenced in the Limiting Control Settings, Limiting Conditions for Operations, or Surveillances in the TSR. Consequently, the margin of safety has not changed.

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

The proposed change involves a correction to the Compliance Plan description of the existing autoclave locking ring interlock system and is not addressed in any programs or plans contained in the Certificate Application. Therefore, this change does not decrease the effectiveness of any programs or plans contained in the Certificate Application.

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 use of the term "switches" in Compliance Plan Issue 3, was carried over from the SAR description and was apparently caused by confusion over the presence of the two switches which make up the positive and negative portions of the autoclave locking ring interlock system. This description is not present in the AQ boundary definition in SAR section 3.8.2.23. The accident analysis depends on the autoclave high pressure containment system to isolate the autoclave at 15 psig. Until the autoclave Nuclear Safety Upgrades project is complete, the Compliance Plan depends primarily on administrative controls and secondarily on the autoclave locking ring interlock system to ensure the autoclave remains closed above 15 psig. These administrative controls, combined with the presence of the locking ring interlock, provide adequate margin of safety and ensure the autoclave remains closed as assumed in the accident analysis. Therefore, the proposed change does not result in undue risk to the public health and safety, common defense and security, or the environment.

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

This proposed change does not result in any physical modification to the plant and has no effect on the generation of effluents. Therefore, there is no change in the type or significant increase in the amounts of any effluents that may be released offsite.

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

Several autoclave related accidents evaluated in the SAR assume the autoclave is closed and remains closed throughout the accident. With the autoclave closed, the consequences of an accident are greatly reduced. As described in the Justification for Continued Operation section

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of Issue 3 of the Compliance Plan, the alarm response procedure does not allow the operator to open the autoclave unless the containment signal is cleared first. Although failure of the locking ring interlock system might physically permit an operator to open the shell and increase the consequences of an accident, this is judged to be highly improbable since both the engineered controls and the administrative controls would have to fail simultaneously. These administrative controls, combined with the presence of the locking ring interlock, ensure the autoclave remains closed throughout an accident. Therefore, no increase in individual or cumulative occupational radiation exposure is expected as a result of this proposed change.

11. There is No Significant Construction Impact.

This change does not require any physical modification to the plant.

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

Several autoclave related accidents evaluated in the SAR assume the autoclave is closed and remains closed throughout the accident. With the autoclave closed, the consequences of an accident are greatly reduced. As described in the Justification for Continued Operation section of Issue 3 of the Compliance Plan, the alarm response procedure does not allow the operator to open the autoclave unless the containment signal is cleared first. Although failure of the locking ring interlock system might physically permit an operator to open the shell and increase the consequences of an accident, this is judged to be highly improbable since both the engineered controls and the administrative controls would have to fail simultaneously. These administrative controls, combined with the presence of the locking ring interlock, ensures the autoclave remains closed throughout an accident. Therefore, no increase in the potential or chemical consequences from previously analyzed accidents is expected as a result of this proposed change.