70-7001

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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 97-0016

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001
Response To Request for Additional Information
Certificate Amendment Request-Autoclave Manual Isolation System

Dear Dr. Paperiello:

The purpose of this letter is to provide a response to the NRC's request (TAC. No. L32003) for additional information on the Certificate Amendment Request (CAR) dealing with the Autoclave Manual Isolation System (AMIS). This additional information request was provided to USEC in Reference 1 and identifies additional information required by NRC to allow final action to be taken on our request.

USEC's response to the NRC information request is provided in Enclosure 1 to this letter. Based on NRC comments provided in Reference 1, USEC has revised the proposed Technical Safety Requirement (TSR) for the Autoclave Manual Isolation System. In addition, USEC has provided revised Safety Analysis Report (SAR) pages which establish the Autoclave Manual Isolation System as a "Q" system and provides the "Q" boundary for this system. These revised TSR and SAR pages are provided as Enclosure 2 to this letter. The TSR pages are replacement pages for those previously provided with the certificate amendment request submitted to NRC on October 31, 1996 (Reference 2, Enclosure 2). USEC has reviewed Enclosure 1 (Detailed Description of Change) and Enclosure 3 (Significance Determination) previously transmitted in Reference 2 and has determined that the conclusions of these enclosures remain valid. As such, only the enclosed TSR replacement pages (TSR Section 2.2-30a and 2.2-30b) and SAR Pages (3.15-9 and 3.15-9a) are provided with this response.

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

Sincerely,

James H. Miller
Vice President, Production

cc: NRC Region III Office
NRC Resident Inspector - PGDP
NRC Resident Inspector - PORTS
Mr. Randall M. DeVault (DOE)

Reference

1) NRC Letter from Merri Horn to Mr. James H. Miller, "Certificate Amendment Request-Paducah Gaseous Diffusion Plant Autoclave Manual Isolation System (TAC No. L32003)," dated January 15, 1997.

2. USEC Letter GDP 96-0188, James H. Miller to Dr. Carl J. Paperiello, "Paducah Gaseous Diffusion Plant (PGDP)-Docket No. 70-7001-Certificate Amendment Request-Autoclave Manual Isolation System," dated October 31, 1996.

Response to Additional Information Request (TAC No. L32003)

Question 1:
Explain the basis for making the autoclave manual isolation system an AQ system instead of a Q system under the quality assurance program. Additionally, provide the page changes for SAR section 3.15

Response:
The Autoclave Manual Isolation System (AMIS) will be designated a Q system. Attached are page changes for SAR section 3.15.

Question 2:
Provide additional justification for not including the actuation device located in the Area Control Room (ACR) in the TSR. TSR 3.2.2 does not require the Operations Monitoring Room to be manned. Both operators could be located in the surrounding grounds and be unable to reenter the facility or approach the crane bay exit to actuate the manual isolation system in the event of a release.

Response:
Because of the possibility that the operators could be located in the surrounding grounds and be unable to reenter the facility to actuate the manual isolation system in the event of a release, the actuation device in the ACR will be included in the Surveillance Requirement for the AMIS. In addition, a new required action (D.3) has been added to establish continuous radio communication with the ACR should PGDP be unable to restore at least one actuation device within the required 4 hour completion time required by Condition C. Attached is revised TSR 2.2.4.13 (proposed) to incorporate this change.

Question 3:
Explain why the time limit of 4 hours for taking action is believed to be appropriate; it appears to be inconsistent with other TSRs that have 1 hour response times.

Response
TSR Required Action Completion Times were selected commensurate with importance to safety. The Autoclave Manual Isolation System (AMIS) has less safety significance than other TSR systems such as the Autoclave High Pressure Isolation System and the Steam Pressure Control System which do have 1 hour response times. This is due to the fact that the purpose of the AMIS is to limit the potential release due to a small line break outside the autoclave, while the other systems prevent, or mitigate the consequences of, the rupture of a liquid cylinder inside an autoclave Unlike the other systems, limiting the gaseous release due to a piping failure outside an autoclave is not required in order to validate the Accident Analysis assumptions or requirements. The accident analysis considers the gaseous release scenario due to a line break outside an autoclave and concludes that the offsite consequences of such an event are bounded by the cylinder drop and rupture scenario. (SAR Section 4.7.3.2.2.)

Question 4:
The explanation of the surveillance needs to be expanded; as written it is not clear exactly how the test works. What is meant by "verifying" to output? Is the logic output actually used to close the containment valves? Is actual actuation of the pull buttons tested?

Response:
The Autoclave Manual Isolation System consists of the actuation device (i.e., the pull button), the programmable logic controller (PLC), the autoclave isolation valves, and the interconnections between these components. The actuation device sends a signal to the PLC which then sends a signal to close the isolation valves on the autoclaves. The AMIS and the Autoclave High Pressure Isolation System (AHPIS) inputs to the PLC both result in the identical valve closure output signal from the PLC. The PLC, valve closure signal, and the isolation valves are the same components used in the Autoclave High Pressure Isolation System which is tested quarterly under TSR SR 2.2.3.1-2. Therefore, the only portion of the AMIS that is not tested quarterly is the actuation device and signal sent from the actuation device to the PLC. The proposed surveillance will test only that portion of the system not tested by SR 2.2.3.1-2. The proposed surveillance for the AMIS consists of actuation of the pull buttons and verification that the PLC sends the isolation signal to the isolation valves. This verification is in the form of verifying the correct electrical signal at the output terminals of the PLC. This verification method is acceptable based on the quarterly test of the AHPIS which verifies the closure (including closure times) for the isolation valves. This test, in conjunction with SR 2.2.3.1-2, ensures that the entire AMIS is operable.

"Verifying" to output simply means verifying the correct isolation signal at the output terminals of the PLC upon actuation of the pull button.

The logic output is not actually used to close the containment valves in this test. However, the logic output is used to actually close the containment valves in SR 2.2.3.1-2.

Actual actuation of the pull buttons is part of the test.

Question 5:
Explain why an annual frequency for performing the functional test of the system actuation devices is appropriate, other systems are tested on a quarterly basis.

Response:
As discussed in the response to Question 4, the only portion of the AMIS that is not tested quarterly is the actuation device and the signal sent from the actuation device to the PLC. The actuation device is simple in design and function with few failure modes. It is no more than a simple mechanical two-position switch, the wiring to the PLC, and the associated terminations. An annual frequency of testing is deemed acceptable based on the simple design and function. Other TSR surveillance for systems with relatively few failure modes such as relief valve and rupture disk inspections are also

conducted on an annual basis. The response to Question 3 also notes that the AMIS has less safety significance than the AHPIS. Those portions of the system that are shared with the AHPIS are tested quarterly under SR 2.2.3.1-2 commensurate with importance to safety. Those portions unique to the AMIS are tested annually commensurate with importance to safety.

Question 6:
There is no need to revise the Compliance Plan to reflect a pull type button instead of the push type button described in Issue 3.

Response:
No response required.

Enclosure 2
GDP 97-0016
4 pages

Revised Technical Safety Requirement and Safety Analysis Report Pages

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

2.2.4 GENERAL LIMITING CONDITIONS FOR OPERATION

2.2.4.13 AUTOCLAVE MANUAL ISOLATION SYSTEM

LCO 2.2.4.13: The autoclave manual isolation system actuation devices shall be operable.

APPLICABILITY: Modes: 4, 5

ACTIONS:

Condition	Required Action	Completion Time
A. The actuation device located in the OMR is inoperable.	A.1 Position an operator such that the "see-and-flee" path provides access to the actuation device located at the cylinder yard crane bay exit. TSR 1.6.2.2d is not applicable.	4 hours
B. The actuation device located at the cylinder yard crane bay exit is inoperable.	B.1 Provide continuous stationing of an operator in the OMR. TSR 1.6.2.2d is not applicable.	4 hours
C. Both feed facility actuation devices inoperable.	C.1 Restore operability to at least one actuating device. TSR 1.6.2.2d is not applicable.	4 hours
D. Required action C not satisfactorily accomplished.	D.1 Place the autoclaves in mode 2. OR D.2 Close containment valves XV-503, CV-504, XV-505, XV-511 and CV-510 on each autoclave. OR D.3 Establish continuous radio communication with the associated Area Control Room in order to ensure immediate capability to actuate the Autoclave Manual Isolation System from the ACR in the event of a release. TSR 1.6.2.2d is not applicable	Immediately Immediately Immediately

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

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2.2.4.13 AUTOCLAVE MANUAL ISOLATION SYSTEM

SURVEILLANCE REQUIREMENTS:

Surveillance		Frequency
SR 2.2.4.13-1	Perform functional test of the system actuation devices.	Annually

BASIS:

The autoclave manual isolation system provides the means to remotely isolate all facility autoclaves in the event of a UF_6 release from a line outside the autoclave containment boundary. The system consists of two local (within the feed facilities) actuation devices located in the OMR and at the cylinder yard crane bay exit (the most likely point of egress from the autoclave area), and one remotely located actuation device in the associated cascade building ACR. Actuating the system will initiate closure of all containment valves for each of the autoclaves within the affected facility. In the event of a UF_6 release from a line outside the autoclave containment boundary, the operator, while exiting the facility in accordance with the "see-and-flee" policy, would actuate the system to isolate the release point from the UF_6 source and limit the amount of material released. Closure of valves XV-503, CV-504, XV-505, XV-511, and CV-510 isolate a cylinder within an autoclave from piping outside the containment boundary thereby eliminating the source of UF_6 available for release. [SAR Section 4.3.1.1.1]

The autoclave manual isolation system closes the same containment valves as those described in TSR 2.2.3.1 for the autoclave high pressure isolation system. Therefore, the operability and surveillance requirements for these valves are included in Section 2.2.3.1. TSR surveillance 2.2.4.13-1 is not required to include the actual closure of all of the containment valves on all autoclaves simultaneously as this would require complete shutdown of the feed facility. The test will be performed by disabling the local actuation devices from the autoclaves not being tested and verifying the appropriate containment logic output from the programmable logic controller for the autoclaves being tested. Testing of all autoclaves in a facility will verify operability of the manual isolation system. Containment valve closure is verified quarterly by the performance of the TSR surveillance requirement 2.2.3.1-2.

3.15.1.1.10 UF_6 pigtails

Q Function

UF_6 cylinder pigtails are designed to safely transfer gaseous UF_6 from the feed cylinder to the enrichment cascade.

See Section 3.2.1 for a description of this system.

Boundary

The system boundary includes:

1. Pigtail assembly, including tubing, adapter, and gaskets.

3.15.1.1.11 Autoclave Manual Isolation System

Q Function

The Autoclave Manual Isolation System is designed to provide a means for the operators to manually isolate, and thereby limit the release of UF6, from a postulated leak in the piping outside the autoclaves in the feed facilities.

Boundary

The system boundary includes:

1. The 3 actuation devices (pull buttons) located in the ACR of the associated cascade facility, the feed facility Operations Monitoring Room (OMR), and at the crane bay exit.

2. Wiring between the actuation devices and the associated logic circuitry.

3. All other components in this system are shared with the Autoclave High Pressure Isolation System and are listed in Section 3.15.1.1.2.

3.15.1.2 Enrichment Facilities

Q systems for the C-331, C-333, C-335, C-337 enrichment cascade, for the C-310 Purge Cascade, and for the C-315 Surge and Waste building are listed below.

3.15.1.2.1 UF_6 Release Detection Systems for Equipment Operating Above Atmosphere

Q Function

Ionization type UF_6 leak detectors are installed in cell housings, cell exhaust ducts, bypass housings, and over B-boosters to detect UF_6 out-leakage from equipment operating above atmospheric pressure. The function of the detectors is to detect a release of UF_6 and to alarm in the ACR.

See Section 3.3.5.9.4 for a description of this system.

Boundary

The system boundary includes:

1. Leak detector heads
2. Signal conditioner
3. Signal cable from the detector heads to the signal conditioner
4. Alarm annunciator in ACR
5. Electrical signal lines, and associated alarm circuitry.