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June 19, 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 97-0102

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001, Certificate Amendment Request - Nuclear Material Controls and
Accountability Scale Usage - Response to TAC No. L32020

Dear Dr. Paperiello:

The purpose of this letter is to provide a response to the NRC's request (TAC No. L32020) for additional information on the Certificate Amendment Request (CAR) dealing with Nuclear Material Control and Accountability (NMC&A) scale usage. 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 the NRC comments, the proposed TSR and SAR pages have been revised as described in the question responses and are included in Enclosure 2. These revised TSR and SAR pages are replacement pages for those previously provided in our Certificate Amendment Request, which was submitted on March 17, 1997 (Reference 2). USEC has reviewed the Enclosure 1 (Detailed Description of Change) and Enclosure 3 (Significance Determination) which were previously transmitted in our March 17, 1997 Certificate Amendment Request and has determined that the conclusions of these enclosures remain valid. As such, only the enclosed TSR pages (TSR pages 2.1-45, 2.2-30 and 2.3-46) and SAR pages (SAR pages 3.2-10a, and 3.6-1) are provided with this response.

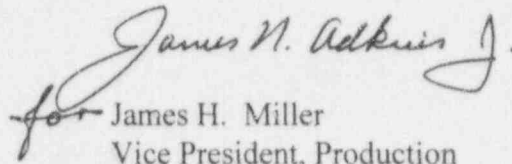
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Dr. Carl J. Paperiello
June 19, 1997
GDP 97-0102 Page 2

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,


for James H. Miller
Vice President, Production

Enclosures: 1. Response to Additional Information Request (TAC No. L32020)
 2. Revised Technical Safety Requirement Pages and Revised Safety Analysis
 Report Pages

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

Dr. Carl J. Paperiello
June 19, 1997
GDP 97-0102 Page 3

References:

- (1) Letter from Merri Horn to Mr. James H. Miller, "Paducah Certificate Amendment Request - Nuclear Material Controls and Accountability Scale Usage (TAC No. L32020)," dated May 20, 1997
- (2) Letter from Mr. James H. Miller to Dr. Carl J. Paperiello, "Paducah Gaseous Diffusion Plant (PGDP) Docket No. 70-7001, Certificate Amendment Request - Nuclear Material Controls and Accountability Scale Usage," dated March 17, 1997 (Serial: GDP 97-0033)

Response to Additional Information
Request (TAC No. L32020)

Issue 1

As written, TSR 2.3.4.23 would allow the use of NMC&A scale ID 11 and 12 for weight verification of 14-ton cylinders. These scales are only calibrated up to 26,000 lbs and, therefore, cannot be used to weigh 14 ton cylinders. Please revise the TSR so that scales authorized to be used for weight verification are calibrated in the appropriate range.

Response:

Enclosure 2 provides a revised TSR which requires that scales authorized to be used for weight verification are calibrated in the appropriate range.

Issue 2

Revise the Safety Analysis Report sections to indicate that the weighing may occur on any operable accountability scale that has been calibrated to an adequate range and tolerance for the item being weighed.

Response:

Enclosure 2 provides revised Safety Analysis Report sections which indicate that the weighing may occur on any operable accountability scale that has been calibrated to an adequate range and tolerance for the item being weighed.

Issue 3

The issue of potential increased cylinder movement needs to be addressed in the amendment package.

Response:

The proposed TSR simply reflects the practice that was in place prior to transition to NRC regulation. [The language of the proposed TSR actually reflects USEC's intention of the current TSR as submitted in the application for certification.] The SAR describes the weighing of feed cylinders at either the feed facility (SAR 3.2.6) or at C-360 (SAR 3.6.1). The movement of cylinders that would be allowed under the attached, proposed TSR (i.e., the movement of cylinders between C-360 and the feed facilities) is not increased such that the accident analysis is invalidated because such movement is made only with cylinders that contain solid UF_6 which do not pose a significant safety hazard as analyzed in the accident analysis. (See SAR Sections 4.3.1.1.2 and 4.3.6.)

**Revised Technical Safety Requirement Pages
and
Revised Safety Analysis Report Pages**

**SECTION 2.1 SPECIFIC TSRS FOR TOLL TRANSFER AND SAMPLING
FACILITY (C-360)**

2.1.4 GENERAL LIMITING CONDITIONS FOR OPERATION

2.1.4.21 SCALES

LCO 2.1.4.21: The C-360 scale(s) used for verification of cylinder weight per LCOs 2.1.4.6, 2.1.4.10, 2.1.4.12, and 2.2.4.4 shall be operable.

APPLICABILITY: Whenever the C-360 scale(s) is/are used for verification of cylinder weight.

ACTIONS:

Condition	Required Action	Completion Time
A. Scale discovered to be inoperable	A.1 Administratively control scale to prevent use.	Immediately

SURVEILLANCE REQUIREMENTS:

Surveillance	Frequency
SR 2.1.4.21-1 Calibrate NMC&A scale ID 22 and 23 (normal position near autoclave and basement at transfer station), to an adequate range and tolerance for the item being weighed, in accordance with NMC&A program requirements.	Annually
SR 2.1.4.21-2 Perform functional test of NMC&A scale ID 22 and 23 (normal position near autoclave and basement at transfer station) (i.e., check operation using test weights in accordance with NMC&A program requirements).	Daily

BASIS:

All cylinder weights are assumed to be within the tolerances assumed in the accident analysis. The calibration and testing of the scale to within the tolerances specified in the NMC&A program (which are much more stringent than the tolerances required by the accident analysis) assured that cylinder weights do not invalidate the accident analysis.

SECTION 2.2 SPECIFIC TSRS FOR UF6 FEED FACILITIES (C-333-A AND C-337-A)

2.2.4 GENERAL LIMITING CONDITIONS FOR OPERATION

2.2.4.12 SCALES

LCO 2.2.4.12: The feed facility scale(s) used for verification of cylinder weight per LCO 2.2.4.4 and 2.1.4.6 shall be operable.

APPLICABILITY: Whenever the feed facility scale(s) is/are used for verification of cylinder weight.

ACTIONS:

Condition	Required Action	Completion Time
A. Scale discovered to be inoperable	A.1 Administratively control scale to prevent use.	Immediately

SURVEILLANCE REQUIREMENTS:

Surveillance	Frequency
SR 2.2.4.12-1 Calibrate NMC&A scale ID 19 (C-333-A) and 21 (C-337-A), to an adequate range and tolerance for the item being weighed, in accordance with NMC&A program requirements.	Annually
SR 2.2.4.12-2 Performs functional test of NMC&A scale ID 19 (C-333-A) and 21 (C-337-A) (i.e., check operation using test weights in accordance with NMC&A program requirements).	Daily

BASIS:

All cylinder weights are assumed to be within the tolerances assumed in the accident analysis. The calibration and testing of the scales to within the tolerances specified in the NMC&A program (which are much more stringent than the tolerances required by the accident analysis) assured that cylinder weights do not invalidate the accident analysis.

SECTION 2.3 SPECIFIC TSRS FOR PRODUCT AND TAILS WITHDRAWAL FACILITIES

2.3.4 GENERAL LIMITING CONDITIONS FOR OPERATION

2.3.4.23 SCALES

LCO 2.3.4.23: The withdrawal facility scale(s) used for verification of cylinder weight per LCOs 2.3.4.15, 2.3.4.17, 2.1.4.6, and 2.2.4.4 shall be operable.

APPLICABILITY: Whenever the withdrawal facility scale(s) is/are used for verification of cylinder weight.

ACTIONS:

Condition	Required Action	Completion Time
A. Scale discovered to be inoperable	A.1 Administratively control scale to prevent use.	Immediately

SURVEILLANCE REQUIREMENTS:

Surveillance		Frequency
SR 2.3.4.23-1	Calibrate NMC&A scale ID 11 and 12 (C-310 positions 3 and 4) and 13, 14, 15, and 16 (C-315 positions 1, 2, 3, and 4), to an adequate range and tolerance for the item being weighed, in accordance with NMC&A program requirements.	Annually
SR 2.3.4.23-2	Perform functional test of NMC&A scale ID 11 and 12 (C-310 positions 3 and 4) and 13, 14, 15, and 16 (C-315 positions 1, 2, 3, and 4) (i.e., check operation using test weights in accordance with NMC&A program requirements).	Prior to placing the cylinder in the withdrawal position.

BASIS:

All cylinder weights are assumed to be within the tolerances assumed in the accident analysis. The calibration and testing of the scale carts to within the tolerances specified in the NMC&A program (which are much more stringent than the tolerances required by the accident analysis) assured that cylinder weights do not invalidate the accident analysis.

3.6 URANIUM HEXAFLUORIDE SAMPLING AND TRANSFER FACILITY

The C-360 Toll Transfer and Sampling Facility provides systems for receiving, sampling, transferring, and shipping cylinders containing UF_6 . This facility provides all operations necessary for the fulfillment of enrichment service contracts with private industry.

3.6.1 Description

Material is not introduced into the enrichment cascade unless assurance is obtained that it meets feed composition and weight specifications. Feed cylinder samples are taken at C-360 along with the weighing required for accuracy to satisfy contractual obligations between the feed supplier and the enrichment facility. The same sampling and weighing requirements also apply to the enriched product. Weighing may occur on any operable accountability scale that has been calibrated to an adequate range and tolerance for the item being weighed.

The types of activities that take place in C-360 are described below.

Preheating

Prior to sampling, an external inspection is performed on each cylinder to detect any physical damage that may have occurred during shipment or in-plant handling. If serious damage is detected, the cylinder is not heated until corrective actions have been taken and verified by a certified inspector.

A cold pressure check is made on each cylinder prior to heating. The pressure within the cylinder is an indication of the purity of the UF_6 in the cylinder. Since UF_6 that meets feed grade specifications is at a pressure less than atmospheric at ambient temperature, higher pressure readings indicate the presence of noncondensable gases such as air or volatile contaminants that could cause overpressure of the cylinder when heated. If the cylinder pressure is greater than 10 psia, the customer is requested to provide instructions to either return the cylinder or remove the noncondensibles by cold burping the cylinder at PGDP.

The cylinder is positioned in one of the four 96-in. diameter containment-type autoclaves in C-360 with the cylinder valve at the 12 o'clock position. The cylinder is connected to a manifold by means of a pigtail fabricated from copper tubing which has passed a hydrostatic test to 400 psig. After pressure testing all connections, the UF_6 cylinder valve is opened, the emergency cylinder valve closer is attached, the autoclave shell is closed, and a hydraulically operated rotating ring seals the movable shell of the autoclave to the fixed head. There are no pigtail hydrostatic retest requirements because plant experience has demonstrated that the pigtails will fail the connection/disconnection leak test due to thread wear and inspection long before there is any structural weakness in the pigtail.

Heating

A thermovent admits steam into the autoclave and bleeds atmospheric air from the shell. Autoclave temperature is controlled by utilizing a cascade control scheme within the feedback loop controller TIC-*17. Information from the autoclave pressure and temperature instruments is continuously used to maintain a constant temperature (see Figure 3.6-1). The steam pressure is limited to a maximum of 8 psig which corresponds to a saturated steam temperature of 235°F. During initial heating, the cylinder is valved to a rupture disc on the manifold header during initial heating to mitigate the possibility of

on the feed line, pressure transmitter PT-507, pressure switches PSH-507 and PSL-507, steam supply isolation valves PV-520, XV-524, and thermovent line block valve XV-565, and associated relays, solenoids, and switches. The pressure between the rupture discs is maintained between 9.5 and 19.5 psia.

- The autoclave opening prevention system is used to prevent the opening of an autoclave when the pressure exceeds 1.25 psig and the autoclave gives a visual indication. System components are the pressure transmitters PT-514 and PT-515, pressure switches PSL-514 and PSL-515, and associated relays and switches.

3.2.6 UF₆ Cylinder Handling

UF₆ feed is delivered to the feed facilities and stored in an interim storage yard until a particular cylinder assay is needed for feed. Cylinders are weighed and checked against fill limits. Weighing may occur on any operable accountability scale that has been calibrated to an adequate range and tolerance for the item being weighed. Each cylinder is inspected externally for any damage prior to placing in an autoclave for feed. All feed cylinders handled are normally empty or contain solid UF₆ and administrative controls prohibit the handling of liquid UF₆ in these areas except in emergency conditions.

3.2.6.1 Cranes

The C-333-A and C-337-A overhead bridge cranes handle only cylinders that are empty or contain solid UF₆. The two cranes in C-333-A and the north crane in C-337-A are 20-ton single-hook, pendant-controlled cranes. The C-333-A west crane hoist has a direct current (dc) rectified shoe brake and an eddy current brake. The (dc) rectified shoe brake is spring actuated in the event of a power loss. The C-333-A east crane hoist and C-337-A north crane hoist utilize a (dc) rectified shoe brake and a mechanical ratchet and pawl backup brake in the case of shoe brake failure. All of the feed facility cranes have a geared up/down limit switch designed to prevent exceeding the limits for lowering or hoisting the load. When activated, the limit switch circuit will stop the motor and activate the shoe brake. To prevent the lifting hook from colliding with the upper crane structure, each crane uses a swivel bar attached to a wire hanging from a paddle-type limit switch on the crane trolley. When the hook comes in contact with the swivel bar, the tension in the wire is released and the crane hoist motor is de-energized. Each of these cranes uses an H-frame-type sling to lift the cylinders with its single hook.

The south crane at C-337-A is a 20-ton double-block, radio/pendant controlled crane with a lifting beam specifically designed for UF₆ cylinders. The crane hoist has two direct current (dc) shoe brakes and one eddy current brake. One hoist shoe brake is used as a holding brake, and the other shoe brake serves as an emergency brake. These brakes are spring actuated in the event of a power loss. A geared up/down limit switch is connected to the cable drum for use in lowering or hoisting the load. When activated, the geared limit switch circuit will stop the motor and activate the brakes. This switch will reset automatically once the motor is reversed. Each crane is equipped with two paddle-type limit switches that serve to prevent a lifting beam to upper crane structure collision. Each paddle-type limit switch has a weight that hangs on a wire from the crane trolley. If the lifting beam comes in contact with one of these weights, the tension in the wire is released and the crane hoist motor is de-energized.