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June 26, 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 97-0103

Paducah Gaseous Diffusion Plant (PGDP)

Docket No. 70-7001

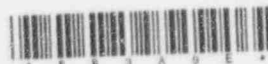
Certificate Amendment Request-Change to Compliance Plan Issue 38, High-Volume Ambient Air Samplers

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 Paducah, Kentucky Gaseous Diffusion Plant (GDP). This certificate amendment request revises one of the action items in the Plan of Action and Schedule specified in the DOE/ORO-2026, Plan for Achieving Compliance with NRC Regulations at the Paducah Gaseous Diffusion Plant (Compliance Plan), Revision 3, Change A, for Issue 38, High-Volume Ambient Air Samplers.

This action item requires USEC to perform a comparison of the Effective Dose Equivalent (EDE) calculated for inclusion in the annual National Emission Standards for Hazardous Air Pollutants (NESHAP) report using 1996 release data and the EDE calculated from measured data gathered by the high-volume ambient air samplers. The computer model used to calculate the EDE for the NESHAP report calculates the air concentrations of radionuclides based on emission data, meteorological data, and a Gaussian plume model. The dose from inhalation and immersion is calculated directly from the air concentrations and the direct radiation and ingestion dose is calculated based on algorithms for calculating ground deposition, uptake into different foodstuffs, and consumption of foodstuffs from the vicinity of PGDP. The ambient air samplers measure the radionuclide levels in air directly. The estimation of ingestion and direct radiation doses from this data, on the same basis as the computer model, is not feasible.

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Dr. Carl J. Paperiello
June 26, 1997
GDP 97-0103 Page 2

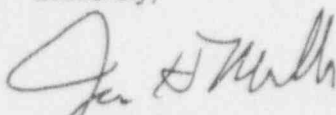
The goal of the Compliance Plan issue is to provide an independent check on the PGDP method of demonstrating compliance with 10 CFR 20 limits regarding the dose to members of the public based on the NESHAP report calculations, by comparing them to measured data from the ambient air samplers. The computer model does calculate an air concentration of radionuclides at specified locations which is used for subsequent dose calculations. A comparison of these calculated air concentrations to the concentrations measured by the ambient air samplers fulfills this goal. The proposed revision to the Compliance Plan action calls for a comparison of estimated concentrations of radionuclides at the ambient air sampling locations calculated using the 1996 release data and the concentrations measured by the high-volume ambient air samplers in 1996 in lieu of the EDE comparison currently specified.

Enclosure 1 to this letter provides a detailed description and justification for the proposed change. Enclosure 2 contains insert and removal instructions and revised pages for Compliance Plan Issue 38 and the SAR. The revised 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 changes to these SAR pages. Enclosure 3 contains the basis for USEC's determination that the proposed change associated with this certificate amendment request is not significant.

This proposed certificate amendment request affects a Compliance Plan commitment due June 30, 1997. USEC will submit a report containing the comparison proposed in this amendment request by that date. USEC requests NRC review and approval at your earliest convenience. The amendment should become effective upon issuance.

There are no new commitments made in this letter. Any questions related to this subject should be directed to Ms. Lisamarie Jarriel at (301) 564-3247.

Sincerely,



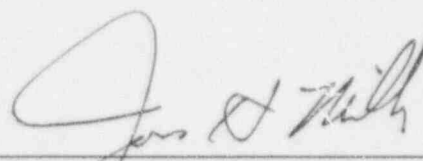
James H. Miller
Vice President, Production

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 Paducah 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 26 day of June, 1997.


Notary Public
BERNICE R. LAWSON
NOTARY PUBLIC STATE OF MARYLAND
Certificate No. 10,000,000, Montgomery County
Commission expires August 1, 1997

**United States Enrichment Corporation (USEC)
Proposed Certificate Amendment Request
High-Volume Ambient Air Samplers
Detailed Description of Change**

Issue 38 of the Compliance Plan commits USEC to a comparison of the Effective Dose Equivalent (EDE) to the most exposed member of the public resulting from plant operations as estimated using two independent methods. The first method is described in Section 5.1.3 of the SAR and entails the use of emission estimates, meteorological data, and computer modeling to estimate the EDE. The second method is the calculation of the EDE based on the levels of radionuclides in air measured by the ambient air samplers.

The computer model used in the calculations determines the EDE by using emission data, meteorological data, and a Gaussian plume model to determine air concentrations of radionuclides at receptor locations. The dose from inhalation and immersion is calculated directly from the air concentrations. Deposition of radionuclides on ground surfaces is calculated by the program from the air concentrations and the direct radiation dose is determined from the ground deposition. The dose due to ingestion is based on assumptions concerning the distribution of food production within the assessment area and the uptake of radionuclides into different foodstuffs including vegetables, beef, and milk. The result is that the ingestion and direct radiation doses are calculated indirectly.

The ambient air samplers measure the radionuclides levels in air directly. The estimation of ingestion and direct radiation doses from this data, on the same basis as the computer model, is not feasible. The ingestion dose is a significant component of the computer model and therefore it is not possible to directly compare the EDEs estimated by the model to those estimated from the ambient air data.

The goal of the Compliance Plan issue is to provide an independent check on the PGDP method of demonstrating compliance with 10 CFR 20 limits regarding the dose to members of the public (as estimated from plant emissions data) using the data from the ambient air samplers. The computer model does calculate an air concentration at the specified location which is used for subsequent dose calculations. A comparison of this calculated air concentration to the concentration measured by the ambient air samplers fulfills this goal.

Proposed Certificate Amendment Request Paducah Gasco's Diffusion Plant Letter GDP 97-0103 Removal/Insertion Instructions	
Remove Pages	Insert Pages
SAR Volume 2	
Chapter 5.1 5.1-14a/5.1-14b	Chapter 5.1 5.1-14a/5.1-14b
Compliance Plan	
Issue 38 Pages ½, 3	Issue 38 Pages ½, 3

exposed person and to the entire population residing within 80 km (50 miles) of the plant. The dose calculations are made using the CAP-88 package of computer codes. This package contains the most recently approved versions of the AIRDOS-EPA and DARTAB computer codes and the ALLRAD88 radionuclide data file. The AIRDOS-EPA computer code implements a steady-state, Gaussian plume, atmospheric dispersion model to calculate concentrations of radionuclides in the air and on the ground. It uses Regulatory Guide 1.109 (October 1988) food-chain models to calculate radionuclide concentrations in foodstuffs (e.g., vegetables, meat, and milk) and subsequent intakes by individuals.

Inputs to the computer model include actual and estimated radionuclide emissions. The uranium isotopes ^{235}U and ^{238}U are determined from isotopic analysis. ^{234}U is calculated based on the ^{235}U content. Other radionuclides— ^{99}Tc , ^{230}Th , ^{237}Np , and ^{239}Pu —are included when the analysis of emissions or of inventories used in the emission estimates indicate their presence.

Other inputs include distances and directions to the nearest receptors and the latest available wind rose data from either the on-site meteorological monitoring station or from the latest National Weather Service Station.

The default values for rural sources in CAP-88 are used for the consumption of meat, milk, and vegetables.

Radionuclide emissions used to determine the CEDE are quantified by continuous monitoring, periodic sampling, or estimation methods set forth in 40 CFR Part 61, Appendix D (NESHAPS) as described in Section 5.1.2.1.

Annualized meteorological data used in the calculations consist of joint frequency stability array (STAR) distributions of wind direction, wind speed, and atmospheric stability that is prepared from data collected from the site meteorological tower or equivalent systems.

In 1994, as a result of normal USEC operations at the PGDP, the calculated effective dose equivalent (EDE) due to airborne radionuclide effluents for the maximally exposed individual located approximately 2,400 m north of the plant site was 0.003 mrem. Two unplanned releases in 1994 added an estimated 0.013 mrem to the calculated EDE for a total of 0.016 mrem. However, ambient air samples obtained during these releases did not indicate the presence of any significant contamination above normal levels at the boundary fence and it is likely that the actual off-site dose resulting from the unplanned releases was considerably less than that estimated by the CAP-88 calculations.

The calculated CEDE from airborne effluents was 0.011 person-rem. The two unplanned releases resulted in an additional 0.024 person-rem to the calculated CEDE for a total of 0.035 person-rem.

5.1.3.2 Waterborne Radionuclides

Water is sampled at USEC-leased site water outfalls and at selected surface water locations. There are no intakes of surface water for domestic or routine livestock watering purposes in Big or Little Bayou Creek. There are also no water intakes on the Ohio River within 15 miles downstream of the plant. As there is no exposure pathway associated with any of the surface water streams to which plant effluents are discharged, no dose from liquid effluent releases is calculated.

5.1.3.3 Direct Radiation

As described in Section 5.1.2.3, the site monitors direct radiation levels at several points within the vicinity of and remote from the plant. There are two monitoring points, EG5 and EG6 (see Figure 5.1-19), near the location of the DOE site reservation boundary that is the boundary between the controlled area (the DOE reservation) and unrestricted areas as described in the Emergency Plan. The direct radiation levels at these points are not statistically higher than at the remote background locations (EG14 and EG15). Therefore, there is no discernable dose at the boundary of the unrestricted area due to direct radiation from USEC operations.

5.1.3.4 Radionuclide Effluent Data

Radionuclide effluent data are summarized in the Paducah Environmental Compliance Status Report.

5.1.4 Items Addressed by Compliance Plan

This section is implemented as described with exception(s) as listed below. The listing of the exception(s) also contains a brief description of what is currently in place at the plant. The Compliance Plan provides a description of the exceptions (noncompliances), a justification for continued operation, a description of the actions to be taken to achieve compliance and the schedule for completion of those actions.

5.1.4.1 Trending of Environmental Data

Some environmental data are not currently trended. Procedures to implement the trending activities will be developed as part of the procedure upgrades within the nuclear safety upgrade program.

5.1.4.2 Establishment of Ambient Air Monitoring Action Levels

The new high-volume air sampling system has been in operation since August 1995. Sufficient data to establish baseline radionuclide concentrations at the stations has not been obtained.

Action levels for ambient air radionuclide levels cannot be established at this time due to the lack of data. Action levels for the samplers will be established when sufficient data and operating experience have been obtained.

A comparison of the ambient air radionuclide concentrations calculated from the 1996 annual emission estimates to the high volume air sampling data will be done in 1997 for the 1996 data.

High-Volume Ambient Air Samplers

REQUIREMENTS

10 CFR 20.1302(a)—“(a) The licensee shall make or cause to be made, as appropriate, surveys of radiation levels in unrestricted and controlled areas and radioactive materials in effluents released to unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public in §20.1301.”

10 CFR 76.60(d)(2)—“The Nuclear Regulatory Commission will use the following requirements for certification of the Corporation for operation of the gaseous diffusion plants: . . . (d) The Corporation shall comply with the applicable provisions of 10 CFR part 20, ‘Standards For Protection Against Radiation’ . . . (2) The Corporation shall comply with the requirements in this part not later than the date of the Director’s decision on the initial certificate of compliance.”

COMMITMENT

Source: Safety Analysis Report

5. Nuclear Safety Programs

5.1 Environmental Protection—Radiological

5.1.4 Compliance Plan Items

5.1.4.2 Establishment of Ambient Air Monitoring Action Levels

[Rev. 3, 5/31/96]

“Action levels for the [high-volume ambient air] samplers will be established when sufficient data and operating experience have been obtained.

A comparison of the ambient air radionuclide concentrations calculated from the 1996 annual emissions estimates to the high[-]volume air sampling data will be done in 1997 for the 1996 data.”

DESCRIPTION OF NONCOMPLIANCE

The new high-volume air sampling system has been in operation since August 1995. Sufficient data to establish baseline radionuclide concentrations at the stations have not been obtained. Action levels to trigger isotopic analysis for ambient air radionuclide levels cannot be established at this time due to the lack of data.

The majority of plant emissions are estimated on an annual calendar basis for inclusion in the annual NESHAP (National Emission Standards for Hazardous Air Pollutants) report, as described in PGDP’s NESHAP compliance plan. Because the high-volume ambient air samplers were not put into service until August, 1995, a comparison of the estimated concentrations of radionuclides at the sampler locations calculated from the 1996 annual emission estimates to measured concentrations from the high-volume air samplers will not be available until 1997.

JUSTIFICATION FOR CONTINUED OPERATION

Action Levels

It is expected that data from six months operation of the high-volume ambient air samplers will be sufficient to provide a basis for establishing meaningful action levels. PGDP is currently performing isotopic analysis of the samples from the high-volume ambient air samplers as a part of the baselining process. Once the baselining process has been completed and action levels have been established, PGDP will perform these analyses only when the gross alpha or beta levels for the samples exceed the established action levels.

Comparison of Calculated and Measured Radionuclide Concentrations

PGDP estimates actual emissions of radionuclides using a combination of methods, in accordance with the NESHAP compliance plan and the commitments in the Application for Certification, Rev. 1, September 15, 1995. Using these methods, the EDE to the maximally exposed individual from operations in 1994 was determined to be 0.003 mrem. Two unplanned releases during that year were estimated to contribute an additional EDE of 0.013 mrem for a total estimated dose of 0.016 mrem to the maximally exposed individual. Because the EDEs from PGDP are so small in comparison to background, attempts to compare the estimated EDEs from PGDP with data from the low-volume air samplers have not proven meaningful. It is hoped that, once the high-volume air samplers have been baselined, they will provide data that can be meaningfully compared with the estimated concentrations of radionuclides at the sampler locations. Since the baselining of the high-volume air samplers is expected to take six months, the earliest that comparisons can be made between the estimated annual concentrations of radionuclides at the sampler locations and the sampling data is after calendar year 1996. These comparisons will be made for calendar year 1996 data.

The primary reason for comparing the estimated radionuclide concentrations with the air sampler data is to confirm the accuracy of the methods used for estimating EDEs. Although confirmation of the accuracy of the methods used to estimate EDEs is desirable, the quantity of radioactive effluent from PGDP has been, and is expected to remain, sufficiently low that the actual EDE to the maximally exposed individual would be well within regulatory limits even if the estimation methods were in error, in a nonconservative direction, by two orders of magnitude. There is no reason to believe that the estimation methods have errors or uncertainties that are anywhere near this large. Therefore, the one-year delay in comparing estimated radionuclide concentrations to air sampler data does not pose an unacceptable risk to the public health and safety or the environment.

PLAN OF ACTION AND SCHEDULE

Action Levels

The data obtained from the first six months operation of the new high-volume ambient air samplers will be reviewed in May 1996. By May 30, 1996, baseline ambient air radionuclide levels for routine plant operations, based on the 6-month data, will be established for each high-volume ambient air sampling location. Using the baseline levels, action levels will be established by May 30, 1996 for requiring additional analyses and, if necessary, investigation of the cause for exceeding an action level. [Completed]

Comparison of Calculated and Measured Radionuclide Concentrations

In 1997, a comparison of the estimated concentrations of radionuclides at the ambient air sampling locations calculated using 1996 release data and the concentrations measured by the high-volume ambient air samplers in 1996 will be performed. The comparison will be provided to the NRC at the time of the PGDP submission of its 1996 NESHAP report to the DOE (i.e., June 30, 1997).

SUMMARY OF REQUIREMENTS, COMMITMENTS, AND NONCOMPLIANCES

Issue: High-Volume Ambient Air Samplers	
Code of Federal Regulations	Part
Title 10	20.1302(a), 76.60(d)(2)
Application Commitment	Section
Safety Analysis Report	5.1.4.2
Technical Safety Requirements	3.16
Application Noncompliance Statement	Section
Safety Analysis Report	5.1.4.2

**United States Enrichment Corporation (USEC)
Proposed Certificate Amendment Request
High-Volume Ambient Air Samplers
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 to the Compliance Plan does not affect any of the plant's safety, safeguards or security programs. The proposed change will not change any method currently in place for emission sampling or the sampling of the environment in the vicinity of the plant. The proposed change will not change the method of demonstrating compliance with limits on the radiological dose to members of the public. This change involves only a calculation for the comparison of ambient air sampling data with the existing, approved emission measurement and estimation program. Therefore, there is no significant decrease in the effectiveness of the plant's safety, safeguards or security programs.

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-1) specifically address the environmental monitoring program. Thus, the proposed change will have no impact on any of the Conditions to the Certificate of Compliance.

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

The Plan of Action and Schedule for Issue 38 of the Plan for Achieving Compliance with NRC Regulations at Paducah Gaseous Diffusion Plant, requires a comparison of effective dose equivalents (EDEs) to the most exposed member of the public resulting from plant operations as estimated by two independent methods by June 30, 1997. As described in Enclosure 1, the proposed change will still provide an independent check on the PGDP method of demonstrating compliance with 10 CFR 20 limits regarding the dose to members of the public (as estimated from plant emissions data) using the data from the ambient air samplers. Therefore, this does not represent a significant change to the approved Compliance Plan.

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

The proposed change will not result in any physical change to the plant or any change to plant operation. The environmental monitoring program only measures the results of any planned or unplanned releases. Therefore, the proposed change will have no effect on the probability of occurrence or consequences of previously evaluated accidents.

5. No New or Different Type of Accident

The proposed change will not result in any physical change to the plant or any change to plant operation. The environmental monitoring program only measures the results of any planned or unplanned releases. Therefore, no new or different type of accident could result from this change.

6. No Significant Reduction in Margins of Safety

There is no margin of safety associated with the environmental monitoring program. The proposed change will not result in any physical change to the plant or any change to plant operation. The environmental monitoring program only measures the results of any planned or unplanned releases. Therefore, the proposed change will not result in any reduction in margins of safety.

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

The proposed change will not result in any changes to any of the programs or plans contained in the certificate application. As described in Enclosure 1, the proposed change will still provide an independent check on the PGDP method of demonstrating compliance with 10 CFR 20 limits regarding the dose to members of the public (as estimated from plant emissions data) using the data from the ambient air samplers. Therefore, the proposed change will result in no significant decrease in 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 proposed change to the Compliance Plan does not affect any of the plant's safety, safeguards or security programs. The proposed change will not result in any physical change to the plant or any change to plant operation. The proposed change will not change any method currently in place for emission sampling or the sampling of the environment in the vicinity of the plant. The proposed change will not change the method of demonstrating compliance with limits on the radiological dose to members of the public. This change involves only a calculation for the comparison of ambient air sampling data with the existing, approved emission measurement and estimation program. Therefore, the proposed change does not result in undue risk to 1) public health and safety, 2) common defense and security, and 3) the environment.

9. No change in the Types or Significant Increase in the Amounts of Any Effluents that May be Released Offsite

The proposed change will not result in any physical change to the plant or any change to plant operation. The environmental monitoring program only measures the results of any planned or unplanned releases. Therefore, the proposed change will result in no change in the types or significant increase in the amounts of any effluents that may be released offsite.

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

The proposed change will not result in any physical change to the plant or any change to plant operation. The environmental monitoring program only measures the results of any planned or unplanned releases. Therefore, the proposed change will result in no significant increase in individual or cumulative occupational radiation exposure.

11. No Significant Construction Impact

The proposed change does not involve a plant modification. Therefore, there is no significant construction impact.

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

The proposed change will not result in any physical change to the plant or any change to plant operation. The environmental monitoring program only measures the results of any planned or unplanned releases. Therefore, the proposed change will result in no significant increase in the potential for radiological or chemical consequences from previously analyzed accidents.