

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 70-7001
Certificate No: GDP-1

Report No: 70-7001/98007(DNIMS)

Facility Operator: United States Enrichment Corporation

Facility Name: Paducah Gaseous Diffusion Plant

Location: 5600 Hobbs Road
P.O. Box 1410
Paducah, KY 42001

Dates: March 16-20, 1998

Inspector: C. A. Blanchard
Fuel Cycle Inspector

Approved By: Patrick L. Hiland, Chief
Fuel Cycle Branch
Division of Nuclear Materials Safety

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EXECUTIVE SUMMARY

United States Enrichment Corporation
Paducah Gaseous Diffusion Plant
NRC Inspection Report 70-7001/98007(DNMS)

Operations

- The inspector determined that the initial Area Control Room classroom and on-the-job training for cascade operators appeared adequate to ensure a proper level of staff knowledge and to meet regulatory requirements. (Section O5.1)
- The inspector identified apparent inconsistencies between the certificatee's training program for first-line managers and regulatory requirements, and between the apparent procedural requirements for first-line manager training and the actual training provided. Resolution of the apparent inconsistencies will be tracked as an Unresolved Item. (Section O5.2)
- The inspector observed a weakness in the preparation of meeting minutes for past operations training review group meetings. The certificatee took timely action to correct the weakness. The inspector attended a meeting of the operations training review group which was conducted in accordance with the governing procedure. (Section O6.1)

Training

- The inspector concluded that the certificatee's training organizational structure was sufficient to facilitate the proper training of plant staff responsible for the safe operation, maintenance, and modification of the gaseous diffusion plant. (Section I1.1)
- The inspector determined that a training initiative to develop system descriptions provided operators with useful reference and operating information for the freezer sublimator system. The inspector also concluded that the certificatee's task analysis of seal operations was effective in identifying areas for training improvements. (Section I1.2)

Report Details

I. Operations

O5.0 Operator Training and Qualification

O5.1 Cascade Operator Training Program

a. Inspection Scope (88010)

The inspector reviewed initial operator training course materials to verify compliance with regulatory requirements. In addition, the inspector interviewed new operators to assess the effectiveness of the initial operator training program.

b. Observations and Findings

The inspector reviewed the initial training program for area control room (ACR) operators. The program consisted of both classroom and on-the-job-training (OJT) and provided training in the fundamentals, basic principles, systems, procedures, and emergency response activities. Qualification as an ACR operator typically required the completion of:

- approximately 240 hours of course material pertaining to basic cascade operations;
- over four months of OJT and self-study pertaining to basic cascade operations;
- approximately 40 hours of ACR-specific course materials; and
- a minimum of one month of OJT and self-study pertaining to ACR operations.

The inspector reviewed the training records of five new ACR operators. The inspector noted that the new ACR operators each had at least a two-year associate's degree in science or mathematics. The new ACR operators' formal education exceeded the minimum requirement stated in the certificatee's Administrative Guide KY/T-31, "Administrative Guide for the Cascade Training Program." The Administrative Guide required either a high school diploma, with two credits in mathematics and two credits in science or equivalent, as a minimum level of formal education. The inspector also noted that each of the new ACR operators had demonstrated successful completion of training courses through testing or examination.

The inspector reviewed the ACR operator training module terminal and enabling objects and concluded that the materials addressed the knowledge required to safely operate the equipment or systems. Additionally, the inspector noted that the ACR operator tests and exams included questions related to the training module terminal and enabling objectives. For example, the final exam for Training Module 601.01.40, Revision 3, "Freezer/Sublimator Operation," included a minimum of two questions for each enabling and terminal objective.

The inspector discussed the effectiveness of operator training with five new ACR operators. Four of the five operators were hired directly into the operator training program with no previous cascade knowledge. During discussions, the operators indicated that the extensive classroom and OJT prepared them to safely operate cascade

systems and equipment. In addition, the new operators indicated that experienced operators readily provided equipment and system operations information when questioned by the new operators. The operators also offered some suggestions for improvement in the training program related to the sequencing of classes and the use of dedicated mentors.

c. Conclusions

The inspector determined that the initial Area Control Room classroom and on-the-job training for cascade operators appeared adequate to ensure a proper level of staff knowledge and to meet regulatory requirements.

O5.2 Cascade First-Line Manager Training Program

a. Inspection Scope (88010)

The inspector reviewed the cascade first-line manager (FLM) training program for compliance with regulatory requirements. In addition, the inspector discussed the effectiveness of the initial cascade operator training program with some FLMs.

b. Observations and Findings

The inspector reviewed the certificatee's training requirements for cascade FLMs. The certificatee utilized Administrative Guide KY/T-31, Revision 1, "Administrative Guide for the Cascade Operator Training Guide," to define and implement the regulatory requirements for training cascade operators and FLMs. The Administrative Guide was issued February 12, 1998.

The cascade FLM training requirements were stated in Section 4, of the Administrative Guide. Item 4.2 stated: "All personnel will work with an OJT qualified Operator/FLM when performing JPMs/OJTs. In the case of a qualified position/area, (ACR or recirculating cooling water (RCW)), the operator will complete the classroom and OJT, then will work a minimum of 80 hours in the position/area with a qualified operator." Item 4.3 of the Administrative Guide stated: "If the FLM has responsibilities for a qualified area, he/she must satisfactorily complete the qualification training for that area." The inspector noted that the wording of the two items was not clear as to application of the requirements to either or both cascade operators and FLMs. In addition, the inspector noted that the primary focus of the document appeared to be cascade operator training, not FLM training.

The inspector discussed the Administrative Guide requirements with operations and training management. The inspector was informed that operations management required all cascade FLMs to complete the basic cascade operations classroom training. In addition, cascade FLMs responsible for oversight of RCW activities were required to complete the RCW classroom training. However, cascade FLMs responsible for oversight and direction of ACR activities were not required to complete the ACR classroom training. Management indicated that the cascade and RCW activities were treated as "areas," while, the ACR was considered an operator position. Therefore, Administrative Guide, Item 4.3 did not require FLMs, responsible for both cascade and ACR activities, to attend the ACR classroom training. In addition, operations

management did not consider the FLMs as individuals responsible for operating, maintaining, or modifying the gaseous diffusion plant.

The inspector also reviewed Revision 0, of the Administrative Guide to determine if FLMs were previously required to take ACR classroom training. Revision 0, of the Administrative Guide stated, "If the first-line manager has responsibilities for a qualified facility, the requirement to satisfactorily complete the qualification training for that facility is mandatory." Although this item appeared to require the FLMs to complete all the operator training required to be qualified for the facility, the inspector noted that the term "qualified facility" was not defined. The inspector also noted that each of the training modules identified first-line supervisors as a target audience. However, the Administrative Guide included a statement that appeared to indicate that FLMs were only required to receive general cascade operations training.

As the end of the inspection, the certificatee was researching the safety basis for changes made to the Administrative Guide between Revisions 0 and 1, and the adequacy of the current training program for cascade first-line managers that supervise area control room activities. In addition, the certificatee was evaluating the Safety Analysis Report definition of those plant staff authorized to operate, maintain, or modify the plant to ensure the description was consistent with regulatory requirements and was appropriately implemented in current operations and training procedures. The certificatee's resolution of the above stated issues will be tracked as an **Unresolved Item ((URI) 070-7001/98007-01)**.

The inspector discussed the certificatee's continuing operator training program with FLMs and operators. The inspector noted that Administrative Guide KY/T-31, Revision 1, required that continuing training include a combination of classroom and/or OJT, based on operational needs to maintain and improve job-related knowledge and skills. Historically, the requirement for continuing training was met through a semi-annual, 40-hour training class. FLMs and operators indicated that previous continuing training normally covered nuclear criticality safety (NCS) issues, infrequently used segments of the cascade, a review of changes in company policies and procedures, and responding to off-normal operating conditions. Operations management currently fulfilled the requirement for continuing training using required daily reading and operational drills. The inspector noted that the training review groups (TRGs) developed recommended subjects for both the daily readings and operational drills. Although the inspector did not identify any recent operational events that were not included in the continuing training, the basis for the subjects chosen by the TRG for inclusion in the continuing training was not readily evident.

c. Conclusions

The inspector identified apparent inconsistencies between the certificatee's training program for first-line managers and regulatory requirements, and between the apparent procedural requirements for first-line manager training and the actual training provided. Resolution of the apparent inconsistencies will be tracked as an Unresolved Item.

O6 Operations Organization and Administration

O6.1 Operations Training Review Group

a. Inspection Scope (88010)

The inspector reviewed operations training review group (TRG) meeting minutes and attended an operations TRG meeting to compare the activities observed with the requirements stated in Procedure CP2-TR-TR1032, "Conduct of Training."

b. Observation and Findings

The inspector reviewed operations TRG meeting minutes from March 3, 1997, to March 11, 1998. The inspector identified that the meeting minutes did not clearly specify actions to be taken, responsible persons for the actions identified, or final decisions for previously identified actions. The inspector discussed this observation with the training manager and operations TRG chairperson. On March 17, the operations training manager issued Problem Report (PR)-98-1688, identifying the concern and proposed corrective actions to improve the completeness of the meeting minutes.

On March 18, the inspector attended an operations TRG meeting. The inspector noted that the meeting was attended by the required personnel and included a discussion of those items specified by the governing procedure. The inspector observed that the TRG members appropriately questioned proposed action items and that positive communications among the members was promoted by the TRG chairperson. The inspector also noted that the chairperson was knowledgeable of the issues discussed. Later on March 18, minutes for the meeting were issued which were consistent with the corrective actions discussed in the problem report filed on March 17.

c. Conclusions

The inspector observed a weakness in the preparation of meeting minutes for past operations training review group meetings. The certificatee took timely action to correct the weakness. The inspector attended a meeting of the operations training review group which was conducted in accordance with the governing procedure.

O8 Miscellaneous Operations Issues (92702)

O8.1 (Closed) IFI No. 70-7001/98005-02: Administrative control to ensure that employees receive nuclear criticality safety refresher training.

The certificatee's training manager required the development of a training module (with a unique training module number) for each functional area that solely addressed nuclear criticality safety refresher training. With the unique nuclear criticality safety refresher training module number, the certificatee could utilize the training computer database to ensure employees were current with required training. The inspector concluded that the certificatee's actions appeared adequate to address the previous weakness. The inspector had no further questions and this item was considered closed.

II. Training

11.0 Conduct of Training Activities

11.1 Training Program Organizational Structure

a. Inspection Scope (88010)

The inspector reviewed the certificatee's training program structure to verify that the program facilitated the proper training of individuals relied upon to operate, maintain, or modify the gaseous diffusion plants (GDPs).

b. Observations and Findings

The inspector noted that 10 CFR 76.95, "Training," required the certificatee to establish, implement, and maintain a training program for individuals relied upon to operate, maintain, or modify the GDPs in a safe manner. In addition, 10 CFR 76.95 required the certificatee to develop the training program using a systems approach to training (SAT). Technical Safety Requirement, Section 3.4, "Training," and SAR, Section 6.6, "Training," specify the SAT elements required for the training program to comply with 10 CFR 76.95.

The inspector reviewed the training program structure and discussed the program with the training manager. The inspector was informed that the training organization was based on a centralized training staff that reported to the training manager. The centralized training staff consisted of technical trainers, administrative personnel and mid-level managers. The centralized staff were responsible for assisting functional managers in the design, development, implementation, and auditing of training programs for the areas listed in SAR, Section 6.6.1, "Training Program Organization and Administration." The training staff also provided training hardware, ensured that the SAT process was followed for programs identified in SAR, Section 6.6, and provided oversight for regulatory training requirements to the functional line managers. Each functional manager was responsible for coordinating training development and implementation for the cognizant functional area. The functional managers used a training review group to develop and implement cognizant training programs. The training review groups typically identified required initial, on-the-job, and continuing training for individuals relied upon to safely operate, maintain or modify the plant.

c. Conclusions

The inspector concluded that the certificatee's training organizational structure was sufficient to facilitate the proper training of plant staff responsible for safe operation, maintenance, and modification of the gaseous diffusion plant.

11.2 Training Initiatives

a. Inspection Scope (88010)

The inspector reviewed current training initiatives being implemented to enhance the performance of operations personnel.

b. Observations and Findings

During discussions with training organization personnel, the inspector was informed of two initiatives undertaken to improve the operator performance. The initiatives were the development of safety system descriptions and a task analysis for cascade seal operations.

The inspector discussed the development of system descriptions with a technical training specialist. The inspector was informed that completed system descriptions described and illustrated how "Quality," "Augmented Quality," and "Augmented Quality-NCS" systems and equipment operated and functioned within the enrichment process. The training staff also expected that the system descriptions would assist operators in understanding how and why system adjustments affected the enrichment process and would facilitate the development of operating procedures and training modules. The inspector reviewed system description SD-001, "Freezer/Sublimator System Description," issued on October 28, 1996. The document described the following freezer/sublimator system aspects:

- major components and functions;
- distribution of the process control system;
- causes for system alarms;
- the high-high weight safety system; and
- the safety system periodic surveillance test.

The inspector verified that the information presented in the system description was adequately incorporated into the associated operations training module (Operation Training Module 601.01.40, "Freezer Sublimator Operation"). The inspector noted that several ACR operators indicated that the system descriptions were useful tools for learning and understanding the enrichment processes and for evaluating emergent operational problems.

The inspector also discussed the seal task analysis with the operation training manager. The task analysis was performed as a first step towards increasing operator performance beyond the current level and the level that might normally be achieved following operator retraining using the current training module. The task analysis included a systematic comparison of the current training module, Operation Training Module 601.01.12, Revision 2, "Seal Instrumentation," against the operator-defined informational needs to properly control and maintain cascade seals. Results of the task analysis indicated that the operators required a greater understanding of the "A" and "B" process seal systems, including the seal feed, seal exhaust, and atmospheric seal systems.

The inspector noted that a draft training module, "Operate Process Seals," developed as a result of the task analysis appeared to address, in sufficient detail, the training objectives identified during the seal task analysis. The operations training manager expected that all ACR operators would begin receiving training, using the new module, in May 1998.

c. Conclusions

The inspector determined that a training initiative to develop system descriptions provided operators with useful reference and operating information for the freezer sublimator system. The inspector also concluded that the certificatee's task analysis of seal operations was effective in identifying areas for training improvements.

IV. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of the plant staff and management at the conclusion of the inspections on March 20, 1998. The plant staff acknowledged the findings presented.

The certificatee did not identify any of the information discussed at the meeting as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

United States Enrichment Corporation (USEC)

*J. Labarraque, Safety, Safeguards and Quality Manager

Lockheed Martin Utility Services (LMUS)

*S. Polston, Plant General Manager

*S. Penrod, Operations Manager

*L. Jackson, Nuclear Regulatory Affairs Manager

*A. Canterbury, Maintenance Manager

*C. Hicks, Site and Facilities Support Manager

*S. Brawner, Training Manager

*Denotes those present at the March 20, 1998, exit meeting

Other members of the plant staff were also contacted during the inspection period.

INSPECTION PROCEDURES USED

IP 88010 Operator Training and Re-Training

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

70-7001/98007-01	URI	The certificatee's action to specify how the training program for first-line managers met regulatory and plant procedural requirements.
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Closed

70-7001/98005-02	IFI	Administrative control to ensure that employees receive nuclear criticality safety refresher training.
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LIST OF ACRONYMS USED

ACR	Area Control Room
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Materials Safety
F/S	Freezer/Sublimator
FLM	First-Line Manager
GDP	Gaseous Diffusion Plant
IFI	Inspection Followup Item
LMUS	Lockheed Martin Utility Services
NCS	Nuclear Criticality Safety
NRC	Nuclear Regulatory Commission
OJT	On-the-job-training
PDR	Public Document Room
RCW	Recirculating Cooling Water
SAR	Safety Analysis Report
SAT	System Approach to Training
TRG	Training Review Group
TSR	Technical Safety Requirements
UF ₆	Uranium Hexafluoride
URI	Unresolved Item
USEC	United States Enrichment Corporation