U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.	70-7002
Certificate No.	N/A
Observation Report No.	70-7002/96002 (DNMS)
Applicant:	United States Enrichment Corporation
Facility Name:	Portsmouth Gaseous Diffusion Plant
Location:	3930 U. S. Route 23 South P. O. Box 628 Piketon, OH 45661
Dates:	March 5, 1996 through April 29, 1996
Inspectors:	C. R. Cox, Senior Resident Inspector F. D. Brown, Resident Inspector
Approved By:	Gary L. Shear, Chief Fuel Cycle Branch

EXECUTIVE SUMMARY

United States Enrichment Corporation
Portsmouth Gaseous Diffusion Plant
NRC Inspection Report 70-7002/96002(DNMS)

This integrated observation report includes aspects of plant operations, maintenance/material condition, engineering, and plant support. Observations were made by the resident inspectors as part of their routine duties.

Authority Statement: The Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC) have agreed to cooperate to facilitate the NRC's obtaining of information and knowledge regarding the gaseous diffusion plants and the United States Enrichment Corporation's (USEC) operation thereof through observation/inspection activities during the interim period before the NRC assumes regulatory responsibility. This report is a summary of NRC observations for the period stated. These observations were communicated to the DOE site safety staff and USEC site staff during and at the end of the observation period to allow for their future followup and evaluation, as appropriate.

Plant Operations

- Valving errors continued to occur in the Cascade (Section O1.2 and O1.3).
- Operations failed to implement corrective and compensatory actions (Section O3). No immediate safety consequences were experienced.
- The inspectors noted mixed performance in identifying and correcting problems. Some positive performance was noted (Section O7), but some work arounds and acceptance of degraded material conditions were noted (Section O1.3 and O2.1).

Maintenance and Surveillance

- Degraded material condition of service headers challenged plant operations (Section O2.1), but were not addressed in a timely manner (Section M2.1). This was consistent with other observations noted in the scheduling of maintenance activities (Section M3).
- A large deposit of uranium material was removed from the Cascade. The inspectors noted procedural weaknesses associated with this evolution (Section M1.2).
- The inspectors identified a concern that the plant could not meet proposed commitment dates for implementation of maintenance planning. The proposed dates were contained in a draft Compliance Plan (Section M6.1).

Engineering

- The inspectors noted that the Safety Analysis Report (SAR) was not used during performance of an engineering analysis (Section E1.1) and was not being updated to reflect approved changes to plant operations (Section E1.3).

- The inspectors identified an inconsistency regarding how wet air moderation of uranium deposits was handled in plant safety documents and the Application for a Certificate of Compliance (Section E3.1).

Plant Support

- Material containing low levels of surface contamination were released from the plant's controlled area (Section R1.1).

REPORT DETAILS

Summary of Plant Status

The plant operated at approximately 1400 MW during most of this observation period. The Low Assay Withdrawal (LAW) Station was returned to service after a long outage and upgrade period. High Enrichment Uranium (HEU) refeed was re-initiated at the end of the period.

A uranyl fluoride (UO_2F_2) deposit of approximately 350 pounds was removed from eight inch diameter piping in the X-330 Building. The assay was estimated to be 5% uranium (U^{235}). This activity is discussed in Section M1.2.

I. Operations

O1 Conduct of Operations[1]

O1.1 General Comments

The inspectors observed selected operational activities. Specific events and noteworthy observations are detailed in the sections below. No specific examples of operations which created an immediate threat to the public, staff, or environment were observed.

O1.2 Valving Error Results in Minor Release

a. Inspection Scope

On March 16, 1996, a minor release occurred inside a heated pipe housing in the X-330 Building. This event did not result in any uranium or fluorine uptakes. All appropriate emergency response actions were implemented per procedure. The inspectors reviewed the plant's efforts to identify the cause of this release.

b. Observations and Findings

This event occurred as the result of a valving error. A valve (C3XVR) was shown as open on the X-330 "pin charts"; however, it was actually closed. Operators implemented a new valving path for product withdrawal at the Tails Withdrawal Station (Tails). The flow path went through valve C3XVR. The incorrect valve position resulted in positive pressurization of the pipe header. This pressure drove uranium hexafluoride (UF_6) out of a leaking valve bellows (see Section M2.1).

The root cause analysis of the valving error or the valve bellows leak had not been released at the end of the observation period.

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[1]Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized inspection report outline contained in NRC Manual Chapter 0610. Individual reports are not expected to address all outline topics, and the topical headings are therefore not always sequential.

c. Conclusions

The inspectors considered the valving error and delay in root cause analysis to be consistent with the weaknesses identified in Observation Report 70-7002/96001(DNMS), paragraphs 2. and 5.

O1.3 Valving Error Leads to Procedural Work Around

a. Inspection Scope

The Low Assay Withdrawal station (LAW) was returned to service, after an extended outage, in early April 1996. It was taken back off line the week of April 8, 1996 and returned to service on April 12, 1996. Operators noted a problem with flow control during this second restart.

The inspectors reviewed log entries, tracked problem reports, and discussed the response to the flow control problems with Operations.

b. Observations and Findings

LAW had an inlet control valve (PV-2369) which was intended to provide flow control for the station. When Operations was unable to use PV-2369 as intended, a procedure change was processed over the weekend to allow use of the LAW isolation valve, a motor operated valve (MOV), for throttling purposes.

The Cascade Coordinator's (CC) logs were reviewed on the morning of April 15, 1996. The NRC noted the procedure change and contacted Operations to point out the apparent "work around" in using an isolation valve for flow control rather than trouble shooting and repairing the valve which was intended to perform that function. At approximately the same time, the on-coming CC directed the LAW operators to verify the status of the PV-2369 bypass valve.

The PV-2369 bypass valve was found to be about 40% open. The procedure for the LAW station start-up required that the bypass valve be closed. The bypass valve could not be completely closed, but was "torqued" to about 10% open. It appeared that a deposit of UF_6 or UO_2F_2 prevented full valve closure. PV-2369 was found to provide adequate flow control with the bypass valve in the 10% open position. The LAW isolation MOV was opened fully, and withdrawal operations continued.

Flow control did not have a direct safety function at the LAW station. The LAW station isolation MOV was credited with limiting potential releases should a pressure boundary fail in the withdrawal loop. The inspectors noted that the MOV's ability to perform its safety function would have been degraded if the valve seat had been etched while it was used to throttle flow. It appeared that no damage occurred to the MOV seat, and a similar MOV provided flow control at Tails.

The investigation and corrective action plan had not been completed at the end of the observation period. The inspectors were concerned that the valving error existed, was not identified when flow control problems developed, and was "worked around" rather than being effectively addressed.

c. Conclusions

The inspectors considered the valving error to be consistent with the weaknesses identified in Observation Report 70-7002/96001(DNMS), paragraph 2. The inspectors considered the procedure change "work around" to be a performance problem similar to those identified in Observation Report 70-7002/95002(DRSS), paragraph 2.B. This conclusion was somewhat mitigated by examples of improved performance identified in Section O7.

O2 Operational Status of Facilities and Equipment

O2.1 Degraded Material Condition of Service Headers Complicates Operations

a. Inspection Scope

Service headers are used to distribute feed material, product withdrawal material, treatment gasses, and light gasses within the cascade. The inspectors reviewed the CC daily logs and held discussions with plant operating staff to ascertain the condition of these headers and their impact on plant operations.

b. Observations and Findings

The inspectors noted that the operations staff were experiencing difficulty in establishing product withdrawal, feed, and vent paths in the X-333 and X-330 Buildings. These difficulties were caused by inleakage of air and process gas through leaking valve bellows and seats. The existence of inleakage (and potential out leakage) was determined by leak rate tests performed prior to the use of a header (the degraded condition of these headers is discussed in Section M2.1). When Operations was unable to utilize a normal or direct flow path, they worked around the problem by establishing a less direct or less desirable flow path through a different section of header. The less direct flow paths added to the complexity of valving operations, an area of weakness discussed in Section O1.2.c.

The severity of the problems was noted to increase through the course of the observation period. The inspectors did not identify any instances of plant staff using headers with inadequate leak rates, but a minor release occurred through a damaged valve bellows (see Section O1.2).

c. Conclusions

The inspectors were concerned that the need to "work around" portions of service headers which failed leak rate testing was not adequately documented for management review and corrective action (see Section 04.1).

03 Operations Procedures and Documentation

03.1 Failure to Implement Corrective Actions at X-342 & X-343

Observation Report 70-7002/96001(DNMS) documented problems with autoclave Parent Cylinder Safety Valves (PCSVs) which required air-to-close to perform their safety function. An event was described in which two PCSVs failed to close on demand (false actuation). The plant determined that the root cause of those failures was air leaks which reduced pressure to the pneumatic actuator and challenged the operability of the back-up air receiver. The air supply located in the PCSV panels was not covered by a preventive maintenance program.

The event described in Observation Report 70-7002/96001(DNMS) occurred on January 23, 1996. A corrective action plan was issued on March 8, 1996. This plan included a requirement to: "inspect Parent Cylinder Safety Valve panels on all remaining autoclaves for leaks and repair as needed." The action was to be completed on April 22, 1996. The action was reported complete after the autoclaves in X-344 were inspected. However, the autoclaves in X-342 and X-343 had not been inspected due to mis-communication between senior plant management and the functional manager.

On April 25, 1996, an operating autoclave (No. 1) in X-342 received a containment signal ("watchdog timer" trip) due to unrelated maintenance activities. The "watchdog timer" trip was intended to place the autoclave into containment if the liquid line pressure from the cylinder had not increased after 60 minutes of heating. The autoclave responded as designed, including isolating the air supply to the PCSV (see Section E1.3). Because of air leaks, a secondary safety system activation (low air pressure) occurred which should have shut the PCSV; however, the PCSV failed to close. No immediate safety consequences resulted from this event. The performance of pneumatically actuated safety valves continues to be tracked under Observation Followup Item GDC 70-7002/96001-01.

Operations identified the failure to implement the March 1996 corrective actions while evaluating the April 1996 event. The eight remaining autoclaves in X-342 and X-343 were tested (inspected) prior to being placed in service again. Five autoclaves failed the air leakage checks and were subsequently repaired.

See Section 03.2.c for the conclusions.

O3.2 Failure to Adequately Implement Compensatory Actions

a. Inspection Scope

Plant management identified that loss of plant air at the Extended Range Product Withdrawal Station (ERP) could potentially lead to hydraulic rupture of the withdrawal pigtails if power to the pigtail heat tracing was not cut off (see Section O7.1). Two compensatory actions were identified (see Section E1.2). One compensatory action was to hang caution tags on the air valves supplying air to the withdrawal stations. This was intended to reduce the potential for inadvertent loss of air to the pneumatic valves. The other compensatory action was to immediately cut off power to the pigtail heat tracing to mitigate any actual loss of plant air. The inspectors walked down the three withdrawal stations (ERP, LAW, and Tails) and talked with operators to assess the implementation of the specified compensatory actions.

b. Observations and Findings

The inspectors found that the compensatory actions were being implemented at ERP. Only one of the two compensatory actions was being implemented at Tails. The inspectors observed LAW being placed into service with neither of the specified actions in place. The inspectors notified Operations of these observations. The compensatory actions were subsequently implemented. Plant management concluded that the failure to implement the corrective actions was the result of poor communications between plant managers and staff, and poor performance by plant managers.

No loss of air occurred during the absence of compensatory actions.

The status of the compensatory actions was reviewed with the CC and Plant Shift Superintendent (PSS). Both the on-shift CC and PSS were familiar with the actual requirements, but the PSS status board and the CCs' log both contained entries referring to compensatory actions at ERP, with no reference to LAW or Tails. The status board and log entries could be interpreted as misleading and confusing. The Plant Control Facility Manager and the PSS were informed of the inconsistencies, which were subsequently corrected. Compensatory actions regarding adequate documentation in the CCs' logs were noted to be improved subsequent to the finding.

c. Conclusions

The inspectors considered the findings of Sections O3.1 and O3.2 to be indicative of a weakness in the communication, documentation, and followup assessment of corrective and compensatory actions within the plant.

O4 Operator Knowledge and Performance

O4.1 Operations Practice of "Torquing" Valves to Obtain Good Leak Rates

In reviewing the CCs' logs, the inspectors noted repeated reference to the practice of "torquing" boundary valves while trying to establish acceptable leak rates in service headers (see Section O2.1). Plant staff reported that valves in proper material condition could manually be closed "hand tight", and "torquing" was not required. The inspectors were not aware of any immediate safety consequence associated with the practice of "torquing" valves, but were concerned that it might accelerate or compound the already degraded material condition of the valves, further reducing their ability to effectively contain process and treatment gasses.

Plant management was informed of this concern.

O7 Quality Assurance in Operations

O7.1 Pigtail Safety Issue Identified by Operations

Operations identified a potential safety issue associated with pigtails at the withdrawal stations. They identified that a loss of plant air would shut (by design) the pneumatically actuated isolation valves at either end of the withdrawal pigtails, but would not isolate power to the pigtail electric heat tracing. This condition created the potential for hydraulic rupture of the pigtail (see Section E4.1). Compensatory actions associated with this finding are discussed in Section O3.2.

The identification of this issue was considered a good example of rigorous self evaluation and failure analysis.

O7.2 ERP Station Work Around Identified by Operations

The X-326 Building Management Team had initiated several problem reports to document issues raised during self assessment activities. Areas discussed included conduct of operations and configuration management.

In one example, the building managers observed that an Operational Safety Requirement (OSR) surveillance was being performed in a manner which might not provide consistent results. The OSR required that the pits underneath cylinder scales be inspected for the presence of water. These pits were filled with Raschig Rings which made inspection difficult unless a stand pipe was installed. Two of the three pits had stand pipes. Operators "worked around" the lack of a stand pipe by driving a measuring rod into the Raschig Rings. The building managers did not believe that this method was providing accurate results, so they stopped work and initiated a modification package to have a stand pipe installed in the third pit.

The Building Management Team was noted to be actively involved in self-assessment of the performance of safety significant work regarding Raschig Rings.

O8 Miscellaneous Operations Issues

O8.1 Follow-up of Valving Error Issues

Observation Report 70-7002/96001(DNMS), paragraph 2., identified weaknesses in the control of valving operations. Additional valving errors are described in Sections O1.2 and O1.3. The Cascade Operations implemented new procedural controls for MOVs during this observation period. Valving orders now require identification of boundary MOVs unless the MOV is covered by specific procedural controls. Operations is evaluating the applicability of similar controls in the areas of Feed and Product Operations, Chemical Operations, and Utilities.

II. Maintenance

M1. Conduct of Maintenance and Surveillance

M1.1 General Comments

During routine tours, the inspectors observed the general physical condition of plant equipment and some in-progress maintenance activities. The inspectors also reviewed some maintenance records and maintenance-related nonconformance reports. The focus of these observations was to assess the overall performance of maintenance activities and their effectiveness in maintaining the material condition of the plant's facilities, systems, and equipment.

M1.2 Removal of Pipe and Uranium Deposit

a. Inspection Scope

A large deposit of uranium in a section of 8" diameter pipe adjacent to one of the 29AB booster compressors located in X-330 was identified and estimated to consist of 5% U^{235} material. The estimated mass exceeded the "safe mass" and the minimum critical mass for fully moderated spheres.

Physical removal of the deposit was determined to be the most conservative approach to resolving the issue. The 8" pipe could be cut out, but not replaced due to "safe mass" considerations. A special Nuclear Criticality Safety Evaluation and Approval (NCSE and NCSA) were prepared (see Section E3.1 for discussion of technical issues), a work package was developed, and the pipe was removed.

The inspectors reviewed the X-330 work package, NCSA and NCSE, and job site before the pipe cut. The inspectors discussed the performance of work with the maintenance staff after the pipe cut-out was performed, and attended a post-work critique.

b. Observations and Findings

The planning effort associated with this evolution appeared to be more detailed and thorough than the planning efforts associated with the compressor work discussed in Observation Report 70-7002/95004(DRSS), paragraph 5. The NCSA and NCSE were found to be specific to the work performed and adequate. The inspectors identified an issue with the consistency of moderation controls. This issue is discussed in Section E3.1. A dry-run and several pre-job briefings were performed.

The maintenance work package procedure was not specific about the method to be used in cutting the pipe, or the method to be used in removing any residual deposits from, and sealing, the openings on either side of the pipe cut.

Several problems were noted with electrical power, work site exhaust ventilation, airborne HF, and work control when the pipe was removed on April 19, 1996. Additional problems were noted after the pipe was transported to X-705 for deposit removal. These included higher than expected levels of HF, and confusion over deposit removal methods. Because of these problems, the deposit had not been removed from the pipe at the end of the observation period, and the pipe was being maintained in a safe condition in X-705.

The plant's critique of the pipe cut was held on April 25, 1996. Written critique minutes were not available at the end of the observation period.

c. Conclusions

The maintenance planning process had improved, but significant opportunities for further improvement remained. Specifically, greater detail in procedural specification of work techniques would appear to have been appropriate so that engineering controls for airborne contamination and HF could have been more adequately assessed.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Degraded Material Condition of Service Headers

The degraded material condition of isolation valves in the cascade service headers is discussed in Sections O2.1 and O4.1. The inspectors reviewed maintenance planning schedules and met with Operations, Maintenance, and Work Planning Managers to determine how they intended to address these conditions. The inspectors were informed that resources did not currently exist to perform corrective maintenance on service headers. The inspectors were informed that efforts to obtain additional resources would be undertaken within the fiscal year (see Section M3.1).

The inspectors pointed out that the degraded condition of these headers had affected the orderly operation of the cascade and had contributed to a minor release (See Section 01.2).

M2.2 Material Condition Self-Assessments

The X-330 Building Management Team performed a self-assessment of material condition in their building. This assessment was documented in Observation Report 70-7002/95006(DRSS), paragraph 3. The inspectors were informed that a similar assessment had been performed for X-333, but that X-326, the X-340 complex, X-705, and X-710 had not completed rigorous assessments by the end of this observation period.

The inspectors were informed that corrective maintenance was being scheduled and performed for the degraded conditions identified in the X-330 assessment. The inspectors did not independently verify this.

M3 Maintenance Procedures and Documentation

M3.1 Maintenance Scheduling

a. Inspection Scope

The inspectors reviewed weekly and "mid-range" (seven weeks in advance) maintenance schedules to assess what preventive and corrective maintenance work was being scheduled.

b. Observations and Findings

The inspectors noted that a great deal of difference existed in the maintenance schedules of the various buildings. For instance, the inspectors noted that the X-330 Building appeared to schedule a mix of routine duties, preventive maintenance, and corrective maintenance on a regular basis. It did not appear to the inspectors that the other buildings scheduled as complete a mix of work. For example, in the mid-range schedules for "5/20-5/26/96" and "5/28-6/2/96," the entire X-340 complex had no corrective maintenance scheduled, and the only preventive maintenances activities scheduled were routine surveillances.

The inspectors noted that the last mid-range schedule issued during the observation period ("5/28-6/2/96") included corrective maintenance for one group of service header boundary valves (see Section 02.1).

Schedule breakages (work not performed as scheduled) were noted to be common. Maintenance management indicated that the breakage rate was as high as 50%. In discussions with the inspectors, the Maintenance and Work Planning Managers acknowledged that resources were not always being utilized in the most efficient manner. For instance, cell refurbishment was being actively worked at a time when excess cells were already available, but the service header boundary valves was clearly degraded (see Section 02.1).

The inspectors noted that many opportunities for improvement of the maintenance scheduling process were being identified by the Problem Reporting System. For instance, work which was not completed when scheduled did not automatically roll over to the next schedule. This could have led to delays in the performance of safety significant corrective maintenance. This issue was being addressed by the Work Control Organization at the end of the Observation Period through manual input for roll-over items.

c. Conclusions

The inspectors considered these observations to be indicative of the newness of the maintenance scheduling function (initiated in January 1996). Significant opportunity for improvement in the identification, scheduling, and tracking of surveillances, preventive, and corrective maintenance appeared to exist.

M6 Maintenance Organization and Administration

M6.1 Status of Maintenance Planning With Respect to Certification

a. Inspection Scope

The inspectors investigated the status of the plant's transition to the commitments being made in the Application for a Certificate of Compliance (COC). Discussions were held with the Maintenance and Work Planning Managers and various application documents were reviewed.

b. Observations and Findings

Under the proposed COC, an effective maintenance program for those systems, structures, and components (SSCs) designated as being safety significant ("Q" and "AQ" within the Quality Assurance Plan (QAP)) would require implementation. The inspectors understood that the plant planned to have the maintenance program for "Q" SSCs in place by the end of calendar year 1996, and for "AQ" SSCs by the end of calendar year 1997. These commitment dates were contained in the proposed Compliance Plan which was being prepared by the Department of Energy (DOE).

In order to fully implement the proposed commitments, plant management needs to identify QAP boundaries for NRC approval, identify all components contained in those boundaries, identify which components required periodic or preventive maintenance, establish frequencies, develop post maintenance tests, write procedures, train staff, and schedule and perform actual work. The first step, establishing boundaries, had not been completed at end of the observation period.

The plant's implementation process appeared to be heavily dependent upon Engineering for component, maintenance, and frequency identification. Engineering had undertaken a similar effort in the area of calibration, and had been unable to provide timely input to Work Planning and Maintenance (see Section E8.1).

c. Conclusions

The inspectors noted that accurately estimating the time required to implement effective maintenance programs would be difficult until the SSC boundaries were finalized. Additionally, Engineering's past performance in an effort of this scope and nature had not been timely.

The inspectors discussed their concern that the plant would not meet the proposed commitment dates in the Compliance Plan with the plant and DOE.

M7 Quality Assurance in Maintenance Activities

M7.1 Performance Indicators

a. Inspection Scope

The inspectors met with the Maintenance Manager and Work Planning Manager to discuss the status of performance indicators for maintenance backlog. Maintenance backlog was discussed in paragraph 3 of Observation Reports 70-7002/95005(DNMS) and 70-7002/95006(DNMS).

b. Observations and Findings

The performance indicators for maintenance backlog and backlog duration showed improvement. The inspectors considered this to be a positive trend, but noted that the existing performance indicators did not provide insight into the material condition of all safety significant SSCs, or how well available resources were being focused on operating equipment. This concern was discussed with plant management.

M8 Miscellaneous Maintenance Issues

M8.1 Followup of Safety Valve Reliability Issue

Followup Item GDC 70-7002/96001-01. One additional safety system valve failure was noted during this observation period (see Section 03.1). This item remains open and will be tracked in future Observation Reports.

III. Engineering

E1. Conduct of Engineering

Throughout the observation period, the inspectors observed facility engineering activities, particularly the engineering organization performance of routine and reactive site activities, including identification and resolution of technical issues and problems.

E1.1 Engineering Evaluations

a. Inspection Scope

The inspectors reviewed the engineering evaluation performed in response to the withdrawal station pigtail concern discussed in Section 07.1. After performing the review, the inspectors discussed their conclusions with the responsible engineers, supervisor and manager.

b. Observations and Findings

The evaluation was found to be generally conservative, easy to follow, and based on sound calculatory methods. A minor non-conservatism was identified with respect to modeling thermal expansion of the pigtail, but the inspectors concluded that it did not effect the evaluation's conclusions.

While reviewing the engineering evaluation, the inspectors noted that pigtail heat tracing was stated to have a maximum design rating of 180°F based upon the latest engineering drawings. The inspectors informed Engineering that the pigtails in use at LAW were marked as having bench test values in excess of 190°F. Upon further review, Engineering determined that the Final Safety Analysis Report (FSAR) allowed pigtail ratings of up to 200°F. This condition changed the calculated expansion values significantly.

The compensatory actions implemented at the time of discovery appeared adequate to address all calculated conditions.

c. Conclusions

The inspectors considered the document reviewed to be a positive example of a conservative, calculatory, approach to engineering assessment. The confusion over maximum pigtail temperatures was indicative of a weakness in the area of configuration management and utilization of the FSAR by engineering (see Section E1.3).

E1.2 Technical Involvement in Event Assessment

a. Inspection Scope

The inspectors observed the initial Operational Assessment Team (OAT) evaluation of the withdrawal station pigtail concern.

b. Observations and Findings

The OAT was observed to provide a conservative management assessment of the as-found condition. Appropriate compensatory actions were identified (see Section 03.2 for implementation of compensatory actions) for the withdrawal pigtails. The inspectors noted that the OAT's evaluation of whether the as-found condition had applicability elsewhere in the withdrawal stations was hindered by a lack of technical staff

involvement. The observation was discussed with plant management. The inspectors were informed that plans existed to increase the involvement of technical subject matter experts in future event assessments (OATs).

E1.3 Configuration Management of SAR

a. Observations and Findings

Following the autoclave containment event of April 25, 1996 (discussed in Section 03.1), the inspectors noted that there was confusion over whether the PCSV should have closed when the "watchdog timer" tripped. Upon further review, the plant determined that the "watchdog timer" control function had been slightly modified in 1995. Lack of familiarity with this change was the cause of the plant's uncertainty over expected system response.

Engineering told the inspectors that all required reviews and approvals had been obtained at the time of the modification, in accordance with plant procedures. The inspectors concluded that the modification did not decrease the safety basis of the "watchdog timers" safety function. The inspectors noted that the FSAR had not been updated to reflect the modification, and that this contributed to the plant's confusion over the event. The plant regulatory affairs and engineering personnel stated that the Application SAR (as differentiated from current DOE FSAR) changes would be incorporated annually, for forwarding to the NRC as required by 10 CFR 76(c)(2)(iii).

The inspectors were concerned that failure to maintain the plant's copies of the Application SAR on a real time basis (after each approved change to operations) could create a potential problem with subsequent event responses and safety evaluations. These concerns were identified to plant management and regulatory affairs.

Weaknesses with the plant's use of the FSAR were discussed in Section E1.1, and in the following Observation Reports:

70-7002/95003(DRSS), paragraph 2.B
70-7002/95004(DRSS), paragraphs 2.D and 2.E
70-7002/95006(DNMS), paragraph 2.A

b. Conclusions

The inspectors concluded that opportunities for improvement in the use of the SAR as the basis for operations, evaluations, and event response existed. Failure to maintain the plant's working copies of the SAR current after each change approval would appear to complicate such usage.

E3 Engineering Procedures and Documentation

E3.1 Inconsistency in Nuclear Criticality Safety Evaluations

a. Inspection Scope

The inspectors reviewed various NCSAs and NCSEs during the observation period. They also participated in NRC reviews of various portions of the Application.

b. Observations and Findings

The inspectors noted an inconsistency in the discussion of the impact of atmospheric (wet) air inleakage into equipment containing deposits of uranium material. Proposed Technical Safety Requirements (TSRs) for the Paducah Gaseous Diffusion Plant (PGDP) stated, or implied, that wet air exposure could moderate uranium deposits in non-fluorinated environments. This conclusion was consistent with NCSEs for various Portsmouth activities. Proposed TSRs for Portsmouth stated that wet air inleakage was not capable of moderating uranium deposits due to chemical and physical properties of the deposits. The inspectors found a recent Portsmouth NCSE which contained the same discussion.

The inconsistent approach to the moderation of uranium deposits by wet air exposure affected technical review of proposed TSRs for both plants, and also impacted the conservatism of NCSEs covering current work practices at the Portsmouth plant. A single position, supported by written technical justification, and applied at both plants, appeared appropriate.

E8 Miscellaneous Engineering Issues

E8.1 Follow-up on Calibration Issues

a. Inspection Scope

The inspectors met with Engineering to review the status of the calibration of plant equipment and components.

b. Observations and Findings

Engineering performed a thorough review of the FSAR and identifying the systems and equipment for which calibration was appropriate. Accuracies, set points, and tolerances would then be identified and documented. Additional efforts would then be undertaken to develop calibration and test equipment. Following these efforts, procedures were to be written, and eventually, the equipment was to be calibrated.

The inspectors identified several issues, including loop versus component calibration, configuration management of new test ports, and long term scheduling of periodic calibrations and surveillances, which the plant had not addressed. Plant management agreed that these issues deserved further consideration.

c. Conclusions

The process selected by Engineering to address the deficiencies in the calibration program appeared more appropriate for new construction or a proposed modification than for addressing installed and operating equipment. The inspectors will continue to evaluate the effectiveness of the plant's calibration program.

IV. Plant Support

R1 Radiological Controls

R1.1 Control of Radiological Material

a. Inspection Scope

On April 3, 1996, PGDP identified low levels of radioactive contamination on a contractor's incoming equipment (uncontrolled shipment). PGDP and Portsmouth determined that the contamination had originated at the Portsmouth plant. The contractor's equipment had been in use at Portsmouth for at least three years and had been shipped from Portsmouth to PGDP. Contractor employees were interviewed, and extensive surveys were conducted at both plants to verify that there was no spread of the contamination to the environment or public areas.

The inspectors attended some of the interviews, observed some of the subsequent surveys, and discussed the plant's process for release of material with the Radiation Protection Manager (RPM).

b. Observations and Findings

Responses to the event at PGDP and Portsmouth appeared appropriate, but the decision to perform followup surveys did not appear timely. Additionally, the inspectors noted some confusion over which plant would take the lead in followup surveys. This appeared to indicate a weakness in communication and coordination between the plants' event assessment groups.

The RPM described the plant's two tier survey program for ensuring the adequate control of radioactive material. The first tier was the required survey of all equipment as it left contamination control zones. The second tier was the survey of all equipment prior to its removal from the radiologically "restricted" area contained within the plant security fence.

The RPM and inspectors discussed how the survey process for material leaving the restricted area could be circumvented by staff or contractors. The RPM informed the inspectors that a more positive control of material would be prohibitively expensive and difficult. The inspectors informed the RPM that the Certificant would be held responsible for any loss of control of radioactive material.

R1.2 Dose Assessment

The inspectors discussed the results of the 1996 first quarter dosimetry program with the RPM. The RPM discussed several procedural errors which occurred during the processing of dosimeters. Each error was identified, documented, evaluated, and corrected. The RPM stated that an external dose reading for each employee had been obtained directly from that employee's dosimeter(s). The inspectors had no negative findings in this area.

V. Corrective Action Programs

V8 Follow-up on Effectiveness of Corrective Actions

a. Inspection Scope

The inspectors continued to assess the staff's effectiveness in evaluating and correcting identified nonconformances (see Observation Report 70-7002/96001(DNMS), paragraph 5). Activities included attendance at meetings, reviews of problem and event reports, attendance at critiques, and interviews of plant staff and management.

b. Observations and Findings

During this observation period, the plant performed a self-assessment to independently evaluate the effectiveness of corrective actions and commitment management. The inspectors were informed that the self-assessment findings were similar to the NRC findings contained in Observation Report 70-7002/96001(DNMS), paragraph 5.

The DOE Site Safety Representative requested an evaluation on the timeliness of nonconformance responses. The evaluation indicated that timeliness goals were not being met.

The inspectors noted that senior management was more aware of the importance of effective evaluation and response to nonconformances than during previous observation periods. New problem report screening and corrective action review panels were implemented. These panels are smaller and more focused than their predecessors. Senior plant managers were observed to take a more active ownership of identified nonconformances than during past observation periods. The inspectors found these to be positive improvements.

The inspectors noted that plant staff continued to identify many opportunities for improvement through the problem reporting system. The inspectors considered the overall quality of problem reports as being good, and indicative of a desire for process improvement by plant staff. One area of concern was an apparent failure to aggressively identify material degradation (see Sections O1 and O2).

Continued problems with implementation of corrective and compensatory actions were noted, as discussed in Section O3. The inspectors and plant management discussed the importance of ongoing management attention in this area to ensure the continued safe and effective operation of the plant.

X. Management Meetings

X1 Exit Meeting Summary

The inspectors met with facility management representatives and the DOE Site Safety Representatives throughout the observation period and on April 29, 1996. The likely informational content of the observation report was discussed. No classified or proprietary information was identified. No disagreement with observations or findings, as described by the inspectors at these meetings, was identified.

Partial List of Persons Contacted

Lockheed Martin Utility Services (LMUS)

*D. I. Allen, General Manager
*J. E. Shoemaker, Enrichment Plant Manager
*J. V. Anzelmo, Work Control Manager
*R. W. Gaston, Nuclear Regulatory Affairs Manager
*C. F. Harley, Engineering Manager
*G. S. Price, Maintenance Manager
*C. W. Sheward, Operations Manager

United States Enrichment Corporation

*J. H. Miller, USEC Vice President, Production
*L. Fink, Safety, Safeguards & Quality Manager

United States Department of Energy (DOE)

*J. A. Crum, Site Safety Representative
J. C. Orrison, Site Safety Representative

Nuclear Regulatory Commission (NRC)

C. B. Sawyer, Project Manager

* Denotes those present at routine resident exit meeting held on April 29, 1996.

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

70-7002/96001-01

Certification Issues

Section M6.1 - Compliance Plan Commitment Dates
Section E3.1 - Inconsistency in NCS Basis