

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-440
License No: NPF-58

Report No: 50-440/99017(DRS)

Licensee: FirstEnergy Nuclear Operating Company

Facility: Perry Nuclear Power Plant

Location: P. O. Box 97, A200
Perry, OH 44081

Dates: December 6-9, 1999

Inspector: John E. House, Senior Radiation Specialist

Approved by: Steven K. Orth, Acting Chief, Plant Support Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

Perry Nuclear Power Plant, Unit 1 NRC Inspection Report 50-440/99017(DRS)

This inspection included an evaluation of the liquid and gaseous radioactive effluent program, the annual effluent report, the operability and quality control programs for the process and effluent radiation monitoring systems, and the testing of engineered safety feature (ESF) ventilation filtration systems. The inspection covers a one-week period and was performed by a regional, senior radiation specialist. During the inspection, no violations of regulatory requirements were identified.

Plant Support

- The 1998 Annual Environmental and Effluent Release Report demonstrated that radioactive effluents were maintained below regulatory limits and that there was no significant environmental impact from plant operation. As a result of the licensee's water management program, the licensee had no liquid radioactive waste releases in 1998. Also, the offsite dose calculations were properly performed. (Section R1.1)
- The licensee effectively maintained the material condition of process and effluent radiation monitors. The proper calibration and effective tracking of instrument operability ensured that liquid and gaseous process effluent radiation monitors accurately measured radioactivity in station effluents. (Section R2.1)
- The licensee tested ESF ventilation filtration systems as required. Test results indicated that system performance was within specifications. (Section R2.2)
- Quality assurance audits were comprehensive, performance-based, and identified deficiencies and areas needing improvement. Condition reports documented audit findings. The corrective action program effectively implemented improvements. (Section R7.1)

Report Details

IV. Plant Support

R1 Status of Radiation Protection and Chemistry Controls

R1.1 Implementation of the Radioactive Effluents Program

a. Inspection Scope (84750)

The inspector reviewed the licensee's control of liquid and gaseous radioactive effluents released to the environment. Specifically, the inspector interviewed members of the Radwaste, Environmental, and Chemistry Section (RECS) and reviewed applicable procedures, effluent release data, the offsite dose calculation manual (ODCM), and the 1998 Annual Environmental and Effluent Release Report. The off-site dose calculation process for determining the dose consequence to members of the public, along with software verification, were also reviewed.

b. Observations and Findings

The licensee made three minor changes to the ODCM and the Process Control Program in 1998. These changes were either conservative or served to clarify portions of these documents. The inspector reviewed the changes and concluded that they did not decrease the effectiveness of the effluent control/monitoring programs.

The licensee maintained radiological releases at levels which resulted in a dose to the public that was a fraction of the regulatory limits. Based on the licensee's offsite dose calculations, the maximum dose to a hypothetical individual at the site boundary from radioactive effluents was less than 10 percent of the applicable limits. Two abnormal release conditions were documented for 1998. The licensee's effluent release calculations for these events showed that there was no significant impact on the environment from these releases.

The licensee continued to implement initiatives to minimize both liquid and gaseous effluents. The licensee had continued to recycle plant water and monitor plant water inventories such that there were no liquid radioactive waste (radwaste) releases in 1998. However, a licensee representative stated that there were liquid releases following the refueling outage in 1999. The RECS staff also continued to closely monitor the number of steam leaks which contributed to gaseous effluents. The inspector observed that the staff was knowledgeable of the effect of these inputs on radioactive waste operations.

The RECS staff used a computer program to calculate the offsite doses from liquid and gaseous effluents, which was consistent with the ODCM. The inspector verified that the staff had completed annual verifications of the software results (i.e., a comparison of the software calculations to manual calculations) and that the results were within the licensee's acceptance criteria (10 percent). In addition, as part of the Y2K readiness process, a 10 CFR 50.59 review was also performed on the offsite dose calculation software which showed that there were no unreviewed safety questions.

c. Conclusions

The 1998 Annual Environmental and Effluent Release Report demonstrated that radioactive effluents were maintained below regulatory limits and that there was no significant environmental impact from plant operation. As a result of the licensee's water management program, the licensee had no liquid radioactive waste releases in 1998. Also, the offsite dose calculations were properly performed.

R2 Status of Radiological Protection and Chemistry Facilities and Equipment

R2.1 Process and Effluent Radiation Monitoring Instrumentation

a. Inspection Scope (84750)

The inspector reviewed the calibrations and operability of the liquid and gaseous process and effluent radiation monitors. This included a walk-down of the radiation monitors; a review of selected calibration records, procedures, operability records; and an interview with a system engineer. Specifically, the inspector reviewed calibration data (1999) for the following radiation monitors:

- Liquid radwaste to emergency service water monitor;
- Off gas ventilation exhaust radiation monitor;
- Unit 2 vent radiation monitor;
- Unit 1 vent radiation monitor; and
- Turbine Building/heater bay radiation monitor.

b. Observations and Findings

During a walk-down of the effluent and process monitors, the inspector noted that the material condition of monitors and associated equipment was good and that all monitors were operational. Few work request tags were observed on monitoring equipment. The inspector also reviewed radiation monitor chart recorders in the control room and did not observe any anomalies for those effluent recorders required by the ODCM.

Selected calibration records were reviewed which indicated that calibrations and equipment operability tests were performed as required. A review of operability records indicated relatively few operability problems. Data observed on Control Tracking Sheets, which were used to track radiation monitor status, showed that monitor problems were entered into the tracking system and were cleared following the monitor's return to service. In most cases monitors were not out-of-service long enough to require compensatory sampling, but compensatory sampling was performed when required.

c. Conclusions

The licensee effectively maintained the material condition of process and effluent radiation monitors. The proper calibration and effective tracking of instrument

operability ensured that liquid and gaseous process effluent radiation monitors accurately measured radioactivity in station effluents.

R2.2 Engineered Safety Features (ESF) Ventilation Filtration Testing

a. Inspection Scope (84750)

The inspector reviewed the licensee's testing of filtration systems for the engineered safety features (ESF) ventilation systems. The inspector reviewed the results of high efficiency particulate air (HEPA) and charcoal filter testing.

b. Observations and Findings

The inspector noted that the licensee tested the ESF ventilation system's HEPA and charcoal filters in accordance with the requirements of Procedure PAP-1126 (Revision 0), "Ventilation Filter Testing Program", July 14, 1996, which contained the required frequency of testing and was consistent with Regulatory Guide 1.52 (Revision 2), "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants". In accordance with procedure PAP-1126, the licensee was required to test HEPA filtration systems on an 18-month frequency and to test charcoal filters on an 18-month frequency and after every 720 hours of operation. In addition, procedure PAP-1126 required additional testing following maintenance and/or chemical releases into the filtration streams.

The inspector reviewed selected 1999 test results for the control room emergency recirculation subsystems (A and B) flow, filter operability, and charcoal adsorption tests. The tests were performed in accordance with the applicable procedures. The results were within the required limits and were obtained using proper industry standards.

c. Conclusions

The licensee tested ESF ventilation filtration systems as required. Test results indicated that system performance was within specifications.

R7 Quality Assurance In Radiological Effluents and Chemistry

R7.1 Quality Assurance

a. Inspection Scope (84750)

The effectiveness of the licensee's identification and resolution of effluent monitoring problems was assessed. The inspector reviewed two audits of the chemistry program pertaining to liquid and gaseous effluents, the ODCM, process control program, and the radiological environmental monitoring program (REMP). In addition, condition reports and corrective action follow-up were reviewed.

b. Observations and Findings

The inspector reviewed audits PA 98-13 and PA 99-15 which consisted of field observations and programmatic reviews conducted by a team of the licensee's quality assurance staff and a technical specialist (audit PA 99-15) from the Davis-Besse plant. The inspector noted that the audits were thorough and provided a broad review of the program, including radiation monitoring instrumentation, ODCM controls, offsite dose calculations, training, internal self assessment, corrective actions, and effluent sampling. As a result of the audits, several condition reports (CRs) were written to document findings, initiate investigations by RECS, and to track follow-up actions. In general, corrective action responses to audit findings were appropriate and timely. For example audit PA 98-13 identified operability issues with the D17 radiation monitor system. Following this audit, the licensee implemented actions to correct the noted deficiencies. Subsequently, audit PA 99-15 noted that the operability of this system had improved significantly. Overall, the audit findings indicated acceptable program performance.

c. Conclusions

Quality assurance audits were comprehensive, performance-based, and identified deficiencies and areas needing improvement. Condition reports documented audit findings. The corrective action program effectively implemented improvements.

X1 Exit Meeting Summary

On December 9, 1999, the inspector presented the inspection results to licensee management. The licensee acknowledged the findings presented. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

H. Bergendahl, Director, Perry Nuclear Services Department
M. Doty, Chemistry Supervisor
L. Eichelberger, Quality Evaluator
B. Luthanen, Regulatory Assurance
M. Medakovich, Shipping Specialist
C. Nash, Chemistry Specialist
T. Rausch, Operations Manager
R. Schrauder, Director, Perry Nuclear Engineering Department
J. Sears, Radiation Protection Manager
J. Sipp, Radwaste Environmental and Chemistry Section Manager
J. Wood, Vice-President, Nuclear

INSPECTION PROCEDURES USED

IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CR	Condition Reports
DRS	Division of Reactor Safety
ESF	Engineered Safety Features
HEPA	High Efficiency Particulate Air
IP	Inspection Procedure
IR	Inspection Report
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PDR	Public Document Room
RECS	Radwaste, Environmental, and Chemistry Section
REMP	Radiological Environmental Monitoring Program

PARTIAL LIST OF DOCUMENTS REVIEWED

Audits and Reports:

Audit Report PA 98-13, "Radiological Monitoring", February 11, 1998.

Audit Report PA 98-15, "Radiation Monitoring", November 23, 1999.

"Annual Environmental and Effluent Release Report for 1998", March, 1999.

Engineered Safety Features Ventilation Testing:

SVI-M26-T1260-A (Revision 2), "Control Room Emergency Recirculation Subsystem A Flow and Filter Operability Test", completed February 16, 1999, (full).

SVI-M26-T1260-B (Revision 1), "Control Room Emergency Recirculation Subsystem B Flow and Filter Operability Test", completed February 2, 1999, (full).

SVI-M26-T3020 (Revision 5), "Control Room Emergency Recirculation Charcoal Adsorber Operability Test", completed March 8, 1999, (Train A) and February 23, 1999 (Train B).

Procedures:

PAP-1126 (Revision 0), "Ventilation Filter Testing Program", July 14, 1996.

CHI-0003 (Revision 1), "Midas Dose Assessment Software Verification", April 15, 1996.

Radiation Monitor Calibrations:

SOI-D17 (Revision 3), "Airborne Radiation Monitoring System (Unit 1)", March 18, 1999.

SOI-D17A (Revision 3), "Process Radiation Monitoring System (Unit 1)", May 30, 1995.

SVI-D17-T8000-B (Revision 4), "Unit 1 Noble Gas Radiation Monitor Source Check for 1D-K786", August 6, 1993.

SVI-D17-T8002 (Revision 3), "LRW to ESW Radiation Monitor Channel Calibration for D17-K606", February 25, 1998.

Condition Reports:

CR 98-2628, CR 99-2751, CR 99-2752, 99-2749, 99-2750, 99-2753.