U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/84-13(DRSS)

Docket No. 50-440 License No. CPPR-148

Licensee: Cleveland Electric Illuminating Company
Post Office Box 5000
Cleveland, OH 44101

Facility Name: Perry Nuclear Power Plant, Unit 1

Inspection At: Perry Site, Perry, OH

Inspection Conducted: July 9-12, 1984

Inspector: D. E. Miller 7/27/84
Date

Approved By: L. R. Greger, Chief 7/27/84
Facilities Radiation Protection Section
Date

Inspection Summary

Inspection on July 9-12, 1984 (Report No. 50-440/84-13(DRSS)
Areas Inspected: Routine announced preoperational inspection of the radiation protection program, including organization and staffing, training, and procedures. Also reviewed was a radiography incident, and installed and planned gaseous effluent monitoring and sampling systems. The inspection involved 29 inspector-hours on site by one NRC inspector.
Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

*S. Boitan, Engineer, Nuclear Design and Engineering Department
*R. Bowers, Corporate Health Physicist
D. Byard, Health Physics Supervisor
*D. Green, Engineer, Nuclear Design and Engineering Department
*S. Kensicki, General Supervising Engineer, Radiation Protection Section
D. Rossetti, ALARA Coordinator
*E. Traverso, Chemistry Supervisor
*L. VanDerHorst, Plant Health Physicist
E. Walden, Site Supervisor, Magnaflux Inc.
*J. Waldron, Plant Manager
*K. Warnock, Licensing Engineer

*J. Grobe, Senior Resident Inspector

*Denotes those present at the exit meeting.

2. General

This preoperational inspection, which began at 8:00 a.m. on July 9, 1984, was conducted to examine progress made in development of the licensee's radiation protection program. Also reviewed was a radiography incident, and installed and planned gaseous effluent monitoring and sampling systems.

3. Organization and Staffing

Since previously reported in Inspection Report No. 50-440/83-36, several health physics related organizational changes have been made, including:

- J. Bontempo, who was in charge of development of radiation protection training programs in the Perry Plant Training Unit, has terminated employment with CEI. A replacement is being sought. Training is further discussed in Section 4.

- R. Bowers has been hired as a corporate health physicist, and is assigned to the Nuclear Engineering Department. Mr. Bowers is Radiation Protection Manager qualified (Regulatory Guide 1.8), and holds comprehensive and power reactor certifications from the American Board of Health Physics.

- One experienced radiation protection technician has terminated, and three have been hired. The inspector will review new employee qualifications during a later inspection.

The licensee plans a Health Physics Unit manning complement of 34 for one reactor operation. The present complement is 14. The licensee is actively recruiting to fill vacancies with appropriate persons.

No violations or deviations were noted.

4. Training

Since the last inspection in December 1983, four radiation protection technicians spent three months at an operating reactor during refueling to gain operational reactor experience. The licensee plans to send four additional technicians under a similar arrangement with a commercial organization which provides radiation protection technicians to nuclear power plants.

Future formal radiation protection technician training is to be performed by the Perry Plant Training Unit. The training programs are being developed. The licensee intends to resume staffing radiation protection technicians after the training program development is completed.

Employee general orientation training is being developed for, or by, the Perry Plant Training Unit who will perform the training. No specific starting date for this training has been established.

Inspection items remaining to be completed in this area include review of the formal radiation protection technician and general orientation training programs after they are instituted.

5. Health Physics Procedures

The inspector selectively reviewed the following new or revised OM-11B series health physics procedures to determine if they are consistent with 10 CFR requirements, FSAR commitments, and good health physics practices. Minor problems noted were discussed with licensee representatives. No significant problems were identified.

HPI-B1, Revision 1, Personnel Dosimetry, Records, and Reports
HPI-B2, Revision 0, Use of Personnel Dosimetry
HPI-B3, Revision 1, Processing of Personnel Dosimetry
HPI-B5, Revision 0, Neutron Dose Assessment
HPI-B6, Revision 0, Operation of the Body Burden Counting System
HPI-C1, Revision 0, Radiological Control Area Access Control
HPI-C3, Revision 0, Posting of Radiation, Contamination, and Airborne Radioactivity Areas
HPI-C4, Revision 0, Establishment of a Health Physics Control Point
HPI-E2, Revision 1, Sealed Source Leak Checks
HPI-E5, Revision 0, Equipment and Area Decontamination
HPI-F1, Revision 0, Air Sampling Techniques
HPI-F2, Revision 0, MPC-Hour Determination
HPI-G1, Revision 0, Respirator Quantitative Fit Test
HPI-G2, Revision 0, Selection of Respiratory Equipment
HPI-G7, Revision 0, Maintenance and Storage of Respiratory Equipment
HPI-G8, Revision 0, Requalification of Respirator Filters and Facepieces

There are no items remaining open at this time in this area. Review of newly developed and revised procedures will continue.

6. Radiography Incident

On Saturday, June 16, 1984, Magnaflux Inc. was performing radiography, using a nominal 200 curie Ir-192 source, in the Unit 1 drywell when two individuals (one employed by Gilbert/Commonwealth and the other Johnson Controls) walked out of the radiogically controlled area while a radiographic exposure was in progress. The time was 0030 hours. Magnaflux radiographers terminated the exposure when the individuals were observed leaving the controlled area.

The Magnaflux supervisor later interviewed the two individuals and accompanied them to the exact location in the drywell where they had been working. The individuals had been near the reactor vessel about 15 feet from the source location and about five feet lower in elevation. The individuals were at that location during one complete radiographic exposure (13 minutes) and the abbreviated exposure (2 minutes) that was terminated when the individuals were observed leaving the radiologically controlled area. The path taken by the individuals, when exiting their work location, took them away from the source.

Magnaflux radiographers later placed TLDs and pocket dosimeters at the location that had been occupied by the individuals, and exposed the source for 15 minutes at its location during the incident. The TLDs read zero and the maximum pocket dosimeter reading was 15 mrem.

The inspector visually inspected the area where the two individuals had been working and where the radiographic source was located. The area is extremely conjested with reactor system piping and components, and scaffolding used in construction. There is substantial shielding between the area where the individuals had been working and the location of the exposed source. The area where the two individuals had been working is shielded from view in most directions.

According to the onsite Magnaflux supervisor, the area was visually searched before the shots were made, and radiological signs and rope barriers erected. However, a bullhorn normally used by Magnaflux radiographers to alert persons in such areas was not used because it had been inoperable for several weeks.

The licensee's corporate health physicist also reviewed the incident and interviewed the persons involved.

This matter was discussed at the exit interview and will be further reviewed by the NRC Region III Nuclear Materials and Safeguards Branch.

7. Gaseous Effluent Monitoring Systems

There are three gaseous effluent pathways from each reactor unit. They are the unit vent, the off-gas vent, and the heater bay/turbine building vent. Each vent has several inputs.

Normal noble gas monitoring and particulate and iodine sampling of each vent will be performed by Victoreen systems that were in the original plant design; these systems are installed but not yet operational. Accident monitoring and sampling of each vent are to be performed by Kaman and Nuclear Research Corporation systems which are not yet installed.

a. Normal Range Gaseous Effluent Monitors and Samplers

The inspector observed the installed Victoreen system that will sample the Unit 1 off-gas vent, discussed its operation with licensee representatives, and reviewed applicable drawings. The sampling system is designed to draw a 40 CFM sample from the vent and transport the flow to a panel near the Victoreen system. At the panel, a one CFM sample is drawn from the 40 CFM flow; the one CFM flow is then routed through the Victoreen system. This design is similar for the six gaseous effluent vent monitors/samplers. The licensee was unable to demonstrate that the sample flow to the six Victoreen systems will be representative and isokinetic as stated in FSAR Section 11; This matter was discussed at the exit meeting and will be further reviewed during a future inspection. (Open Item 440/84-13-01)

Accident range monitors/samplers are to be located adjacent to the Victoreen systems. Setpoints on the Victoreen systems and/or a containment isolation signal actuate sampling through the accident range noble gaseous monitors and particulate and iodine samplers. The inspector noted that the normal range monitors/samplers continue to sample and monitor after actuation of the accident range systems. The inspector discussed with the licensee the need to evaluate the radiological consequences of non-isolation of the Victoreen systems post-accident. The licensee stated that the evaluation would be made. This matter was discussed during the exit meeting and will be further reviewed during a future inspection. (Open Item 440/84-13-02)

b. Accident Range Gaseous Effluent Monitors and Samplers

This equipment and sampling lines are not yet installed. The inspector reviewed systems descriptions and drawings of the post-accident noble gaseous monitors and particulate/iodine samplers. The inspector noted that the particulate and iodine sampling capability that will be provided by the Nuclear Research Corporation and Kaman systems, on each vent, is redundant except that sampling for the Kaman system is not designed to be isokinetic. The Kaman system contains the high-range noble gaseous effluent monitors.

The Kaman system high-range noble gas detector employs a small shielded GM tube which views a contained sample stream. Clarification Item (4)(b) of NUREG-0737, Action Item II.F.1.1, requires procedures or calculations/methods to convert post-accident instrument readings to release rates based on exhaust air flow and considering radionuclide spectrum distribution as a function of time after shutdown. This matter was discussed with licensee personnel and will be reviewed after the licensee implements the appropriate procedures and calculational methods.

Further review of the high-range monitoring and sampling equipment, and associated procedures, will be performed after they are installed.

Inspection items remaining to be completed in this area include review of NUREG-0737 Task Item II.F.1 and 2 monitors and samplers when installed; representative sampling for Victoreen monitors and samplers (440/84-13-01); consequences of non-isolation of the Victoreen system post-accident (440/84-13-02); and calibrations and preoperational testing of the normal and accident range gaseous effluent monitors.

8. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on July 12, 1984. Discussed were the scope and findings of the inspection. In response to certain items discussed, the licensee:

a. Stated that they would investigate the sampling methods for the gaseous effluent vents to determine if the samples will be representative of vent contents. (Section 7.a.)

b. Acknowledged the inspector's comments about possible consequences of continued operation of the normal gaseous effluent monitors and samplers after activation of the high range system. The licensee stated that this matter would be evaluated. (Section 7.a.)

c. Acknowledged the inspector's comments that it was fortuitous that the radiographic incident had not resulted in higher doses to the two individuals and that the matter was still under review by the Regional Office concerning enforcement actions. (Section 6)