U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 87-26

Docket No. 50-247

License No. DPR-26 Priority --- Category C

Licensee: Consolidated Edison Company of New York
4 Irving Place
New York, New York 10003

Facility Name: Indian Point Nuclear Generating Station, Unit 2

Inspection At: Buchanan, New York

Inspection Conducted: November 16-20, 1987

Inspectors: Robert M. Loesch 1/4/88
R. Loesch, Radiation Specialist date

Michael Markley 1/4/88
M. Markley, Radiation Specialist date

Approved by: M. Shanbaky 1/4/1988
M. Shanbaky, Chief, Facilities Radiation Protection Section, EP&RPB, DRSS date

Inspection Summary: Inspection conducted on November 16-20, 1987, No. 50-247/87-26.

Areas Inspected: Routine, unannounced inspection of the licensee's Radiological Controls Program during an outage. The following areas were reviewed: training and qualifications; external/internal exposure controls; hot particle control program; control of radioactive materials and contamination; and ALARA.

Results: One violation was identified: Failure to control access to a locked high radiation area, T.S. 6.12 (paragraph 4.0).

DETAILS

1.0 Personnel Contacted

1.1 Licensee Personnel

During the course of this inspection, the following personnel were contacted or interviewed:

*M. Selman, Vice President, Nuclear Power
*M. Miele, General Manager, E.H.& S.
*V. Lander, Radiation Protection Manager
M. Shannon, Senior Radiation Protection Supervisor
J. Parry, Radiological Engineering Manager
D. Smith, Radiological Engineer
*J. Ellwanger, Senior Engineer, Regulatory Affairs
*J. Collin, Radiological Assessor
H. Stone, Senior HP Technician, NSS
E. Loyd, Senior HP Technician, NSS

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Other licensee or contractor personnel were also contacted.

1.2 NRC Personnel

B. Summers, Project Engineer
P. Kelly, Resident Inspector

* Denotes attendance at the Exit Meeting held on November 20, 1987.

2.0 Purpose

The purpose of this routine inspection was to review implementation of the licensee's radiological control program relative to the current refueling outage. Areas inspected included:

- Training and Qualifications;
- External/Internal Exposure Controls;
- Hot Particle Control Program;
- Control of Radioactive Materials and Contamination; and
- ALARA.

3.0 Training and Qualifications

Evaluations of licensee performance in this area was based on:

- discussions with supervisory and technician level personnel;

- discussions with workers;
- review of resumes; and
- review of training records.

Within the scope of this review, no violations were identified. However, during inspector review of contract Health Physics (HP) technician's qualifications, the following discrepancies were brought to the licencee's attention:

- The occupational exposure dates of one contract HP Technician's Form NRC-4 did not correspond to the employment dates indicated by the individual's resume.

  Licensee corrective actions included: restricting the individual from the radiologically controlled area pending resolution, obtaining an updated Form NRC-4, and contacting other licensee facilities to verify occupational exposure and employment. The licensee verified that the individual is qualified for the position assigned.

- A contract HP Technician's resume had a 15 month period in which the job description was not indicative of the position held.

  The licensee performed an assessment which included contacting the other licensee's facility. The licensee determined that the individual met the minimum qualification requirements and possessed sufficient experience for the position currently filled (Senior HP Technician).

These descrepancies were not indicative of a programmatic breakdown but indicated the need for improvements in the review process for contract HP technicians.

4.0 External/Internal Exposure Controls

The licensee's program for external and internal exposure controls was reviewed against criteria contained in the following:

- 10 CFR 20.103, "Exposure of individuals to concentrations of radioactive materials in air in restricted areas";
- 10 CFR 20.201, "Surveys";
- 10 CFR 20.203, "Caution signs, labels, signals and controls";
- 10 CFR 20.401, "Records of surveys, radiation monitoring, and disposal";
- Technical Specification 6.11, "Radiation Protection Program";

- Technical Specification 6.12, "High Radiation Area";
- Licensee procedures:
  - EHS-3.109, "Control of High Radiation and Locked High Radiation Areas";
  - EHS-3.110, "Control of Locked Ultra High Radiation Areas"; and
  - EHS-SQ-3.901, "Vapor Containment Entry and Egress."

Evaluation of licensee performance in this area was based on the following:

- Discussions with cognizant personnel;
- Tours of the facility;
- Review of Radiological Occurrence Reports (RORs);
- Review of RWP's and associated surveys; and
- Review of MPC-hour tracking logs.

The licensee has established an effective program for the control of internal exposures. The inspector reviewed MPC-hour tracking logs and air sample results. Discussions of in vivo analysis results with whole body counter (WBC) operators indicated no significant uptakes. A new WBC, recently placed into service, supplements the existing chair geometry for routine screening purposes.

The inspector reviewed a radiation exposure to one worker in excess of the plant administrative limit without prior authorization. This unplanned exposure occurred on March 8, 1987, at 6:00 p.m. An entry was made into the loop area of containment at 100% power to investigate a possible primary leak. A plant operator entered containment, escorted by a health physics technician, and identified a leak involving a sample valve associated with the #21 steam generator (S/G). Surveys by the HP indicated dose rates of 3-4 R/hr at the base of the S/G platform and 3-35 R/hr on the platform. When the source of the leak was identified, the operator tried to isolate the sample valve, and in so doing, entered the higher dose area of the S/G platform resulting in a total exposure for the entry of 1300 mR. The leak was not isolated on the initial entry. The operator was authorized an administrative limit of 1250 mR and had been tasked only with identifying the leak.

The exposure resulted in the initiation of Radiological Occurrence Report 87-08 and an investigative report as specified in Station Procedure SAO-132. The cause of the unplanned exposure was the operator's attempt to isolate the valve. At no time was power reduced to minimize dose to the individuals. The licensee's review of this incident resulted in a Standing Order requiring a reduction to 30% power for all future entries into the loop area. In addition, the containment entry procedure was substantially revised. Future situations of this type are now handled by a two-entry procedure. Procedures now require that initial entries are to identify the

problem and recommend a possible solution, with a second, planned entry, to effectively mitigate the problem. The overall effectiveness of the licensee's corrective actions will be reviewed during future inspections.

On November 17, 1987, at approximately 1200 hours, the inspector toured the 95' elevation of vapor containment accompanied by the licensee's Radiation Protection Manager (RPM). During the tour, the inspector opened an inadequately locked access hatch, posted as a locked High Radiation Area. The hatch, a hinged section of floor grating, is typically secured to the surrounding structural grating with a steel cable and a padlock. The hatch allows access via a ladder to two lower platforms surrounding the #23 Reactor Coolant Pump. In addition, a second ladder from the lower platform allows full access to the 46' elevation inside the crane wall. This 46' elevation is controlled as a locked High Radiation Area and allows access to the S/G platforms with dose rates exceeding 1000 mR/hr. The licensee immediately posted a guard until the hatch was adequately locked. This failure to control access is an apparent violation of Technical Specifications, Section 6.12, "High Radiation Area" (50-247/87-26-01).

The licensee's program for the administrative control of locked High Radiation keys was reviewed. During a review of the key inventory documentation for the period beginning October, 1987, the inspector noted several instances where the licensee did not document the shiftly accountability checks. In addition, the documentation of the key inventories was fragmented, appearing in three different logs. The inspector also noted during a review of the key issue log starting August, 1987, several instances where the documentation of the use of Locked High Radiation keys was incomplete. Although station procedure EHS-SQ-3.109, Rev. 5, does not specifically require an inventory or key issue log, the findings by the inspector indicate a need for management review of the administrative controls associated with Locked High Radiation Keys. This area will be reviewed during a future inspection (50-247/87-26-02).

5.0 Hot Particle Control Program

The inspector reviewed the status of the licensee's "hot particle" exposure control program with respect to criteria contained in the following:

- 10 CFR 20, "Standards for Protection Against Radiation";
- Information Notice (IN) 86-23, "Excessive Skin Exposures Due to Contaminatiion with Hot Particles", dated April 9, 1986; and
- Information Notice (IN) 87-39, "Control of Hot Particle Contamination at Nuclear Power Plants", dated August 21, 1987.

Evaluation of licensee performance was based on:

- discussions with supervisory and technician-level personnel;
- review of station procedures; and
- review of RWP surveys.

The licensee has established and implemented a program to control personnel exposure to hot particles. Procedures for the detection, monitoring, and dose assessment of hot particles are in place. Personnel monitoring instrumentation is capable of detecting hot particles. Training is being given to contractor and licensee staff personnel. RWP surveys were found to include "sticky smears" for hot particles. ALARA checklists included briefings for hot particles.

The licensee has exercised good initiative in establishing a program, however, the following weaknesses were identified by the inspector:

- Dose assessment methodology does not provide adequate guidance necessary to minimize potential calculational errors.

- Dose assessment analysis procedures did not specify appropriate calculational responsibilities and requirements for review and approval by management.

The inspector informed the licensee of the above weaknesses. The licensee acknowledged the problems and stated that they will be addressed. This area will be examined further in the next routine inspection.

6.0 Control of Radioactive Materials and Contamination

The inspector reviewed the posting, labeling and control of radioactive materials and contamination with respect to criteria contained in 10 CFR 20, "Standards for Protection Against Radiation."

The evaluation of the licensee's performance in this area was based upon:

- observations by the inspector during tours of the facility including inspections performed during back shifts; and
- independent radiation surveys performed by the inspector.

Within the scope of this review, no violations were identified. The licensee was implementing an adequate radioactive material and contamination control program.

The licensee has taken steps in reducing the extent of facility contamination. Since June, 1986, the total area of contamination has been reduced from 37,000 sq.ft. to 20,000 sq.ft., a reduction of over 45 percent. In addition, the licensee has been effective in maintaining these areas as contamination free.

7.0 ALARA

The licensee's ALARA program was evaluated against criteria contained in the following:

- Regulatory Guide 8.8, "Information Relevant to Ensuring the Occupational Radiation Exposures at Nuclear Power Stations will be As Low As is Reasonably Achievable (ALARA)"; and
- Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures as Low as is Reasonable Achievable."

Licensee performance relative to these criteria was evaluated by:

- discussions with cognizant personnel;
- tours of radiologically controlled areas;
- review of station ALARA goals;
- review of REM Committee meeting minutes;
- review of ALARA briefing and RWP packages;
- review of departmental exposure tracking; and
- review of station procedures.

Within the scope of this review, no violations were identified.

The following observations were discussed with licensee personnel:

- The licensee is within the established 1987 person-rem goal and is performing exposure tracking and trending. The licensee's goal of 975 person-rem (875 outage person-rem and 100 non-outage person-rem) is reduced from the 1986 projection of 1250 person-rem. However, it is significantly above the industry average for pressurized water reactors. As of November 17, the outage total was 618.785 person-rem. The plant systems source term remains high which is contributing to higher than average dose rates at similar facilities. Most areas inside the crane wall of the vapor containment require respiratory protection which may be contributing to personnel exposure. The unexpected steam generator girth weld makes it unlikely that the goals will be met.

- Monthly REM Committee meetings are being held. Reports are prepared and distributed by the ALARA staff.

- All RWP and ALARA briefing packages examined indicated that personnel had received their ALARA briefings. Discussions with workers indicated adequate knowledge of ALARA and RWP requirements.

- Discussions with contractor personnel indicated worker concern over high individual Health Physics technician exposures. The inspector

discussed this with licensee management who stated that this situation would be evaluated.

- Several items indicating good licensee ALARA initiatives were noted:

  - effective use of audio-visual equipment in controlling jobs;
  - use of the CEVUE laser-disc system to allow computer generated tours of containment;
  - reactor vessel head shielding modifications;
  - shielding for lower internals work; and
  - preventative valve maintenance.

8.0 Exit Meeting

The inspector met with licensee management personnel at the conclusion of this inspection to discuss the findings. At no time did the inspector provide written material to the licensee.