

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION I

IE Inspection Report No: 50-219/75-09

Docket No: 50-219

Licensee: Jersey Central Power & Light Company

License No: DPR-16

Madison Avenue at Punch Bowl Road

Priority: I

Morristown, New Jersey 07960

Category: C

Location: Oyster Creek, Nuclear Generating Station

Safeguards
Group: _____

Type of Licensee: BWR, 640 MWe

Type of Inspection: Refueling, Health Physics (Unannounced)

Dates of Inspection: March 25-27, and April 8-10, 1975

Dates of Previous Inspection: November 11-14, 1974

Reporting Inspector: *Robert R. Hyson*
Robert R. Hyson, Radiation Specialist

5/20/75
DATE

Accompanying Inspectors: _____

DATE

DATE

DATE

Other Accompanying Personnel: _____

DATE

Reviewed By: *P. J. Knapp*
P. J. Knapp, Chief, Facilities Radiation
Protection Section

5/23/75
DATE

3/821

SUMMARY OF FINDINGS

Enforcement Action

A. Items of Noncompliance

1. Violations

None

2. Infractions

- a. Failure to make adequate evaluations necessary to comply with 10 CFR 20.101 as required by 10 CFR 20.201(b). Failure to provide personnel extremity dosimetry where required for the proper evaluation of personnel extremity doses. (Details, Paragraph 10)

3. Deficiencies

- a. Failure to post a High Radiation Area in the Trunion Room as required by 10 CFR 20.203(c)(1). (Details, Paragraph 9)

B. Deviations

1. Failure to check for non-linearity errors in each range scale during survey instrument calibrations. (Details, Paragraph 8.b.)
2. Failure to calibrate 14 survey instruments at a quarterly interval as specified in a licensee commitment. (Details, Paragraph 8.a.)

Licensee Action on Previously Identified Enforcement Items

A. Items of Noncompliance, RO:I Inspection Report 50-219/74-17

Licensee's corrective actions with respect to the above referenced report were reviewed by the inspector and found completed.

Design Changes

Not Inspected

Unusual Occurrences

The following Abnormal Occurrences were reviewed and the inspector had no further questions:

- A. Failure to release 4,000 gallons of liquid radioactive waste in a controlled manner, AO 75-021.
- B. Failure of dehumidifying heater in standby gas treatment system no. 1 to energize upon system initiation, AO 75-072.

Other Significant Findings

A. Current Findings

1. Acceptable Areas

a. Pre-outage Preparation

A review of the health physics planned program for the refueling outage was concluded. (Details, Paragraphs 2 and 3)

b. 1974 Exposure

A review of the man-rem expended for 1974 was conducted. (Details, Paragraph 4)

c. Plans for Exposure Reductions

A review of the licensee's plans to effect reduced exposures for future refueling outages was conducted. (Details, Paragraph 5)

d. Fuel Sipping and Radiochemical Results

A review was made of the radiochemical results from fuel sipping operations and the radiochemical data collected for power operational parameters, (off-gas, stack gas release and reactor coolant iodine concentrations). (Details, Paragraphs 14 and 15)

2. Unresolved Items

None

- 1. JCP&L letter dated 2/3/75 to the Director, Division of Licensing
- 2. JCP&L letter dated 3/27/75 to the Director, Division of Licensing

3. Items Identified and Corrected by the Licensee

Infraction

None

Deficiency

None

Management Interview

A management interview was held at the site on March 27 and April 17, 1975.

Persons Present

Mr. D. A. Ross, Manager Nuclear Generating Station (via telephone intercom)
Mr. J. Carroll, Station Superintendent
Mr. E. Scalsky, Radiation Protection Supervisor

Items Discussed

A. Purpose of the Inspection

The inspector stated that the purpose of the inspection was to review the licensee health physics program, specifically, related to the refueling outage which would include inspection of pre-outage preparations and observation of actual outage operations as related to ALAP. The inspector stated that an individual from the NRC Radiological Assessment Branch had accompanied him as an observer during the inspection of the outage conditions.

B. Review of Items of Noncompliance

The items discussed are as identified under Enforcement Action in the Summary of Findings in this report.

C. Review of Inspection Findings

The items discussed are as follows:

1. Pre-outage Preparations (Details, Paragraphs 2, 3 and 5)
2. Airborne Contamination (Details, Paragraph 6)
3. Results of Plant Inspection Tour (Details, Paragraph 11)
4. N-16 Exposure Evaluation (Details, Paragraph 12) ,
5. Radwaste Area Inspection (Details, Paragraph 13)

DETAILS

1. Individuals Contacted

Jersey Central Power and Light (JCP&L)

J. Carroll, Station Superintendent
E. Scalsky, Radiation Protection Supervisor
D. Arbach, Radiation Protection Foreman
J. Cook, Radiation Protection Foreman
E. Grouney, Technical Supervisor
R. Swift, Maintenance Engineer
R. Pelrine, Chemistry Supervisor
R. Baron, Engineering Assistant
W. Spoulos, Station Helper Foreman

General Electric (GE)

Wrobel, Supervisor
D. Grant, Supervisor

Institute for Resource Management (IRM)

S. Prewett, Health Physics Shift Supervisor
E. Boice, Health Physics Technician
M. Meaburn, Health Physics Technician
J. Serabian, Health Physics Technician
S. Wong, Health Physics Technician
R. Leonard, President, IRM

2. Pre-outage Preparations

The inspector noted that the licensee agreed to follow the basic tenets of Regulatory Guides 8.8 and 8.10 during the refueling outage scheduled for March 28, 1975. The major elements of the above mentioned documents to which the licensee agreed were as follows:

- a. The use of well trained and qualified personnel (Health Physics and Maintenance)
- b. Estimates of man-rem to be expended on jobs involving potentially significant exposures.
- c. Setting of man-rem goals for the total outage.

- d. Comparison of man-rem accumulations with projected estimates and goals as the work progresses and acting on significant deviations.
- e. Assigning to a specific individual the responsibility for ensuring that exposures are kept as low as practicable (ALAP).
- f. Use of mock-ups, special shielding, flushing or decontaminating (to aid in removing radiation sources), special tools where practicable to maintain occupational radiation exposures low.
- g. Proper control of time and exposures to individuals to assure ALAP.
- h. Review and evaluation of exposures received during the performance of various jobs following the refueling outage.
- i. Health Physics input at PCRC meetings to procedures reviewed prior to refueling.

3. Training and Qualifications

The inspector noted through discussions with licensee representatives and review of records that the training and documented qualifications of health physics personnel hired to aid in keeping occupational exposures ALAP were consistent with Regulatory requirements. The inspector also noted that contractor and station maintenance personnel involved in potentially high exposure jobs (notably, control rod drive removal, rebuild and platform building in the control rod drive area beneath the reactor vessel, and recirculation pump seal repair) had received special pre-training for these jobs.

4. Man-rem Exposures - 1974

The inspector noted through review of records that the total man-rem dose for all personnel in 1974 was 20% less than that received in 1973 - 985 vs 1236 man-rems. It appeared that this reduction was effected, in part, by a greater effort on the part of the Health Physics personnel to instill the precepts of ALAP into their overall program.

5. Future Reduction In Exposures from Control Rod Drive (CRD) Maintenance

The licensee indicated that during the refueling outage two jobs were planned which would potentially reduce exposure for CRD maintenance at future refuelings. These jobs are as follows:

1. Erection of a new CRD platform to more easily facilitate CRD removal.
2. Flush neutron activated crud which has fallen into blank instrument tubes (~ 120) adjacent to CRD's.

The cognizant licensee representative indicated that the latter job, because of potential radiological hazard, would be especially evaluated from the ALAP standpoint during its progress and that such evaluation would be used to determine the extent of the total job scope.

6. Airborne Contamination

The inspector reviewed with the licensee the problem of contamination of personnel, primarily, in the areas of the Turbine building, i.e., the condenser bay, turbine deck, etc. The licensee representative indicated that the type of contamination experienced consisted primarily of the short lived particulate daughters of the fission gases Xe^{138} and Kr^{88} (Cs^{138} and Rb^{88}), that the source of these gases were numerous known steam packing leaks in the condenser bay area and that the contamination problem had existed since January, 1975. A review of the records indicated that affected areas were being surveyed daily and regulatory required occupancy times determined to assure that no significant radiological hazards to personnel existed. The licensee indicated that the known steam leaks were scheduled for repair during the refueling outage and that he would perform a search for possible additional steam leaks needing repair during the shutdown operation. The licensee felt this would eradicate the contamination problem, which in many cases required personnel to be decontaminated in order to allow them to exit through the change room portal monitors.

The inspector noted through review of records that some of this same type of contamination had been detected in the boiler house adjacent to the stack base during periods of boiler shutdown. The licensee indicated that during the shutdown the possibility of sealing any leaking areas between the boiler house and the stack base would be investigated.

7. Plant Tour During Refueling

The inspector concentrated on observation and evaluation of the health physics operation during refueling. The areas toured included the turbine building deck, condenser and heater bay, refueling floor, CRD rebuild area (75' level), drywell and access control areas. With

the exception of the items of noncompliance previously noted the licensee's health physics program appeared to be functioning in a manner consistent with regulatory requirements and ALAP concepts as partially outlined in paragraph 2.

During the tour the inspector verified the adequacy of:

- a. health physics staffing,
- b. instrument supplies,
- c. protective clothing supplies,
- d. mask supplies,
- e. contamination control,
- f. air sampling,
- g. survey records,
- h. exposure controls, and
- i. personnel traffic control.

The inspector noted from the licensee's records that the man-rem dose received for the CRD maintenance for 31 CRD's was only 63% of the dose received in 1974 for similar maintenance performed on 32 CRD's.

8. Instrument Calibration

- a. The inspector noted through review of records that, contrary to the licensee's calibration frequency for survey instruments as specified in the October 30, 1973, letter to the Director, Directorate of Regulatory Operations, Region I, there were 14 instruments which were not calibrated within the last quarter as follows:

| <u>Survey Instrument Type</u> | <u>Instrument No's</u> |
|-------------------------------|-------------------------|
| GSM-5 | 113, 114, 116, 117, 118 |
| Rad Owl | 203 |
| PIC-6A | 209, 211, 216 |
| Atometer | 708, 709, 711, 716, 720 |

The inspector noted that the licensee had calibrated all the instruments above before the inspection had terminated.

- b. The inspector noted that, except for the PIC-6A instruments, that all other survey instruments were only calibrated at one point on each scale. The inspector informed the licensee that this was a failure to check for non-linearity errors associated with each scale of the instrumentation as is in-

licated by accepted radiological practices. The licensee indicated that his calibration method agrees with the technique suggested by the instrumentation vendors and felt that this was adequate.

- c. The inspector noted that several of the present instrument calibration procedures taken from the vendor instruction manual were handwritten on informal note paper. The licensee stated that these procedures would be formalized and added to the 900 series procedure by July, 1975.
- d. The inspector noted that the licensee recently (1/75) acquired two new neutron survey meters to replace his previously inoperable ones.

9. Posting

During the facility tour, the inspector noted that a major portion of one's body could receive a radiation dose of 150 mr/hr from shielded piping located in the Trunion room near the heater bay area but that, contrary to regulatory requirements, the area was not properly posted as a high radiation area. It is noted that the two individuals working on two feedwater check valves in this room were informed of the high radiation area by the health physics personnel monitoring their work and that the area of high radiation was indicated on the radiation work permit (RWP). However, the posted survey did not include any dose rate greater than 80 mr/hr. The appropriate high radiation area signs were noted by the inspector to be properly placed within one hour after the deficiency was pointed out.

10. Extremity Doses

During the plant tour, the inspector noted that during certain jobs such as CRD removal and rebuilding there was no special dosimetry such as extremity badges or other means of recording extremity doses despite the fact that workers' hands were exposed to local radiation fields of up to 10 R/hr while the whole body film badge (used for permanent dose records) was only exposed to ~200 mR/hr according to a cognizant licensee representative. The inspector noted that in this situation adequate evaluation of worker extremity doses were needed to comply with 10 CFR 20. The inspector noted that the licensee promptly implemented the use of extremity badges where required to comply with 10 CFR 20 regulations.

11. Air Monitoring

- a. The inspector noted during the plant tour that three or four of the low volume air samplers (particulate and charcoal samplers) did not have rotameters attached and that the licensee was using the rated pump capacities to determine sample flow rates. The licensee agreed to properly verify these flow rates, immediately.
- b. The licensee indicated that all airborne exposure evaluations were being made by using low and high volume air samplers. And that the new continuous air monitors (CAMs) placed strategically throughout the plant were only being used experimentally. The inspector informed the licensee representative that there was some confusion among the health physics personnel as to the applicability of the CAM's with regard to exposure evaluations. The licensee stated that he would inform all health physics personnel immediately that the use of the CAM's was as stated above.

12. N-16 Exposure Evaluation

The inspector questioned the licensee about the adequacy of his evaluation of personnel exposure to N-16 (during power operations) in light of the fact that the N-16 gamma emission energies exceed 3 Mev and are, therefore, difficult to measure in terms of exposure. The licensee indicated that, at present, he has been in contact with his film badge vendor and outside personnel concerning this matter. The licensee agreed to have a viable program or in effect to evaluate his present program for N-16 exposure and dose measurements within one month after startup following this refueling outage.

13. Radwaste Area

The inspector identified the following items found during a radwaste building tour to the licensee:

- a. The entrance door to the control room was found propped open with a leak brick which could adversely affect ventilation design parameters.

The licensee agreed to keep this door closed when not in use.

- b. The recurring failure of the waste drum capping machine operation.

The licensee stated that he continues to try different methods of repair but that none have proved permanently effective. The licensee stated that for the periods when the capper is out of service that manual capping will be done using a portable leaded shield to reduce exposures.

- c. There was radiation emanating from process piping producing a 5 mR/hr field at the radwaste control room where the operator sits during portions of his tenure there.

The licensee stated that a shield wall in front of the process piping in this area is to be built and that, thus far, the study of floor loading capacity in the area of this proposed wall has been completed and that the final design of the wall is expected within the next 30 days.

14. Fuel Sipping

The inspector noted through discussions with the cognizant licensee representative and review of records that 19 of the 525 fuel assemblies were identified as "leakers" using the incore fuel sipping technique.

15. Radiochemistry

- a. The cognizant licensee representative indicated to the inspector that the gross radioactive concentration in the refueling water (fuel pool and reactor) was 3×10^{-3} $\mu\text{C}/\text{ml}$ on 4/8/75.
- b. The licensee representative indicated to the inspector that the following radiochemical data were obtained during full power operations on the dates noted:

| <u>Date</u> | <u>Off-Gas @ Air Ejector ($\Sigma 6$)</u> | <u>Stack Gas ($\Sigma 9$)</u> |
|-------------|------------------------------------------------------|------------------------------------------|
| 3/26/75 | 157,000 $\mu\text{Ci}/\text{sec}$ | 33,000 $\mu\text{Ci}/\text{sec}$ |

| <u>Date</u> | <u>Reactor Water Iodine Concentration</u> |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3/28/75 | I-133 = 0.056 $\mu\text{Ci}/\text{ml}$ I-135 = 0.10 $\mu\text{Ci}/\text{ml}$ I-131 = 0.006 $\mu\text{Ci}/\text{ml}$ I-132 = 0.17 $\mu\text{Ci}/\text{ml}$ I-134 = 0.55 $\mu\text{Ci}/\text{ml}$ Total = 0.88 $\mu\text{Ci}/\text{ml}$ |

16. RWP

The inspector noted that the licensee is using the revised Radiation Work Permit as previously described in RO:I Inspection No. 50-219/74-17.

17. Personnel Dosimetry

The inspector noted that the licensee upon further investigation, assigned the reported TLD badge dose to the individual whose TLD

dose badge varied from the licensee's initial investigation of the individual's dose. This original disparity in dose assessment was noted in a previous inspection report*.

18. The inspector noted through discussions with the licensee representative and review of records that the following two practices, questioned previously*, are being performed:
 - a. Air samples are being taken during centrifuge operations in the working zone areas to assure compliance with regulatory requirements.
 - b. Data sheets defining frequency of air surveys to be taken are now in use by health physics personnel.