

U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS  
REGION I

RO Inspection Report No.: 50-219/73-13

Docket No.: 50-219

Licensee: Jersey Central Power & Light Company

License No.: DPR-16

Madison Avenue at Punchbowl Road

Priority: \_\_\_\_\_

Morristown, New Jersey

Category: C

Location: Oyster Creek, Forked River, N. J.

Type of Licensee: 1930 MW (t) BWR (G.E.)

Type of Inspection: Routine, Unannounced

Dates of Inspection: August 28-29, 1973

Dates of Previous Inspection: August 3 and 6, 1973

Reporting Inspector: Edward G. Greenman

Edward G. Greenman, Reactor Inspector  
Facility Operations Branch

10/1/73  
Date

Accompanying Inspectors: Robert Young Jr for

Donald L. Capton, Senior  
Reactor Inspector (August 29, 1973)

10/1/73  
Date

Gary D Snyder  
Gary Snyder, Reactor Inspector  
(August 29, 1973)

10/1/73  
Date

Other Accompanying Personnel: None

Reviewed by: Robert Young Jr for

Donald L. Capton, Senior Reactor Inspector  
Facility Operations Branch

10/1/73  
Date

## Summary of Findings

### Enforcement Action

#### Violations

- A. Technical Specification 4.4.A.2 - Failure to verify Core Spray motor operated valve operability on a monthly basis as required. (Report Details, Paragraph 6.a.2)
- B. Technical Specification 3.6.C - Failure to maintain the maximum amount of radioactivity, excluding tritium noble gases and isotopes with  $t_{1/2} < 3$  days contained in outside rad-waste storage tanks less than 10 curies. (Report Details, Paragraph 7.d)

#### Safety Items

Radiological safety control practices - Failure to routinely calibrate survey instruments used to detect and measure radioactivity for the purpose of personnel protection on a quarterly basis. (Report Details, Paragraph 7.a)

#### Licensee Action on Previously Identified Enforcement Items

Not inspected.

#### Unusual Occurrences

- A. Failure of the No. 1 Diesel Generator to start during a routine six month test. (JCPL letter to Licensing dated August 17, 1973 (Abnormal Occurrence No. A073-17) )\*
- B. Fish kill attributed to thermal shock caused by high temperatures following a dilution pump trip. (JCPL letter to Directorate of Regulatory Operations, Region 1 dated August 31, 1973.) (Report Details, Paragraph 8)
- C. High activity in outside rad-waste storage tanks. (JCPL letter to Licensing dated August 31, 1973 (Abnormal Occurrence No. A073-18) )\* (Management Interview, Paragraph C; Report Details, Paragraph 7.d)

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\*A review of records and discussions with licensee representatives indicated that events and corrective action was as stated in the licensee's letter(s).

Other Significant Findings

A. Current Findings

1. Fuel Densification

Core power distribution and power level was adjusted on August 24-25 in accordance with Change No. 16 to the Technical Specifications dated August 24, 1973. (Report Details, Paragraph 5.b)

2. CRD Accumulator Surveillance

Accumulator level and pressure switches were last calibrated in April, 1968. (Report Details, Paragraph 5.a; Management Interview, Paragraph B)

B. Status of Previously Reported Unresolved Items

Not inspected.

Management Interview

An exit interview was conducted August 28, 1973 with Messrs. Reeves\*, Sullivan and Riggle. Mr. Capton and Mr. Snyder were also present representing the Directorate of Regulatory Operations, RO:1. Items discussed are summarized below:

A. General

The inspector summarized the scope of the inspection, relative to the licensee's actions with respect to Change No. 16 to the Technical Specifications, circumstances related to a fish kill which occurred August 9, 1973, abnormal occurrences since the last inspection, surveillance records for the Emergency Cooling Systems, survey instrument calibrations, and CRD accumulator surveillance.

B. Control Rod Drive Accumulator Surveillance

The inspector stated his understanding based on previous discussions with licensee representatives that a procedure would be prepared, a PCRE review conducted, surveillance frequency

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\*Acting Plant Superintendent

and acceptance criteria established, and pressure and level switch calibrations performed.

A licensee representative stated that the inspector's understanding was correct. (Report Details, Paragraph 5.a)

C. Ongoing Violation of the Technical Specifications Section 3.6.C - High Activity in Outside Rad-Waste Tanks

The inspectors stated concern regarding the extended time interval required to return activity levels in the outside rad-waste surge tank to within Technical Specification limits. An inspector further noted that the bases for the Technical Specification requires action to be taken on a timely basis to avoid exceeding the limit.

A licensee representative stated that decontamination work was going on at this time and that processing would continue as rapidly and effectively as possible. The licensee representative further stated that Regulatory Operations (RO:1) would be notified when surge tank activity levels were within limits.\*

An inspector stated that this violation further identified the rad-waste problem at the facility and emphasized the necessity for management involvement to recognize the severity of this problem.

A licensee representative acknowledged the inspector's remarks and stated that evaluations concerning modifications to the radioactive waste facility were being conducted.

D. The inspector identified the following apparent violations and safety items:

1. Violation - Failure to conduct monthly operability verification for Core Spray motor operated valves as required by Technical Specification 4.4.A.2. (Report Details, Paragraph 6.a.2)
2. Safety Item - Failure to perform routine calibrations of survey instruments on a quarterly basis. (Report Details, Paragraph 7.a)

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\*Notification was subsequently provided to the assigned inspector by telephone on September 4, 1973.

E. Deficiencies Identified in Health Physics Instrument Calibration Documentation

An inspector stated that a review of procedures and calibration records had disclosed certain deficiencies which required resolution. The inspector further stated he had discussed these deficiencies with a cognizant licensee representative and obtained commitments regarding resolution.

A licensee representative stated that he was aware of those commitments and that he concurred with them. (Report Details, Paragraph 7.b)

F. Plant Audit System

An inspector stated his position based on a limited sampling basis that the internal audit system should be examined to provide assurance that surveillance testing requirements are met. The inspector further stated that all surveillance records should be examined to assure adequate documentation as required.

A licensee representative acknowledged the inspector's remarks.

DETAILS

1. Persons Contacted

Mr. D. L. Reeves, Operations Supervisor  
Mr. J. L. Sullivan, Technical Supervisor  
Mr. E. I. Riggle, Maintenance Supervisor  
Mr. D. E. Kaulback, Radiation Protection Foreman  
Mr. R. Stoudnour, Chemical Engineer (Environmental)  
Mr. C. Fickiessen, HP Staff Engineer  
Mr. E. Gowney, Technical Engineer  
Mr. S. Griffiths, Cadet Engineer

2. Administration and Organization

a. Personnel Changes

Three associate engineers and two engineering assistants have been added to the staff since January, 1973.

b. Operator Complement

The operating staff consists of four shift foremen and three management representatives (all licensed senior reactor operators), eight control room "A" and "B" operators and eight operators in training (all licensed reactor operators), two non-licensed operating foremen, and fourteen non-licensed equipment operators. A licensee representative stated that jobs had been posted for selection of four operating foremen. The inspector was informed that personnel selected would be capable of licensing as senior reactor operators.

c. Status of Certified Health Physicist

Interviews to fill the position of certified Health Physicist at Oyster Creek are continuing. No selection had been made at the time of this inspection. Facility staffing requirements were discussed with a licensee representative.

d. Plant Operating Review Committee (PORC)

Minutes of PORC meetings No. 73-11 through 73-29 held April 11, 12, 14, 20, 24, 26, May 7, 11, 12, 22-25, June 1,

14, 21 and 25, July 12, 19, 21, 30 and August 6 and 13, 1973 were reviewed on a sampling basis. Meetings were conducted within frequency requirements of Technical Specification 6.C.b.

3. Logs and Records

The following logs and records were reviewed without comment except as noted within this report.

- a. Emergency Cooling System surveillance records January - August 16, 1973.
- b. Control Room Log Book - June 2, July 19, August 24-29, 1973.
- c. Technical Specification Log and Work Sheet for T.S. 3.10 - August 28-29, 1973.
- d. Power Data Results - August 6 - August 29, 1973.
- e. HP Survey Instrument Calibration Log - July, 1972 - July, 1973.
- f. Survey results RS No. 676-73 dated August 28, 1973 and Surge Tank Surveys - August 22-28, 1973.

4. Operations

The reactor was operated at approximately 98% of rated power from August 6 - August 24, 1973. The licensee received an order by the Director of Regulation changing the Technical Specifications of License No. DPR-16, dated August 24, 1973 at approximately 4:45 P.M. on August 24. Power level was adjusted from 97.5% (4:45 P.M.) to 93.1% (6:00 P.M.) to comply with Change No. 16 to the Technical Specifications. During the time period August 25 - August 29, 1973 (conclusion of inspection) power level was varied from 90.5% - 93.68% and records indicated established average planar LHGR and local LHGR limits, were not exceeded.

5. Reactivity Control and Core Physics

- a. Control Rod Drive (CRD) Accumulator Instrumentation Surveillance

The inspector conducted a review of surveillance requirements regarding accumulator level and pressure switch calibrations and identified several deficiencies which required resolution. The apparent deficiencies and the licensee response to these items was as follows:

Deficiencies:

- (1) A surveillance procedure had not been prepared for calibration of pressure and level switches associated with the accumulator units.
- (2) The last calibration of these sensors was performed November 7, 1968.

Licensee Response:

A licensee representative stated that a surveillance calibration procedure would be prepared, PORC review completed and frequency and acceptance criteria established. This item was also discussed at the exit interview.

b. Fuel Densification\*

Licensee's action was as described in JCPL letter to the Directorate of Licensing dated August 27, 1973. The licensee has generated a new procedure (Standing Order No. 18) dated August 29, 1973 for calculating the local linear heat generation rate and the average planar linear heat generation rate. T.S. 4.10 dated August 24, 1973 requires a daily check of average planar LHGR and local LHGR. The inspector reviewed calculations for the period August 25-29. Results indicated limits for fuel types I, II, III and IIIE were not exceeded. Records indicated the limiting condition for Type III and IIIE fuel. MAPLHGR values varied from 9.042 - 10.17. Local LHGR varied from 11.66 - 13.12. Discussions with licensee representatives and records reviewed indicated that power was reduced on August 24, 1973 and full core power distribution data accumulated. Tip Traces were completed and power was further reduced to 90.5% (582 MWe). On August 26, 1973, further power distribution data and tip traces were completed. On August 27, power was increased to 93.2% (600 MWe).

\*Letter from Directorate of Licensing to JCPL dated August 24, 1973



6. Emergency Core Cooling Systems

Surveillance records concerning the following systems and components for the time intervals referenced were reviewed by the inspector in accordance with requirements of the Technical Specifications (T.S.). Deficiencies identified were as noted below:

a. Core Spray System

(1) Pump Operability Tests - January 1 - August 16, 1973

Surveillance results for testing conducted June 2, 1973 were unavailable for the inspector's review. Control Room Log entries indicated this test had been conducted as required by T.S. 4.4.A.1. Deficiencies in the licensee's record keeping and management audit system were discussed with a licensee representative.

(2) Valve Operability - January 1 - August 16, 1973

Surveillance results for testing conducted July 19, 1973 were unavailable for the inspector's review. Control Room Log entries indicated this test had been conducted as required by T.S. 4.4.A.2. Deficiencies in the licensee's record keeping and management audit system were discussed with a licensee representative. No documentation was available to indicate a monthly operability test had been performed between April 26 and June 21, 1973. (The reactor was returned to power following a refueling outage from April 13 - June 4, 1973.) T.S. 4.4.A.2 specifies a monthly test frequency.

Discussions with a licensee representative indicated testing was not completed as scheduled due to a hydro test in progress. This item was also discussed at the exit interview. (Violation)

(3) Automatic Actuation Test - January 19 - August 15, 1973

Surveillance records indicated testing was performed as required by T.S. 4.4.A.3.

- (4) Pump Compartment Water Tight Door Closure - May 25 - August 21, 1973

Verification was provided on a daily basis and following entry. T.S. 4.4.A.4 specifies a weekly frequency.

- (5) Core Spray Header Differential Pressure Instrumentation - January - July, 1973

Calibration was completed February 5, April 28, and July 20, 1973 as required by T.S. 4.4.A.5.

- b. Automatic Depressurization (ADS) - May 28, 1973

Surveillance records indicated a valve operability and auto actuation test was completed during the last refueling outage as required by T.S. 4.4.B. Previous testing was conducted November 7, 1971.

- c. Containment Cooling System - January 12 - August 23, 1973

- (1) Pump Operability

Surveillance records indicated testing was performed monthly and on May 30, 1973 prior to startup following the refueling outage as required by T.S. 4.4.C.1.

- (2) Automatic Actuation - January 12 - July 26, 1973

A review of surveillance records indicated testing was performed as required by T.S. 4.4.C.2.

- (3) Pump Compartment Water Tight Door Closure - May 1 - August 14, 1973

A review of tour checkoff sheets indicated that verification was provided daily and after entry. T.S. 4.4.C.3 specifies a weekly frequency.

d. Emergency Service Water System

(1) Pump Operability - January 12 - August 23, 1973

A review of surveillance records indicated pump operability was verified monthly and prior to startup following the refueling outage as required by T.S. 4.4.D.1.

(2) Automatic Actuation Test - January 12 - July 26, 1973

A review of surveillance records indicated testing was performed as required by T.S. 4.4.D.2.

e. Control Rod Drive Hydraulic System - January 22 - August 6, 1973

A review of surveillance records indicated testing was performed as required by T.S. 4.4.E.1.

f. Fire Protection System - January 23 - August 7, 1973

A review of Pump and Isolation Valve Operability Surveillance indicated testing was performed as required by T.S. 4.4.F.1.

7. Radiation Protection

a. Instrument Calibration Procedure

The inspector conducted a review of HP Procedure 904.11 revision dated October 12, 1972. The procedure specifies all portable monitoring survey meters will be calibrated within a six (6) month interval and/or following maintenance. The procedure specifies a monthly review of all instrumentation for the last calibration date, removal from service of any instrument that had not been calibrated satisfactorily, and further specifies that any instrument satisfactorily calibrated within the last five (5) months shall be left in service. Records of calibrations are to be maintained on Radiation Protection Record Forms. A licensee representative was apprised of the inspector's position that generally acceptable practice is a calibration of instruments on a quarterly basis. (Safety Item)

b. Survey Instrument Calibration Log

The inspector conducted a review of the Survey Instrument Calibration Log for the period July 1972 - July 1973 and identified several apparent deficiencies which required resolution. The apparent deficiencies which were identified and the licensee's response to those items are as follows:

Deficiencies:\*

- (1) Instrument status sheets were found to be incomplete.
- (2) Radiation Protection Record Forms were not complete and updated.
- (3) Out of Service Radiation Protection Forms were not properly complete and updated.
- (4) Instruments to be calibrated section was incomplete.

Licensee Response:

A licensee representative stated that corrective action would be taken with respect to record completion and review of log book requirements.

The inspector informed a licensee representative that deficiencies of this type reflected negatively with respect to a good, well managed program.

c. Instrument Calibrations

The inspector reviewed calibration results for the period July 1972 - July 1973 encompassing 20 portable survey instruments. Calibrations were performed in accordance with procedure 904.11 frequency requirements.

d. Survey Readings (Outside Rad Waste Storage)

(1) Perimeter Fence Readings

The inspector reviewed survey results (RS No. 676-73

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\*Review of work requests and supporting documentation indicated that calibrations were performed, or the instrument was taken out of service or lost.

dated August 28, 1973. Results indicated that readings at the perimeter fence varied from 0.1 - 0.2 mr/hour. No readings in excess of 10 CFR 20 limits for an unrestricted area were observed.

(2) Outside Waste Surge Tank

The inspector reviewed survey results concerning activity levels in the outside waste surge tank for the period August 22-28, 1973. The highest observed reading was 2.7 R/hour at contact. During a subsequent tour of the area the inspector observed that the area around this tank had been posted and a barricade installed (rope barrier). The inspector was informed by a licensee representative that this area is permanently posted as a high radiation area.

8. Miscellaneous

Fish Mortalities - August 9, 1973

a. Pump Trip and Restart

The fish kill which occurred on the afternoon of August 9, 1973 was attributed to high temperature in the discharge canal resulting from a dilution pump trip.\* The inspector's review of circumstances surrounding this occurrence indicated the following:

- (1) The licensee was unable to restart the tripped pump due to a low water level switch actuation. (Float switch)
- (2) Grating was partially lifted at the No. 2 dilution pump and no attempt was made to start this pump.
- (3) The No. 3 dilution pump was not started immediately in that seal water had been valved out to the pump. This event apparently resulted in a 29 minute delay between the No. 1 pump trip and a subsequent startup of No. 3.
- (4) Records reviewed and discussions with plant personnel indicated the bridge temperature reached approximately 99° F.

\*JCPL letter to the Directorate of Regulatory Operations, Region 1 dated August 31, 1973

b. Pump Capabilities

The inspector was advised by a cognizant licensee representative that it is not unusual to experience pump trips. Plant records indicated a pump trip occurred August 10, 1973 and a pump was restarted in about 5 minutes. Discussions with a licensee representative indicated that dilution pumps have no automatic starting capabilities.

c. Licensee's Corrective Action to Prevent Recurrence

The licensee has taken the following steps to prevent similar occurrences:

- (1) Bypasses have been installed around low level switches to permit a startup sequence.
- (2) Seal water is now continuously provided to the pumps.
- (3) An alarm has been installed in the control room to annunciate a bridge temperature of 93° F.
- (4) A memorandum has been issued to shift foremen dated August 10, 1973 requiring utilization of a second dilution pump if temperature increases to 95° F.

d. Temporary Temperature Monitoring in Canal

The inspector was accompanied by a licensee representative on a tour of the dilution pump and canal area. The inspector was informed that temporary temperature monitoring about 75 feet out into the discharge canal had been installed on August 10, 1973. The inspector observed a reading of 100° F. on August 28, 1973 obtained from this equipment.



UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

OCT 4 1973

*O'Reilly, RO*

H. D. Thornburg, Chief, Field Support and Enforcement Branch, RO

OYSTER CREEK - DOCKET NO. 50-219 - MALFUNCTION OF BOTH DIESEL GENERATORS  
FOLLOWING A LOSS OF POWER

This memo is in response to H. D. Thornburg's request<sup>1</sup> for review of the above incident and our assessment of the related generic and safety implications. The licensee reported<sup>2</sup> that both diesel generators (DG) failed to restart after a power loss to the essential 4160 V buses following a "faststart" and subsequently a DG unit "stop" signal from the control room. Investigation into the problem disclosed a design deficiency in the interlocking of the failure-to-start and auto-start circuitry of both DG units.

During our discussions with the DG manufacture (General Motors) another design deficiency was noted in the licensee's planned modification to the logic circuitry. Accordingly, General Motors informed the licensee of this latest development and the work effort toward implementing the circuit changes were subsequently terminated. Further efforts are now underway by the manufacture to correct the restart problem.

We recommend that Region I follow up on this matter to ascertain the specific corrective measures that are taken to resolve the problem. In order to complete our review of the fix, we will need a copy of the electrical drawing which show the circuit modifications. Please arrange with Region I to forward a copy to us.

With regard to the related generic implications, General Motors stated that OC #1 is the only nuclear station utilizing this make and model diesel generator. On this basis, we do not believe the problem concerns other licensees.

Please advise, when we can be of further assistance on this matter.

*G. W. Reinmuth for*  
G. W. Reinmuth, Chief  
Technical Assistance Branch, RO

cc: B. H. Grier  
J. G. Davis  
D. Capton, RO:I  
J. P. O'Reilly, RO:I

<sup>1</sup>Action Control Form FO-175, Thornburg to Reinmuth, dated 9/27/73.

<sup>2</sup>Licensee's letter to Licensing dated 9/18/73 Concerning Events Related to the Subject Power Failure.

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