

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I

CO Inspection Report No. 50-219/72-01

Subject: Jersey Central Power & Light Company
Oyster Creek

License No. DPR-5

Location: Forked River, New Jersey

Priority

Category C

Type of Licensee: 1930 Mwt, BWR

Type of Inspection: Special, Unannounced

Dates of Inspection: February 7, 1972

Dates of Previous Inspection: November 19, 1972

Principal Inspector: *F. S. Cantrell*
F. S. Cantrell, Reactor Inspector

3/15/72
Date

Accompanying Inspectors: None

Date

Other Accompanying Personnel: None

Date

Reviewed By: *R. T. Carlson*
R. T. Carlson, Sr. Reactor Inspector

3/16/72
Date

Proprietary Information: None

Section I

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Action: Not applicable.

Unresolved Items: Not applicable.

Status of Previously Reported Unresolved Items: Not applicable.

Unusual Occurrence:

Coincident with a plant shutdown on January 28, 1972, large numbers of dead fish were found in coves off Barnegat Bay between the discharge canal and the inlet canal. Newspaper articles attributed the fish kill to the sudden cooling of the water in the discharge canal. (Section II)

Persons Contacted:

Mr. Tom McCluskey, Station Superintendent
Mr. Don Ross, Technical Supervisor
Mr. John Sullivan, Engineer
Mr. Ed Growney, Engineer
Mr. Don Kaulbach, Radiation Protection Supervisor
Mr. Charles Amato, Nuclear Engineer, N. J. State Department of Health

Persons & Groups Reported to be Involved in the Investigation:

Dr. Charles Wurtz, Consulting Biologist (for Jersey Central), Philadelphia, Pa.
Mr. Ernest Karvelis, Chief Biologist, Environmental Protection Agency (EPA),
Edison, New Jersey
Mr. Paul Hamer, Marine Biologist, State of New Jersey, Nacote Creek Fishery
Mr. Bruce Young, Conservation Officer, State of New Jersey, Fish & Wildlife
Service

Management Interview:

An exit interview was held with Mr McCluskey on February 7, 1972.

The inspector stated that there appeared to be a "cause and effect" relationship between the fish kill and the plant shutdown which lowered the water temperature in the outlet canal. Mr. McCluskey stated that before talking to Dr. Wurtz, he would have agreed to this statement, however, Dr. Wurtz stated that as a result of the decrease in bay temperature before the plant shutdown, the water temperature was already down to the threshold temperature for survival for these warm water fish. As such, it was his opinion that some of the fish would have died as a result of the natural drop in water temperature.

The inspector asked if Jersey Central planned to make a written report to the Commission on the fish kill. No definite commitment was made, however, Mr. Ivan Finfrock, Manager of Nuclear Generating Stations, subsequently informed the inspector that the fish kill would be reported as part of an Environmental Report that Jersey Central planned to submit to the Commission about March 1, 1972.

Section II

Details of Subjects Discussed in Section I

1. Plant records show that a "five recirculation pump trip test" was conducted at 10:42 p.m. on January 27, 1972. Reactor power dropped from 1890 MWt to 825 MWt when the pumps were tripped, and returned to 1325 MWt when the recirculation pumps were restarted. Following completion of the test, a planned power reduction began, and the generator was taken off line at 4:30 a.m. on January 28, 1972. Following completion of the planned maintenance work, the approach to critical began at 1:50 p.m., January 30, 1972 and the generator was placed on line at 4:28 a.m., January 31, 1972. Power was increased in steps to 1840 MWt at 1:00 p.m., February 2, 1972. The prime purpose of the outage was to identify and repair primary system leaks in the drywell. (The unidentified leakage rate was 4 gpm. Technical Specification limit - unidentified leakage to 5 gpm.)

2. Fish Kill in Barnegat Bay

According to Mr. McCluskey, the first reports of dead fish were received at the plant on January 29, 1972. The dead fish were reported between the plant inlet and outlet canals. Mr. Ross reported that he went to the location where the dead fish were reported. He stated that he estimated the number of dead fish was in the "hundreds". In one newspaper article in the Trenton Sunday Times Advertiser, Mr. Hamer, Marine Biologist, State of New Jersey, was reported to have estimated there were 200,000 dead fish, and that 99.9% of these fish were menhaden. Mr. McCluskey stated that by January 31, 1972, most of these fish had been eaten by sea gulls. Jersey Central's minutes of a meeting on February 1, 1972 to discuss the fish kill problem with local officials indicated that the Township officials agreed cleanup of dead fish would not be a problem. The meeting was attended by representatives from Jersey Central and Ocean and Lacey Townships.

3. Release Records

Radioactive release records and chemical release records were reviewed. Radioactive release records showed that one batch was released (1800 gallons) on January 28 and two batches (16,000 and 2,000) were released on January 29, 1972. A gamma spectrum was run on each batch prior to each release and each batch met applicable release limits. The release rate was controlled to meet the limits for unidentified releases even though an isotopic analysis was performed. This is the normal method used by Oyster Creek.

Records show that two batches (5,200 gallons each) of chromated water (K_2CrO_4) were transferred to Sumco, Inc. (Caldwell, N. J.) tank trucks for disposal. These transfers were made on February 3 and April 8, 1971. This water was removed from the torus. These were the only chemicals that the records indicate had been removed from the plant during CY 1971 and CY 1972 through February 7, 1972.

In response to specific questions asked of Mr. Carroll by the inspector* regarding chlorination of condenser cooling water, the following information was obtained. The maximum rate used is 4000 pounds/day (in summer). The rate currently in use is 1000 pounds/day. The rate is chosen to give a residual of 0.5 - 1 ppm at the condenser outlet. Seven streams are chlorinated for 1/2 hour each and the system stops for 1/2 hour (i.e., each stream is chlorinated for 1/2 hour every 4 hours). The last analysis for chlorine at the condenser outlet showed 1.5 ppm on June 17, 1971 with a 4000 pound/day feed. The rate of chlorination was reduced from 4000 pounds/day to 1000 pounds/day on December 1, 1971.

4. Cooling Water Temperature

Temperature charts were reviewed showing the condenser inlet and outlet temperatures and the temperature of the water in the discharge canal at the point where the outlet water leaves Jersey Central property (the railroad bridge). The condenser temperature chart showed that the inlet cooling water temperature dropped from approximately $47^{\circ} F$ to approximately $36^{\circ} F$ between 4:00 p.m. January 25, and 4:30 a.m. January 27, 1972, and remained in the range of $34 - 36^{\circ} F$ through January 30, 1972. The ΔT across the condenser was steady at $25^{\circ} F$ until the power reduction that started at 10:42 p.m. January 27, 1972 (the five recirculation pump trip test). Thereafter, the ΔT decreased to $\leq 1^{\circ} F$ at 4:30 a.m. when the plant was taken off line. During this period, three circulating pumps were pumping water through the condensers (total flow - 345,000 gpm). One dilution pump was in operation, except during this period from 10:00 p.m. January 25 to 12:01 a.m. January 27, 1972. One dilution pump moves approximately 250,000 gpm directly from the inlet canal to the outlet canal, bypassing the condenser.

Water from a creek named Oyster Creek enters the discharge canal before the discharge canal leaves Jersey Central property. The temperature of water leaving Jersey Central property is monitored by two thermocouples and recorded on a multipoint recorder. Two additional thermocouples were installed but are inoperable. The recorder chart showed wide variations in temperature between the two points that are considered operable. This may be due to incomplete

*During subsequent inspection on February 24, 1972 (CO Inspection Report No. 219/72-02).

mixing of the water from the condenser with water from the dilution pump and water from Oyster Creek. Several spikes were noted in which the indicated temperature was in the range of 75 to 110° F, however, these appear to have been due to recorder problems. In general, the indicated temperature was in the range of 45 to 50° F with the plant operating and 32 to 40° F with the plant shutdown.

5. Investigations

The fish kill was investigated by the State of New Jersey and by the Environmental Protection Agency (EPA). According to Mr. McCluskey, Mr. Paul Hamer, Marine Biologist from the Nacote Creek Fishery and Mr. Bruce Young, Conservation Officer from the Fish and Wildlife Service, participated in the investigation for the State. Samples of dead fish were taken for laboratory analysis to determine the cause of the fish kill. Mr. Charles Amato told Mr. J. P. O'Reilly, Director, Region I, that he would supply Region I the results of this analysis. Jersey Central retained the services of a consulting biologist to aid in this investigation of the problem. Mr. Ernest Karvelis, Chief Biologist, represented the EPA.

6. Publicity

The fish kill story appeared as a front page article in the Asbury Park Sunday Press on January 30, 1972. Subsequently, at least eight other newspapers carried a story or editorial on the subject. The newspapers included: The Evening Times (Trenton, N. J.), Trentonian, Trenton Times, Beach Haven Times, New York Times, Morristown Daily Record, The Reporter (Toms River) and the Sunday Times Advertiser.

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J. G. Keppler, Chief, Reactor Testing & Operations Br.
Division of Compliance, HQ

CO INQUIRY REPORT NO. 50-219/72-01
JERSEY CENTRAL POWER & LIGHT COMPANY
OYSTER CREEK 1 - BWE
DEPARTURE FROM TECHNICAL SPECIFICATION REQUIREMENTS

The subject inquiry report is forwarded for your information.

The actions taken and planned by the licensee are considered appropriate.

This subject will be reviewed during our next inspection of the facility (February 1972).

G. L. Madsen
Acting Sr. Reactor Inspector

Enclosure:
Subject Inquiry Report

cc: E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DRL (2)
D. J. Skovholt, DRL (3)
H. R. Denton, DRL (2)
A. Giambusso, CO
L. Kornblith, CO
R. Engelken, CO
CO Files
DR Central Files

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OFFICE ▶	CO				
SURNAME ▶	Madsen:smg				
DATE ▶	1/28/72				

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R. T. Carlson	
Region I	
E. M. Howard	
Region I	
XXXXXXXXXXXXXXXX G. L. Madsen	X
Region I	
F. J. Long	
Region II	
W. C. Seidle	
Region II	
N. C. Moseley	
Region II	
C. Fiorelli	
Region III	X
D. M. Sundcutt	
Region III	
W. E. Vetter	
Region III	
J. W. Fiera	
Region IV	
G. W. Spencer	
Region V	x

ESTIMATED RADIATION LEVELS NEAR LARGE BWR's

Enclosed for your information and for appropriate action is a copy of a memorandum, Denton to Boyd, November 17, 1971, with attachment, which provides information relating to the current estimates of the radiation levels that may prevail at both on-site and off-site locations near large BWR's. Please determine the dose rates at critical locations; i.e., control room, turbine hall, shop, off-site dwellings, etc., as appropriate for the following BWR's:

1. Dresden 1, 2, 3
2. Big Rock Point
- ~~3. Oyster Creek~~
4. Millstone 1
5. Nine Mile Point
6. Monticello
7. Humboldt Bay
8. LaCross

The requested information should be submitted to Headquarters by separate memorandum.

Enclosure:
As Stated

cc:w/o enclosure
J. P. O'Reilly, CO:I
B. H. Grier, CO:II

R. T. Carlson

FROM: R. T. Carlson DATE: 1/11/72

JAN 28 1972

J. G. Keppler, Chief, Reactor Testing & Operations Br.
Division of Compliance, HQ

CO INQUIRY REPORT NO. 50-219/72-02
JERSEY CENTRAL POWER & LIGHT COMPANY
OYSTER CREEK 1 - BWR
TRIPPING OF FEEDWATER AND RECIRCULATION PUMPS

The subject inquiry report is forwarded for your information.

The licensee agreed to consider the reportability of this matter, during the scheduled Plant Operations Review Committee meeting, in accordance with Section 1.15 F of their Technical Specifications.

This matter will be reviewed during our next inspection of the facility. (February 1972)

G. L. Madsen
Acting Sr. Reactor Inspector

Enclosure:
Subject Inquiry Report

cc: E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DRL (2)
D. J. Skovholt, DRL (3)
H. R. Denton, DRL (2)
A. Giambusso, CO
L. Kornblith, CO
R. Engelken, CO
CO Files
DR Central Files

OFFICE ▶

CO

SURNAME ▶

Madsen: smg

DATE ▶

1/28/72

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CO Inquiry Report No. 50-219/72-02

Subject: Jersey Central Power & Light Company

License No.: DPR-16

Facility: Oyster Creek - 1 BWR

Title: Tripping of Feedwater and Recirculation Pumps

Prepared by: G. L. Madsen, Acting Sr. Reactor Inspector Date

A. Date and Manner AEC was Informed:

By telephone call from Mr. T. McCluskey, Plant Superintendent, on January 26, 1972. Additional information was obtained in a phone call to Mr. McCluskey on January 27, 1972.

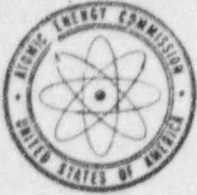
B. Description of Particular Event or Circumstance:

Mr. McCluskey stated that a review and checkout of the emergency alarm procedures had been initiated. On January 22, 1972 at 1:15 pm the alarm, "Normal Emergency Power DC Interlock Failure", was being tested. The test included transferring the electrical power from DC battery A to battery B (using a "knife" switch). As a result of this transfer, the breakers for three recirculation pumps and one feedwater pump, on the 4160 volt bus 1A, tripped. Mr. McCluskey indicated that:

1. No abnormal flux or reactor water level were encountered.
2. The electrical output dropped from 640 MWe to 316 MWe and then leveled out at 336 MWe.

C. Action by Licensee:

1. The DC power was returned to battery A (normal).
2. The recirculation and feedwater pumps were returned to service.
3. The plant was returned to 90% power by 3:00 pm, January 22, 1972.
4. Switches that should not be operated during power operation are being identified.
5. This subject is scheduled to be evaluated by the Plant Operation Safety Committee.



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

February 23, 1972

Note to File: *J. G. Keppler*
THRU: J. G. Keppler, Chief, Reactor Testing and Operations
Branch, CO

OYSTER CREEK - CO INQUIRY REPORT NO. 50-219/72-02

The subject inquiry report that was forwarded to Headquarters for action contains a recommendation relating to a possible restriction on the main condenser differential temperature at all power reactors. A specific recommendation regarding the Oyster Creek facility was forwarded to DRL in the Headquarters' transmittal memorandum for the subject inquiry report. No further action is planned at this time for the other power reactors because DREP is considering the effect of temperature change on biota during the environmental review of each facility.

F. J. Nolan
F. J. Nolan, Senior Reactor
Inspection Specialist
Division of Compliance

cc: J. P. O'Reilly, CO:I
R. T. Carlson, CO:I
F. S. Cantrell, CO:I

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