

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

RO Inspection Report No: 50-219/74-02 Docket No: 50-219  
Licensee: Jersey Central Power and Light Company License No: DPR-16  
Madison Avenue at Punch Bowl Road Priority: -  
Morristown, New Jersey Category: C  
Location: Oyster Creek, Forked River, New Jersey

Type of Licensee: GE (BWR) 1930 MW(t)

Type of Inspection: Routine, Unannounced

Dates of Inspection: January 21-25, 1974

Dates of Previous Inspection: January 11-12, 1974

Reporting Inspector: *Edw. G. Greenman* for 3/27/74  
Edward G. Greenman, Reactor Inspector Date

Accompanying Inspectors: *V. Thomas* for 3/27/74  
V. Thomas (TAB), October 17, 1973 Date

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Date

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Date

\_\_\_\_\_  
Date

Other Accompanying Personnel: None \_\_\_\_\_  
Date

Reviewed By: *Richard A. Field* 3/27/74  
for Donald L. Caphton, Senior Reactor Inspector, Date  
Reactor Operations Branch

*B/585*

## SUMMARY OF FINDINGS

### Enforcement Action

#### A. Violations

1. Technical Specification 4.5.F.1.D - Failure of MSIV's to meet specified leakage rates.
  - a. NS03B leak test failure (JCP&L letters to DL dated September 21, 1973 and December 7, 1973 (revised), subject AO 73-23)
  - b. NS04A and NS04B leak test failure (JCP&L letter to DL dated October 12, 1973, subject AO 73-24)
  - c. NS04A leak test failure (JCP&L letter to DL dated January 25, 1974, subject AO 74-05)
2. Technical Specification 2.3(1)(a) and 2.3(2)(a) - Failure to set the average power range monitor and rod block setpoints to specified values. (JCP&L letter to DL dated October 16, 1973, subject AO 73-26) (Details, Paragraph 6.b)
3. Technical Specification 2.3.7 - Failure of low pressure main steam line pressure switches to trip at  $\leq$  850 psig during surveillance tests.
  - a. RE 23A, B, C, and D (JCP&L letter to DL dated December 24, 1973, subject AO 73-30)
  - b. RE 23C (JCP&L letter to DL dated January 15, 1974, subject AO 74-01) (Recurrent violations)
4. Technical Specification 3.1.1.B.6 - Failure of a main steam line high radiation monitor to trip during surveillance. (JCP&L letter to DL dated January 9, 1974, subject AO 73-34) (Details, Paragraph 11.b)

5. Technical Specification 3.5.A.6 - Failure to inert the torus atmosphere to 5% O<sub>2</sub> content within 24 hours after placing the mode switch in run. (JCP&L letter to DL dated January 26, 1974, subject AO 74-6)
6. Technical Specification 2.3.5 - Failure of isolation condenser system time delay relays to initiate at  $\leq$  15 seconds. (JCP&L letter to DL dated January 29, 1974, subject AO 74-8)
7. Technical Specification 6.6.2 - Abnormal Occurrence Reports - Failure to notify the Director of the Regional Regulatory Operations office within 24 hours followed by a 10 day report.

a. 24 Hour Notification

AO 73-23(1)

b. 10 Day Written Report

- (1) AO 73-22
- (2) AO 73-24
- (3) AO 73-32
- (4) AO 73-34

(Details, Paragraph 13)

8. Technical Specifications 4.7.A.5 and B.1 - Failure to perform weekly checks of station and diesel generator batteries. (Details, Paragraphs 10.a(4) and b(1))
9. Technical Specifications 6.2.A.4 and 6.2.D - Installation of jumpers without benefit of a written procedure. (Details, Paragraph 8)

B. Safety Items

None

Licensee Action on Previously Identified Enforcement Items

1. Failure to report seismic shock suppressor failures.

Subsequent suppressor failures have been reported as required. An ongoing audit of surveillance areas is also disclosing prior occurring reportable items. The licensee has made additions and changes to the JCP&L staff. This item is considered closed.\*

2. Failure to maintain startup transformers operable and provide written procedures for relay testing.

The licensee's corrective action is still ongoing. Procedures for relay testing have not yet been reviewed by PORC. This area will be reviewed during the course of subsequent inspections.\*\*

3. Failure to complete core spray motor operated valve surveillance tests at required frequencies.

The licensee has assigned a staff engineer and an engineering assistant responsibilities for auditing surveillance records. Audit results to date have identified previously undisclosed reportable items. This item is considered closed.\*\*\*

4. Failure to maintain outside tank activity less than the 10 Ci limit.

The licensee implemented a procedural change January 25, 1974 requiring necessary sampling in the event of leaks. This item is considered closed.\*\*\*\*

5. Safety Item - Failure to calibrate portable survey instruments quarterly.

The licensee has implemented a new recordex control system. Surveillance records indicated instruments have been calibrated in accordance with a quarterly frequency. Additionally, 12 PIC 6A portable instruments (0-100 R/hr) have been ordered to replace old equipment. This item is considered closed.\*\*\*\*\*

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\* RO Inspection Report 50-219/73-18 dated January 8, 1974 and JCP&L letter to RO:I dated November 9, 1973.  
\*\* JCP&L letter to RO:I dated November 20, 1973.  
\*\*\* JCP&L letter to RO:I dated October 30, 1973.  
\*\*\*\* JCP&L letter to RO:I dated October 30, 1973.  
\*\*\*\*\* JCP&L letter to RO:I dated December 3, 1973.

Design Changes

None

Unusual Occurrences

The following abnormal occurrences and events were reviewed. Comments concerning specific areas are noted within this report.

- A. MSIV (NS03B) failed to meet allowable leakage requirements.<sup>1</sup>
- B. A differential pressure switch failed to trip and actuate the reactor building to torus vacuum breaker block valves.<sup>2</sup>
- C. MSIV's (NS04A and NS04B) failed to meet allowable leakage requirements.<sup>3</sup>
- D. An Isolation Condenser initiation relay failed to function during a surveillance test.<sup>4</sup>
- E. Limiting safety system settings for the APRM neutron flux scram and rod block were not properly set.<sup>5</sup>
- F. A nipple connecting the relief valve to the 1-3 containment spray heat exchanger (emergency side) failed due to salt water corrosion.<sup>6</sup>
- G. Leakage was identified from the RBCCW system to the discharge canal via the service water system.<sup>7</sup>
- H. An inoperable snubber (fluid loss) on the steam line to the B Isolation Condenser was found during surveillance inspection.<sup>8</sup>
- I. All four (4) main steam line low pressure switches tripped at less than the minimum required setpoint, during surveillance.<sup>9</sup>

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1 JCP&L report to DL dated September 21, 1973, Subject AO 73-23.  
2 JCP&L report to DL dated October 3, 1973, Subject AO 73-23(1).  
3 JCP&L report to DL dated October 12, 1973, Subject AO 73-24.  
4 JCP&L report to DL dated October 9, 1973, Subject AO 73-25.  
5 JCP&L report to DL dated October 16, 1973, Subject AO 73-26.  
6 JCP&L report to DL dated October 26, 1973, Subject AO 73-27.  
7 JCP&L report to DL dated November 8, 1973, Subject AO 73-28.  
8 JCP&L report to DL dated November 13, 1973, Subject AO 73-29.  
9 JCP&L report to DL dated December 24, 1973, Subject AO 73-30.

- J. Momentary interruption of 125 V DC power supplying instrumentation associated with safeguards systems.<sup>10</sup>
- K. The test spool valve for NS04A did not reset properly, following a five percent closure test.<sup>11</sup> (Details, Paragraph 9)
- L. A damaged relay in the plant protection system.<sup>12</sup>
- M. Four (4) isolation condenser high flow sensors tripped in excess of specified  $\Delta$  values.<sup>13</sup>
- N. A main steam line high radiation monitor failed to trip during surveillance testing.<sup>14</sup> (Details, Paragraph 11.b)
- O. An unexplained isolation of the "B" Isolation Condenser during a routine reactor cooldown on November 25, 1973.<sup>15</sup>
- P. A spill of chromate water on December 20, 1973 when a drain line from a temporary storage tank froze and subsequently cracked.<sup>16</sup>
- Q. One (1) low pressure main steam line pressure switch tripped below specified limits.<sup>17</sup>
- R. One main steam line high flow sensor in each safety system actuated in excess of maximum allowable levels.<sup>18</sup>
- S. Five (5) inoperable snubbers (fluid loss) were identified during surveillance.<sup>19</sup>

10 JCP&L report to DL dated December 29, 1973, Subject AO 73-31.

11 JCP&L report to DL dated January 7, 1974, Subject AO 73-32.

12 JCP&L report to DL dated December 20, 1973, Subject Damaged Relay.

13 JCP&L report to DL dated January 4, 1974, Subject AO 73-33.

14 JCP&L report to DL dated January 9, 1974, Subject AO 73-34.

15 JCP&L report to DL dated January 2, 1974, Subject Unexplained Isolation of B Condenser.

16 JCP&L report to DL dated January 3, 1974, Subject Spill of Chromated Water.

17 JCP&L report to DL dated January 7, 1974, Subject AO 74-01.

18 JCP&L report to DL dated January 17, 1974, Subject AO 74-02.

19 JCP&L report to DL dated January 24, 1974, Subject AO 74-03.

- T. MSIV (NS03B) failed to initially close with the reactor shutdown and the mode switch in refuel.<sup>20</sup>
- U. MSIV (NS04A) failed to meet acceptable leakage rate requirements during testing.<sup>21</sup>
- V. The torus was not inerted to 5.0% O<sub>2</sub> within 24 hours of placing the mode switch in run.<sup>22</sup>
- W. One of four (4) reactor high pressure sensors tripped in excess of specified limits.<sup>23</sup>
- X. Three of four (4) time delay contacts associated with high pressure-isolation condenser switches failed to close within specified preset times.<sup>24</sup>

#### Other Significant Findings

##### A. Current Findings

###### 1. Diesel Generator Modification

The licensee has installed the permanent (single) fast start relay for both diesel generators and has completed functional testing. (Details, Paragraph 10.c)

###### 2. N<sub>2</sub> Inerting Problem

The licensee began reducing power from about 340 MWe at 10:00 A.M. January 22, 1973. Power was reduced to approximately 292 MWe by 12:30 P.M.\* when load reduction ceased. (Details, Paragraph 3)

###### 3. Dead Fish Located in Lagoons and Marinas

Signs of fish mortalities apparently resulting from the shutdown January 11-12, 1972 were observed coming to the surface. No new kill was evident. (Details. Paragraph 12.b)

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- 20 JCP&L report to DL dated January 25, 1974, Subject AO 74-04.
  - 21 JCP&L report to DL dated January 25, 1974, Subject AO 74-05.
  - 22 JCP&L report to DL dated January 28, 1974, Subject AO 74-06.
  - 23 JCP&L report to DL dated January 28, 1974, Subject AO 74-07.
  - 24 JCP&L report to DL dated January 29, 1974, Subject AO 74-08.

\* Change No. 19 to the Technical Specifications dated January 23, 1974.

4. Chromate Water Storage

Temporary storage of chromate water is continuing. (Details, Paragraph 12.a)

B. Status of Previously Reported Unresolved Items

Not inspected

Management Interview

A management interview was conducted January 25, 1974 with Mr. D. A. Ross, Manager, Nuclear Generating Stations and Mr. J. T. Carroll, Station Superintendent. Messrs. Reeves, Chief Engineer; Swift, Maintenance Engineer; Sullivan, Operations Engineer and Growney, Technical Engineer were also in attendance for JCP&L. Items discussed are summarized below:

A. General

The inspector summarized the scope of the inspection as related to a review of operating logs and records, surveillance records, GORB and PORC committee meeting minutes and a review of Abnormal Occurrences reported since the last inspection.

B. Diesel Generator Modifications

The inspector informed licensee representatives that he had reviewed the final diesel generator "fix" and subsequent testing conducted and that there were no further questions at this time. Licensee representatives were also informed that a previous evaluation prepared by the RO Technical Assistance Branch (TAB) would be incorporated as Details, Section II to this report. (Details, Paragraph 10.c and Details, Section II)

C. Corrective Action Concerning Previously Identified Enforcement Items

The inspector informed licensee representatives that corrective action as described in Items 1, 3, 4 and 5 above had been reviewed and that the inspector had no further questions concerning these matters. The inspector noted, however, that commitment actions should be completed in a timely manner referencing AO 73-28 dated November 8, 1973 as an example. The 10 day report concerning this event specified procedural changes and such changes were not in effect prior to the inspection.

A licensee representative stated that a system had been initiated by approximately December 1, 1973 at the corporate staff level to close



the loop on commitments. The licensee representative further stated that this system is now working. (Details, Paragraph 7)

D. Recirculation Loop Temperature Recorder and Multipoint Recorder Read Out

The inspector stated that his review indicated a disparity existed between the recirculation loop temperature recorder and multipoint readings, such that assurance was not provided to adequately demonstrate compliance with the 50° temperature limit upon startup of an idle loop.

A licensee representative stated that operators would be required to monitor and record pump starts and further that the multipoint recorder would be examined for accuracy of readings during the next outage. (Details, Paragraph 5.b(2))

E. Chromate Water Storage

The inspector stated his position that continued storage of chromate water in outside tank trucks no longer classified as "temporary storage," and that this was considered an unacceptable arrangement. (Details, Paragraph 12.a)

F. Enforcement Items

Licensee representatives were informed that violations (1-6 above) previously disclosed and reported by the licensee would be identified in the report following this inspection. Items 7-9 under enforcement action above were identified as apparent violations.

DETAILS, SECTION I

1. Persons Contacted

Mr. D. A. Ross, Manager, Nuclear Generating Stations  
Mr. J. T. Carroll, Station Superintendent  
Mr. D. L. Reeves, Chief Engineer  
Mr. J. L. Sullivan, Operations Engineer  
Mr. J. P. Maloney, Operations Supervisor  
Mr. R. F. Swift, Maintenance Engineer  
Mr. E. J. Gowney, Technical Engineer  
Mr. K. O. Fickeissen, Technical Supervisor  
Mr. E. I. Riggle, Maintenance Supervisor  
Mr. E. D. Skalsky, Radiation Protection Supervisor  
Mr. A. H. Rone, Assistant Staff Engineer  
Mr. J. Menning, Staff Engineer  
Mr. R. Stodnour, Staff Engineer  
Mr. F. H. Rodies, Engineering Assistant  
Mr. H. Kurtz, Local Marina Owner

2. Administration and Organization

a. Facility Staffing

Recent changes and additions to the JCP&L staff were discussed during a previous management meeting.\*

b. Plant Operations Review Committee (PORC) Meetings

The PORC met on the following dates and the minutes were reviewed by the inspector. No deficiencies were identified.

<u>Date</u>	<u>Meeting No.</u>
October 2, 1973	38-73
October 3, 1973	39-73
October 4-6, 1973	40-73
October 15, 1973	41-73
October 15, 1973	42-73
November 1, 1973	43-73
November 7, 1973	44-73
November 8, 1973	45-73
November 13, 1973	46-73

\* RO Inspection Report 50-219/73-18.

c. General Office Review Board Meeting Minutes (GORB)

The GORB met on the following dates and the minutes were reviewed by the inspector. No deficiencies were identified.

<u>Date</u>	<u>Meeting No.</u>
September 11, 1973	46
September 26, 1973	46A
November 9, 1973	46B
October 1, 1973	Subcommittee (diesel generator modification)
October 24-25, 1973	47
December 19, 1973	48

3. Operations

Reactor operations resumed December 20, 1973. On December 22, the reactor was operating at about 340 MWe at 10:00 A.M. A power reduction was initiated to approximately 292 MWe when a temporary change to the T. S. was issued by DL permitting operation with containment atmosphere greater than 5% O<sub>2</sub> (torus). A nitrogen supplier arrived onsite at about 1:45 P.M. and the licensee was in compliance with Technical Specification 3.5.A.6 by 2:30 P.M. At the conclusion of the inspection the reactor was operating at 515 MWe (1600 MWt).

4. Logs and Records

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

- a. Station Log Book - September 30, 1973-January 16, 1974
- b. Shift Foreman's Log - September 30, 1973-January 16, 1974
- c. Plant Operating Review Committee (PORC) meeting minutes - October 2, 1973-November 13, 1973
- d. General Office Review Board (GORB) meeting minutes - September 26, 1973-December 20, 1973
- e. Surveillance Records for the reactor coolant system and emergency power system for the periods as indicated within this report
- f. All Abnormal Occurrences since the last routine inspection
- g. Jumper memorandums dated July 19, 1969 and December 11, 1970
- h. Safety Valve certifications - May 4, 1973

5. Primary System

The following surveillance records for the periods indicated were reviewed by the inspector. No violations were identified.

a. Reactor Coolant Samples

Surveillance results for the period September 1, 1973-January 7, 1974 were reviewed. The licensee analyzes samples on a daily basis. Records indicated that requirements of T. S. 3.3.E and T. S. 4.3.E were satisfied concerning content of chloride ion and conductivity.

b. Thermal Transients

(1) Heatup and Cooldown

The inspector audited temperature recorder chart records on a sampling basis for the period September 1, 1973-January 13, 1974. Records indicated that the average rate of coolant temperature change did not exceed 100°F in any one hour interval, the T. S. limit.

(2) Idle Recirculation Loop Pump Start

The inspector audited recirculation loop temperature recorder and multipoint recorder chart records on a sampling basis for the period September 1, 1973-January 13, 1974. Records indicated that the 50° T. S. limit was not exceeded. The inspector noted that multipoint recorder points were in some instances printing inaccurate temperature indications, i.e., 0-98°. The inspector also noted that in some instances charts were not marked to indicate which pumps had been started. (Recirculation Loop Temperature recorder provides a permanent record of any two (2) pumps.) The inspector discussed documentation requirements with respect to the 50° limit with a cognizant licensee representative. The representative concurred with the inspector's comments and stated that in the future, pumps when started would be identified to provide adequate documentation. The apparent multipoint recorder problem was also discussed at the exit interview.

c. Reactor Coolant System Leakage

Surveillance records for the period September 1, 1973-January 11, 1973 were reviewed, and indicated that limits of T. S. 3.3(d) were not exceeded. An increased unidentified leakage rate occurred in January 1974.\* Unidentified leakage in general varied from 1.0-2.7 gpm. Identified leakage for the period was approximately 4.0 gpm.

\* RO Inspection Report 50-219/74-01, dated February 7, 1974

d. Valve Replacement

During the 1973 refueling outage the licensee replaced five safety valves as specified by Technical Specification 4.3.D. Records indicated the following:

<u>Valve No.</u>	<u>Setpoint (as installed)</u>
BK 6259	1212
BK 6311	1221
BK 6310	1212
BK 6314	1212
BK 6533	1239

Certification was provided by Dresser Industrial Valves, Instrument Division. Setpoint settings for replacements complied with values listed in Technical Specification 4.3.D.

6. Reactivity Control and Core Physics

a. Hydraulic Control Unit (Accumulator) Level and Pressure Switch Surveillance\*

The licensee has written a procedure to complete surveillance requirements. Records indicated all switches were checked on September 11, 1973. Level switches tripped between 51-52 ml and pressure switch actuation occurred between 940-970 psig. According to licensee representatives surveillance will be conducted each refueling outage.

b. APRM and Rod Block Monitor Settings

A review of AO 73-26 indicates that engineers have been directed and corrective action taken to notify the Shift Foreman of the following information:

- (1) Core total peaking factor and location
- (2) APRM 100% setting and allowable peaking factor
- (3) Location and value of the MAPLHGR for each fuel type
- (4) Recirculation flow
- (5) Approximate power
- (6) Specific instructions for further power level changes
- (7) Requirements for subsequent peaking factor checks by Operations
- (8) When to request engineering assistance.

Additionally, Shift foremen are now required to complete a daily check list including average planar LHGR, and peaking factor.

\* RO Inspection Report 50-219/73-13, Details, Paragraph 5.a.

7. Auxiliary Systems

RBCCW and Service Water Systems

The inspector's review of AO 73-27 concerning closed cooling water system leakage to the discharge via a service water path indicated that procedural changes had not been made as discussed in a licensee letter.\* The licensee issued a temporary change notice dated January 25, 1974 specifying sampling requirements. The inspector also discussed potential for generic indications of salt water corrosion with a cognizant licensee representative.

8. Electrical Systems

Momentary Loss of 125 V DC Power

A review of events as described in AO 73-31 dated December 14, 1973 indicated the power loss was momentary. The inspector also reviewed JCP&L memorandums dated July 14, 1969 and December 11, 1970 describing jumpers and their usage. Based on the above, the referenced loss was caused when a jumper installation was improperly conducted and without using a formal written procedure (VIOLATION). The licensee subsequently developed a procedure for jumper installation and removal in response to RO Bulletin No. 73-6. The inspector discussed the level of management review required (Shift Foreman) with cognizant licensee representatives. With respect to this event, the licensee has written and PORC had approved a procedure to check for ground on the Battery "A" Bus or "B" Bus. The procedure review did not indicate any apparent deficiencies.

9. Containment

MSIV Spool Valve Problems

A review of AO 73-32 and AO 74-09 and discussions with licensee representatives indicated that insufficient residue was available for analysis. The licensee initiated a new procedure prior to returning the plant to operation following the failure January 16, 1974 to insure that N<sub>2</sub> has replaced air on the inner MSIV's. Parameters are observed during the daily 5% closure tests, as indicative of possible problems. For operation, the licensee has established a 100 psi minimum pressure (compressor) to assure a N<sub>2</sub> atmosphere.

\* JCP&L letter to DL dated November 8, 1973.

10. Emergency Power

The following surveillance records for the periods indicated were reviewed by the inspector. One violation with respect to test frequency was identified.

a. Diesel Generator

(1) Load Testing Every Two Weeks

January 1, 1973-January 7, 1974.

(2) Automatic Actuation

June 1-2, 1973.

(3) Annual Inspection

August 19, 1973.

(4) Starting Batteries

January 1-December 31, 1973. Records of weekly tests and monitoring for diesel generator starting batteries indicated that for the interval May-June, 1973 tests were conducted May 10, 21, and June 8. These test dates did not correspond to the weekly frequency specified by Technical Specification 4.7.A.5 (VIOLATION).

(5) Fuel Supply

February 1973-January 15, 1974. Records reviewed indicated that a minimum of 14,500 gallons was maintained as required by T. S. 3.7.C.4.

(6) Load Testing of D. G. Batteries (6 Month)

D. G. No. 1 and No. 2. May 16, 1972-December 20, 1973.

b. Station Batteries

(1) Specific Gravity and Voltage Checks

January 1-December 31, 1973. Records of weekly tests concerning station batteries indicated that for the period May-June 1973 tests were conducted May 10, 21, and June 8. These test dates failed to correspond to

the weekly frequency specified by Technical Specification 4.7.B.1 (VIOLATION).

(2) Cell Voltage Measurements (Monthly)

January 1-December 31, 1973.

(3) Specific Gravity, Temperature, Electrolyte, and Water Addition (3 Months)

January 1-December 31, 1973.

(4) Load Testing of Station Batteries (6 Month)

Station Batteries A and B, April 21, 1972-December 13, 1973.

c. Diesel Generator Modification

Records reviewed and discussions with licensee representatives indicated that the licensee has installed a single relay for each diesel generator to replace relays referenced in Details, Section II. Simplified schematics of this change are shown in Figures 1-2. Records indicated PORC and GORB review of the diesel generator modification. The FSR-A relays for both generators was installed and tested on January 3 and 7, 1974. According to licensee representatives the fast start testing resulted in a successful start of both units with an engine fault present. Testing was conducted in accordance with an approved procedure.

11. Radiation Protection

a. Survey Instrument Calibration Log

The inspector reviewed deficiencies identified in a previous inspection.\* Forms and sheets are now properly completed and maintained. The licensee is in the process of implementing a new control system in this area. These items are considered closed. Discussion with cognizant personnel indicated the Radiation Protection Supervisor has assumed responsibilities in this area.

b. Main Steam Line Radiation Monitor Failure

A review of AO 73-34 and the plant logs indicated that following the monitor failure on December 27, 1973, a one half scram

\* RO Inspection Report 50-219/73-13, Details, Paragraph 7.b



(Protection system action) was introduced on two separate occasions. Following surveillance testing monitors B, C and D were also tested.

12. Environment

a. Chromate Water Storage

As a result of the recent chromate water spill\* the licensee has increased surveillance to one tour/hour in addition to shift tour rounds. The acceptability of continuing storage was also discussed at the exit interview.

b. Fish Mortalities

The inspector visited a local marina and visually observed fish mortality signs from the marina dock. According to a marina owner, signs of dead fish appearing at the water's surface had been evident for several days. Gull activity was also present. The inspector observed no fish in distress and based on state of putrefaction, the fish sighted appeared to be the result of a previous shutdown (January 11-12, 1974). Numbers were estimated by the inspector to be approximately 2,000 fish.

13. Miscellaneous

Late Reports

The inspector audited abnormal occurrence reports and attendant 10 day reports pursuant to requirements of the Technical Specifications. Review indicated the following late reports filed by the licensee.

24 Hour Report

AO 73-23-1

10 Day Reports

AO 73-22

AO 73-24

AO 73-32

AO 73-34

(VIOLATION)

\* JCP&L letter to DL dated January 3, 1973.

## DETAILS, SECTION II

### Section II - Diesel Generator Circuit Modifications (V. Thomas)

#### 1. General

This section discusses the electrical aspects of the restart problem experienced with both diesel generators during the recent loss of off-site power event.<sup>1</sup> The scope of review included the correctness of the licensee's abnormal occurrence report,<sup>1</sup> and the adequacy of corrective measures taken to prevent recurrence.

#### 2. Persons Contacted

Joseph T. Carroll, Plant Superintendent  
E. I. Riggle, Maintenance Supervisor  
Thomas Johnson, Electrical Maintenance Foreman

#### 3. Diesel Generator Modifications

The licensee stated that subsequent to the problem experienced with the diesel generators during the loss of power event, investigation into the matter resulted in modifications of the diesel unit's fast-start, and restart circuitry. These corrective measures are discussed below and are also shown on Figure 1, a simplified schematic of the diesel generator's starting circuitry.

The corrective measures taken by the licensee involved the installation of two relays and a jumper wire. The two "fast-start" auxiliary relays identified as FSRA (time delay) and FSRA<sub>1</sub> (instantaneous), are installed parallel to the existing "fast-start" relay (FSR). The jumper wire is installed around the set of contacts of the "deadline" (DLU) relay. In effect, these modifications now permit the FSR, FSRA, and FSRA<sub>1</sub> relays to be energized simultaneously upon loss of power to any essential 4160 volt bus even though an engine-fault is present. This automatic reset feature is made possible because of the following additional circuit changes:

- a. A set of contacts from each new relay, FSRA and FSRA<sub>1</sub> is now installed in a series parallel circuit arrangement (see Figure 1) around the existing local reset button that is wired in the diesel generator's engine-fault reset circuitry.

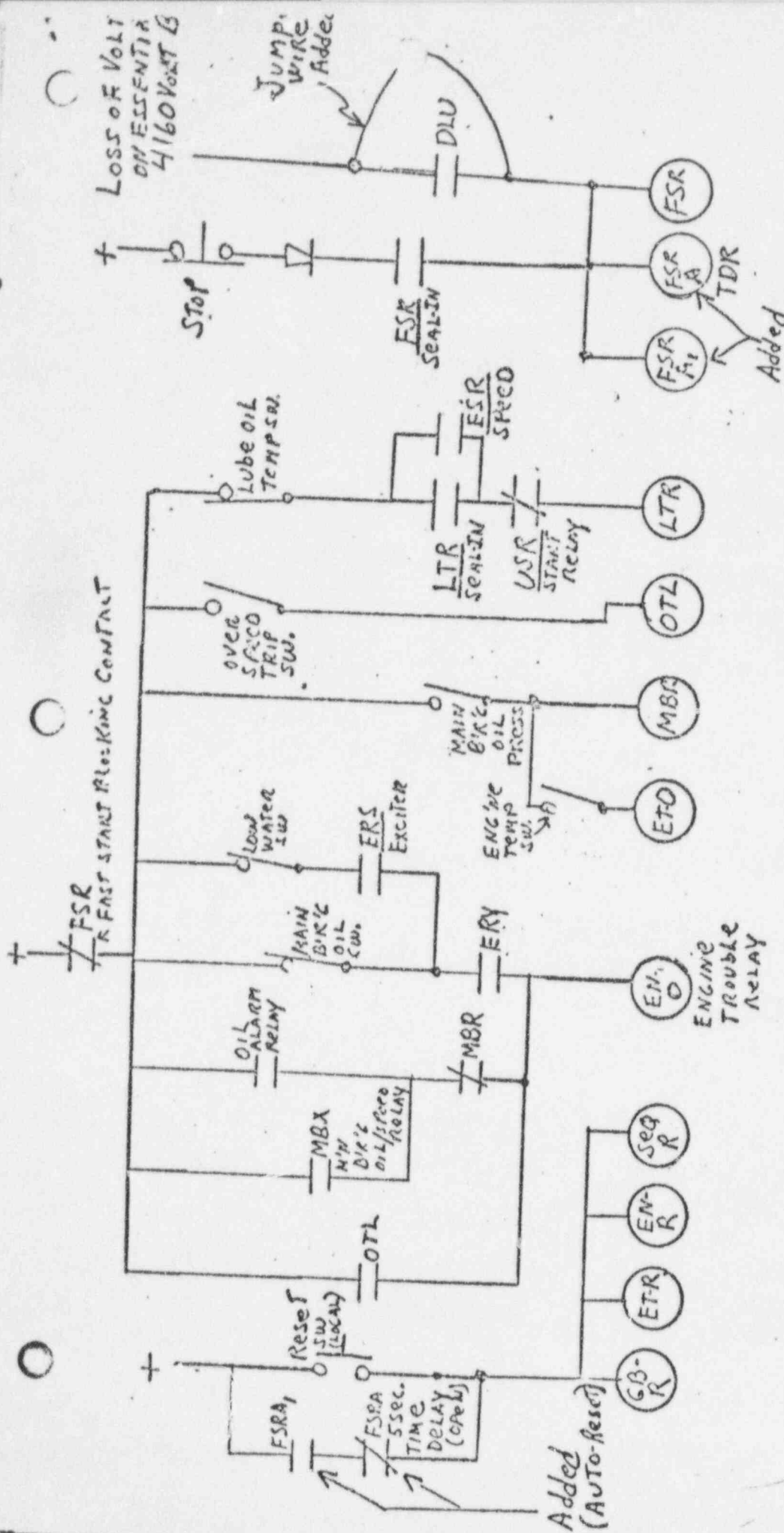
<sup>1</sup> Licensee's Report to Licensing dated September 18, 1973, Subject: Oyster Creek - Docket No. 50-219, Power Failure.

- b. The set of contacts from the FSRA relay has a five second time delay "to open" feature while the other set of contacts from the FSAR<sub>1</sub> relay has an instantaneous "to close" feature. This mode of contact operation occurs only when FSRA and FSRA<sub>1</sub> relays are energized.

In summary, the contact operation combined with the circuit arrangement as discussed now provided the licensee with a "built-in" automatic five second reset feature to clear any engine-fault during a diesel generator fast-start situation. There is no longer a need to manually reset the machine to obtain a "fast-start" following a manual shutdown of the unit. It is well to note, however, that the auto-reset feature has no effect during manual operation of the diesel generator. In manual operation, local reset action following unit shutdown is still required.

The licensee also stated that the above modifications were reviewed by the Plant Operations Review Committee (PORC) as required, and the proposed fix was found to be acceptable. The modifications were completed by October 1, 1973. Subsequently, the diesel unit's automatic start circuitry was successfully tested in that, the unit properly responded to a fast-start condition while an engine fault existed.

Our review of the above circuit modifications revealed that these corrective actions have been completed. We also reviewed the licensee's abnormal occurrence report, and his test procedures of the diesel unit following the above modifications, and no items of discrepancy were noted.



Loss of Volt  
ON ESSENTIAL  
4160 Volt G

Jump Wire Added

Note: No additional  
CIRCUITRY CHANGE  
MADE

# TYPICAL DIESEL GENERATOR CIRCUIT (PARTIAL) MODIFICATION

FIGURE 1