

10/31/73, Inspector's Evaluation

DMC
D. L. Caphton, Senior Reactor Inspector, Facility Operations Branch,
Directorate of Regulatory Operations, Region I

RO INSPECTION REPORT NO. 50-219/73-15
JERSEY CENTRAL POWER AND LIGHT COMPANY

The results of this special inspection related to the power loss occurring September 8, 1973 indicated the following:

1. The occurrence was avoidable and directly related to the QA program.
2. Stack releases September 8-9, were not in violation of 10 CFR 20 limits.
3. Minimum recorded coverage of the core was 9'.
4. Drywell activities were not abnormal and entry restriction indicated prudent management.
5. The problem with the diesel generators was not picked up on routine surveillance testing. The licensee has contacted G. M. to provide a permanent fix. I intend to continue examination of this area with respect to safety aspects. (Reference R. T. Carlson memorandum to H. D. Thornburg dated September 20, 1973, re: A0-73-23)

The inspection of aspects concerning relay testing requirements resulted in issuance of a citation for a violation of the Technical Specifications. I have a major concern in this area. I strongly feel that the management of this plant is on a "treadmill" in trying to keep up with all the abnormal occurrences which recently included the snubber problem, high activity in radwaste storage tanks, MSIV leakage test failures, the Isolation Condenser valve failure, the power loss of September 8, and diesel generator failure to restart. Seven Abnormal Occurrences have been reported by the licensee in the last month. I see a very real necessity for immediate staffing and managerial control to get on top of the problem areas. Until this is accomplished I do not foresee a concentrated effort and/or ability of JCP&L to implement a routine program at this plant.

An observation, resulting from review of the circumstances surrounding the power loss was the difficulty in accurately re-creating all circumstances in the appropriate time sequence with the present state of the

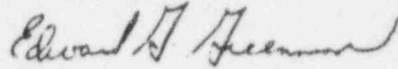
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D. L. Caphton

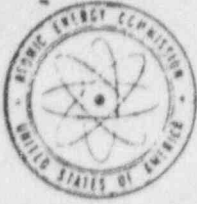
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art concerning events recorders, operator and supervisory recollections and review of pertinent recorder charts. I find it difficult to see how a proper evaluation of event significance can be made without such equipment. I recommend this area be pursued with DL.

I project a minimum of 11 man days of effort for the remainder of this year at this facility.



Edward G. Greenman
Reactor Inspector



UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

OCT 30 1973

R. T. Carlson, Chief, Reactor Operation Branch, Region I

OYSTER CREEK DIESEL GENERATOR RESTART PROBLEMS - DOCKET NO. 50-219

At the request of Mr. Capton, Mr. Thomas accompanied the Oyster Creek principal inspector, Mr. Greenman on a combination investigation/inspection of this facility on October 17, 1973. The purpose of the investigation was to determine the facts and circumstances regarding allegations received by Commissioner Doub from R. G. Sullivan, Commissioner, Department of Environmental Protection, State of New Jersey, relative to a restart problem experienced with the diesel generators during a power failure incident. The purpose of the inspection was to determine the adequacy of the licensee's corrective actions following the incident.

In our investigation into the allegations relating to electrical deficiencies, no evidence was found to substantiate the specific claims that were made against the licensee. On this basis, we believe that the allegations as stated are not a concern and that further follow-through is not required.

With respect to our inspection of the corrective measures to resolve the restart problem of the diesel units, the attached feeder report on this matter is forwarded to you for issuance by your office.

From our site observations and discussions held with the licensee personnel and the diesel generator manufacturer, General Motors; we believe that all concerned parties were responsive in that acceptable corrective measures were taken. However, the licensee stated that his permanent "fix" involves replacing the two newly installed relays with a single relay (on order) which is considered more suitable for the application. In view of this, we recommend that the Region I site inspector follow-up on this matter to ascertain that adequate testing of the diesel unit is made subsequent to the final relay change.

In our judgement the restart problem experienced with these diesel units at the Oyster Creek facility is a potential problem at other facilities under similar circumstances. Therefore, to follow through on this matter we have taken the following actions.

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1. Requested the Office of Operations Evaluations prepare and issue a Reactor Operating Experience letter on this subject.
2. Transferred lead responsibility to the Directorate of Licensing, to evaluate and determine (on a generic basis) the adequacy of the reset capabilities of the diesel unit and the operator's response requirements under similar circumstances as those experienced during the Oyster Creek power failure.
3. Recommended that DL consider requiring circuit changes, to permit resetting of "Engine Trouble" lock out relays from the control room if automatic resetting of these relays during a fast-start condition has not been provided by the licensee.

Please advise if we can be of further assistance on this problem.



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

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

DETAILS

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.¹ The scope of our review included the correctness of the licensee's abnormal occurrence report,¹ and the adequacy of corrective measures taken to prevent recurrence.

2. Person Contacted

Joseph Carrol, Plant Superintendent
Woody Riggle, Maintenance Supervisor
Thomas Johnson, Electrical Maintenance Supervisor

3. Diesel Generator Modifications

The licensee stated that subsequent to the problem experienced with the diesel generators during the recent 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 FSRA₁ (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 FSRA₁ 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:

1. A set of contacts from each new relay, FSRA and FSRA₁, 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.

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

2. 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 FSAR₁ relay has an instantaneous "to close" feature. This mode of contact operation occurs only when FSRA and FSRA₁ 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.

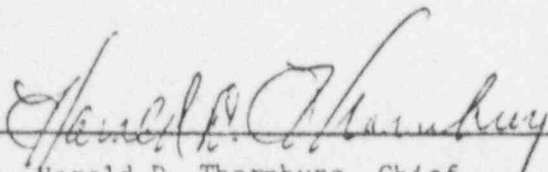
Our review of the above circuit modifications revealed that these corrective actions have been completed. We also reviewed the licensee's abnormal occurrence report, and his test procedures of the diesel unit following the above modifications, and no items of discrepancy were noted.

DIRECTORATE OF REGULATORY OPERATIONS

Memo Route Slip

Field Support & Enforcement Branch

J. P. O'Reilly, Director Region I	✓	OYSTER CREEK DIESEL GENERATOR RESTART PROBLEMS - DOCKET NO. 50-219 For your information.
N. C. Moseley, Director Region II		
J. G. Keppler, Director Region III		
E. M. Howard, Director Region IV.		
R. H. Engelken, Director Region V		


FROM: Harold D. Thornburg, Chief
Field Support & Enforcement Branch
Directorate of Regulatory Operations

DATE: 10/31/73

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

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R. T. Carlson, Chief, Reactor Operation Branch, Region I

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In our judgement the restart problem experienced with these diesel units at the Oyster Creek facility is a potential problem at other facilities under similar circumstances. Therefore, to follow through on this matter we have taken the following actions.

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R. T. Carlson

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OCT 30 1973

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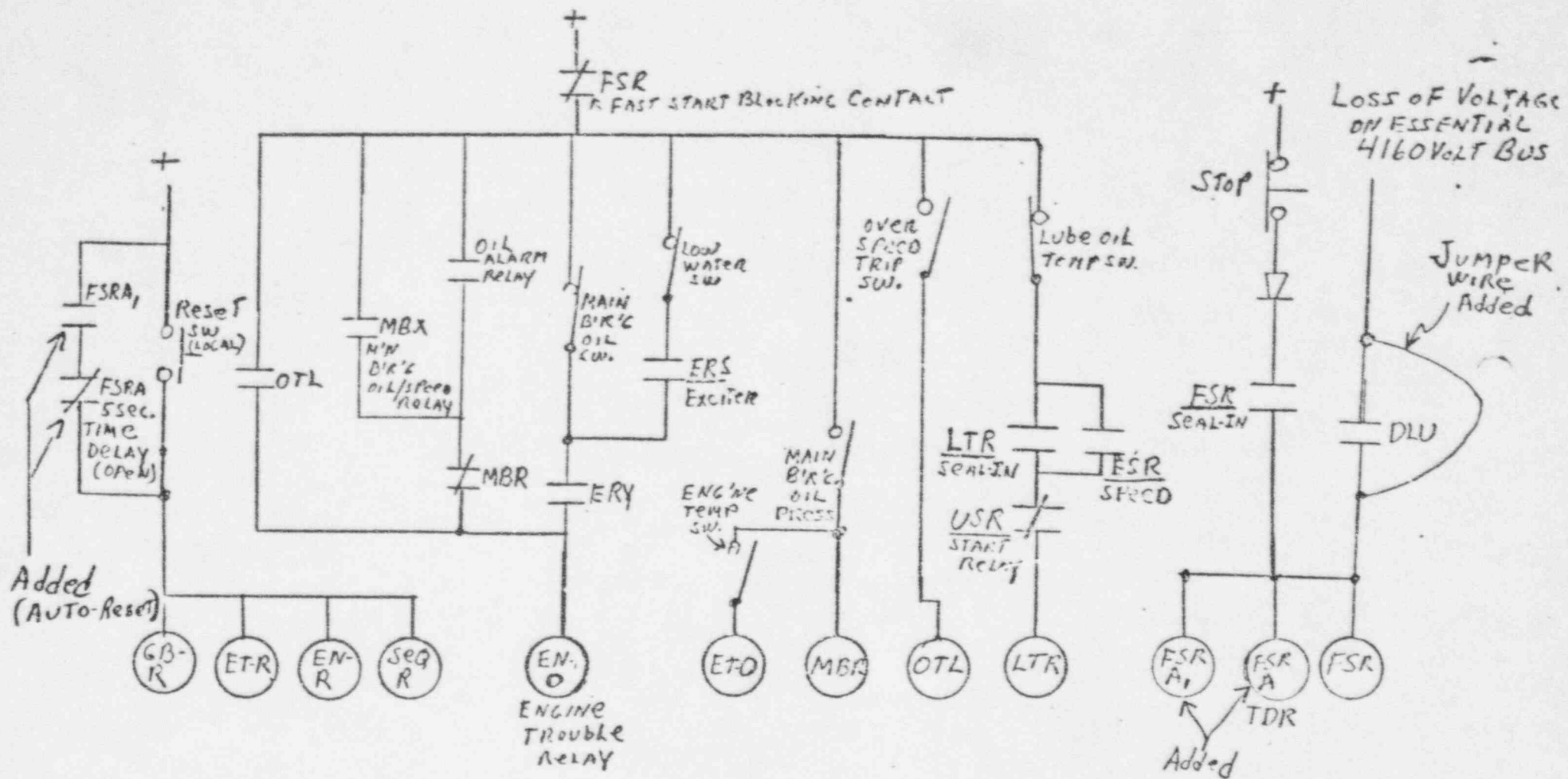
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TYPICAL
 DIESEL GENERATOR CIRCUIT (PARTIAL)
 MODIFICATION

Note: No additional
 CIRCUITRY CHANGE
 Made