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ACCESSION NBR: 8810190364 DOC. DATE: 88/10/10 NOTARIZED: NO DOCKET #
 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moho 05000410
 AUTH. NAME: WARD, K. AUTHORITY AFFILIATION: Niagara Mohawk Power Corp.
 WILLIS, J. L. AUTHORITY AFFILIATION: Niagara Mohawk Power Corp.
 RECIPIENT NAME: RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-044-00: on 880912, failure to adequately separate Category 1E & Non-Category 1E circuitry. W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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| | ACRS WYLIE | 1 1 | AEOD/DOA | 1 1 |
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| | NUDOCS-ABSTRACT | 1 1 | REG. FILE 02 | 1 1 |
| | RES TELFORD, J | 1 1 | RES/DSIR DEPY | 1 1 |
| | RES/DSIR/EIB | 1 1 | RGN1 FILE 01 | 1 1 |
| EXTERNAL: | EG&G WILLIAMS, S | 4 4 | FORD BLDG HOY, A | 1 1 |
| | H ST LOBBY WARD | 1 1 | LPDR | 1 1 |
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LICENSEE EVENT REPORT (LER)

| | | |
|--|---|----------------------------|
| FACILITY NAME (1) Nine Mile Point Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 410 | PAGE (3) 1 OF 04 |
|--|---|----------------------------|

TITLE (4) **Failure to Adequately Separate Category 1E and Non-Category 1E Circuitry Resulting in Inoperable Division I and II Emergency Diesel Generators - Inadequate Design Review**

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | | |
|----------------|-----|------|----------------|-------------------|-----------------|-----------------|-----|------|-------------------------------|--|------------------|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | | DOCKET NUMBER(S) |
| | | | | | | | | | N/A | | 0 5 0 0 0 |
| 09 | 12 | 88 | 88 | 044 | 00 | 10 | 10 | 88 | N/A | | 0 5 0 0 0 |

OPERATING MODE (9) **4**

POWER LEVEL (10) **000**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

| | | | |
|-------------------|------------------|--|--|
| 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
| 20.405(a)(1)(i) | 50.36(c)(1) | <input checked="" type="checkbox"/> 50.73(a)(2)(v) | 73.71(c) |
| 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| 20.405(a)(1)(iii) | 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| 20.405(a)(1)(iv) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(B) | |
| 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| Keith Ward, Manager Nuclear Design | AREA CODE 315 NUMBER 349-4568 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| | | | | | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

| MONTH | DAY | YEAR |
|-------|-----|------|
| | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On September 12, 1988 at 1813 hours with the reactor mode switch in SHUTDOWN (Operational Condition 4) and at a power level of 0% rated thermal power (reactor temperature and pressure at 124 degrees Fahrenheit and 4.5 pounds per square inch gauge (psig) respectively), it was discovered that Nine Mile Point Unit 2 (NMP2) had a design inadequacy in the Division I and II Emergency Diesel Generator (EDG) control circuits. The NMP2 licensed operators declared the Division I and II EDGs inoperable and entered Technical Specification (TS) action statement 3.8.1.2.a.

The root cause of this event is an inadequate design review. The result of this inadequate design review was a design deficiency which did not allow for proper safeguards in the Category 1E emergency stop/start circuitry to isolate it from a failure of the interconnected non-Category 1E components.

The corrective actions are; (1) a temporary modification was performed to disconnect the interface between the non-Category 1E switches and relays and the Category 1E emergency stop/start circuit, (2) a request for a permanent modification has been submitted to Engineering, and (3) the operating procedure for the Division I and II EDGs was revised to allow the EDGs to be shut down from the control room after any initiation.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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| FACILITY NAME (1) Nine Mile Point Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 410 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| | | 88 | 044 | 00 | 02 | OF | 04 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. DESCRIPTION OF EVENT

On September 12, 1988 at 1813 hours with the reactor mode switch in SHUTDOWN (Operational Condition 4) and at a power level of 0% rated thermal power (reactor temperature and pressure at 124 degrees Fahrenheit and 4.5 pounds per square inch gauge (psig), respectively), it was discovered that Nine Mile Point Unit 2 (NMP2) had a design inadequacy in the Division I and II Emergency Diesel Generator (EDG) control circuits. Specifically, a non-Category 1E local stop pushbutton switch and a relay in the manual stop/start circuit could fail and disable EDG operation during loss of offsite power conditions. The NMP2 licensed operators declared the Division I and II EDGs inoperable and entered Technical Specification (TS) action statement 3.8.1.2.a.

The sequence of events for this incident is as follows:

On September 12, 1988, during a review to update the Failure Modes and Effects Analysis (FMEA) for the Emergency Diesel Generators, contractor engineering personnel discovered an error in the start/stop circuit. A non-Category 1E relay or local stop pushbutton switch could disable the Category 1E emergency stop/start circuit. Each Division I and Division II control cabinet possesses the same design error. Failure of either component (the relay or the pushbutton switch) could disable the respective Division EDG during loss of offsite power conditions by tripping the emergency start circuit run relays.

The NMP2 licensed operators declared the Division I and II EDGs inoperable and entered Technical Specification action statement 3.8.1.2.a. TS action statement 3.8.1.2.a suspends core alterations, fuel movement, or any actions with a potential for draining the reactor vessel. None of these actions were in progress at the time of the event.

There were no other inoperable and/or failed components which contributed to this event.

II. CAUSE OF EVENT

The immediate cause of this event is a design deficiency. The root cause of this event was an inadequate design review by Architect/Engineer personnel. Architect/Engineer personnel did not implement design requirements previously identified by the EDG supplier. Therefore the design was inadequate and would allow the Division I and II EDGs to be disabled by a common mode failure of a non-Category 1E relay or switch in the manual stop/start circuit during a loss of offsite power.



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| | | 88 | 044 | 00 | 03 | OF | 04 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

III. ANALYSIS OF EVENT

This event is considered reportable via 10CFR50.73(a)(2)(v) because this event could have prevented fulfillment of the EDG safety function by rendering two independent EDG trains inoperable.

The probability of a common mode failure of these non-Category 1E components is extremely low; they are seismically mounted passive devices, located in a mild environment and are only infrequently used.

Since a common mode failure of the manual stop/start circuit components never occurred, the safety function of the Emergency Diesel Generators was never compromised. It can be concluded then, that this event did not at any time impact plant or public health and safety.

The duration of this event, from the date of issuance of NMP2's operating license on October 31, 1986, to the date that the work request corrected the design deficiency on September 13, 1988, was approximately six hundred and eighty three days.

IV. CORRECTIVE ACTIONS

The immediate corrective actions were to declare the Division I and II EDGs inoperable and enter TS action statement 3.8.1.2.a.

An additional corrective action was to issue Temporary Modification Request No. 88-912, and Work Request No. 146398, to disconnect the interface between the non-Category 1E components and the Category 1E emergency start circuit. This work was completed on September 13, 1988.

To accommodate temporary modification No. 88-912, procedure N2-OP-100A, "Standby Diesel Generators" was revised on September 13, 1988. The revision incorporates the requirement to use the control switch and Loss of Coolant Accident (LOCA) bypass switch in the control room to shut down the Division I and II EDGs after any initiation.

The long term corrective action will be to permanently correct the design deficiency through a plant modification. Modification request N2-88-174 has been submitted to perform this work by the end of the first NMP2 refueling outage.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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| | | 88 | 044 | 00 | 04 | OF | 04 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

V. ADDITIONAL INFORMATION

There have been other problems identified by the FMEA Analysis Update but none of them are similar to this event.

Failed component identification: None

Identification of Components Referred to in this LER

| Component | IEEE 803 EIIS Funct | IEEE 805 System ID |
|------------------|------------------------|-----------------------|
| Relay | RLY | EK |
| Switch | HS | EK |
| Diesel Generator | DG | EK |
| Solenoid | SOL | EK |
| Circuit | N/A | EK |



October 10, 1988

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 88-44

Gentlemen:

In accordance with 10 CFR 50.73, we hereby submit the following
Licensee Event Report:

LER 88-44 Is being submitted in accordance with 10 CFR 50.73
(a)(2)(v), "Any event or condition that alone could have
prevented the fulfillment of the safety function of
structures or systems that are needed to: (A) Shut down
the reactor and maintain it in a safe shutdown condition;
(B) Remove residual heat; (C) Control the release of
radioactive material; or (D) Mitigate the consequences of
an accident."

This report was completed in the format designated in NUREG-1022,
Supplement 2, dated September 1985.

Very truly yours,



J. L. Willis
General Superintendent
Nuclear Generation

JLW/PCJB/mjd

Attachments

cc: Regional Administrator, Region 1
Sr. Resident Inspector, W. A. Cook

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