

PRIORITY

(ACCELERATED RIDS PROCESSING)

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9512200128 DOC. DATE: 95/12/14 NOTARIZED: NO DOCKET #
 FACIL: 50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
 AUTH. NAME AUTHOR AFFILIATION
 GARROU, A.L. Carolina Power & Light Co.
 YOUNG, D.E. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-008-00: on 951114, condition prohibited by TS occurred due to failure to meet min degree of redundancy of RPS. Caused by equipment malfunction. Channel placed in tripped condition. W/951214 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: S
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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Carolina Power & Light Company
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville SC 29550

Robinson File No.: 13510C
Serial: RNP-RA/95-0221

DEC 14 1995

United States Nuclear Regulatory Commission
Attn: Document Control Desk
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
LICENSEE EVENT REPORT NO. 95-008-00

Gentlemen:

The enclosed Licensee Event Report (LER), is submitted in accordance with 10 CFR 50.73.
This report is required to be submitted to the NRC by December 14, 1995.

Very truly yours,

A handwritten signature in cursive script, reading "Dale E. Young". The signature is written in black ink and is positioned below the "Very truly yours," text.

D. E. Young
Plant General Manager

Enclosure

c: Mr. S. D. Ebnetter, Regional Administrator, USNRC, Region II
Ms. B. L. Mozafari, USNRC Project Manager, HBRSEP
Mr. W. T. Orders, USNRC Senior Resident Inspector, HBRSEP

2000

9512200128 951214
PDR ADOCK 03000261
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Highway 151 and SC 23 Hartsville SC

JE221

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| NRC FORM 366 (4-95) | | U.S. NUCLEAR REGULATORY COMMISSION | | APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 <small>ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.</small> | | | | | | | |
| LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block) | | | | | | | | | | | |
| FACILITY NAME (1) H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 | | | | DOCKET NUMBER (2) 05000-261 | | PAGE (3) 1 OF 4 | | | | | |
| TITLE (4) CONDITION PROHIBITED BY TECHNICAL SPECIFICATIONS DUE TO FAILURE TO MEET MINIMUM DEGREE OF REDUNDANCY | | | | | | | | | | | |
| 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 NAME | DOCKET NUMBER | |
| 11 | 14 | 95 | 95 | -- 008 | -- 00 | 12 | 14 | 95 | FACILITY NAME | DOCKET NUMBER | |
| | | | | | | | | | | 05000 | |
| | | | | | | | | | | 05000 | |
| OPERATING MODE (9) | | N | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11) | | | | | | | |
| POWER LEVEL (10) | | 100 | | 20.2201(b) | | 20.2203(a)(2)(v) | | <input checked="" type="checkbox"/> 50.73(a)(2)(i) | | 50.73(a)(2)(viii) | |
| | | | | 20.2203(a)(1) | | 20.2203(a)(3)(i) | | 50.73(a)(2)(ii) | | 50.73(a)(2)(x) | |
| | | | | 20.2203(a)(2)(i) | | 20.2203(a)(3)(ii) | | 50.73(a)(2)(iii) | | 73.71 | |
| | | | | 20.2203(a)(2)(ii) | | 20.2203(a)(4) | | 50.73(a)(2)(iv) | | OTHER | |
| | | | | 20.2203(a)(2)(iii) | | 50.36(c)(1) | | 50.73(a)(2)(v) | | Specify in Abstract below or in NRC Form 366A | |
| | | | | 20.2203(a)(2)(iv) | | 50.36(c)(2) | | 50.73(a)(2)(vii) | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | |
| NAME A. L. Garrou, Manager - Licensing/Regulatory Programs (Acting) | | | | | | | | TELEPHONE NUMBER (Include Area Code) (803) 857-1544 | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | | |
| X | JE | TI | W120 | Y | | | | | | | |
| | | | | | | | | | | | |
| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | EXPECTED SUBMISSION DATE (15) | | MONTH | DAY | YEAR | |
| YES (If yes, complete EXPECTED SUBMISSION DATE). | | | | X NO | | EXPECTED SUBMISSION DATE (15) | | | | | |
| ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16) <p>On November 14, 1995, with H. B. Robinson Steam Electric Plant, Unit No. 2 operating at 100% power, a Reactor Protection System (RPS) Loop 3 Overpower Delta-Temperature (OPDT) setpoint indicator was found to have drifted slightly upscale, and was subsequently determined by an engineering review to have been inoperable. The Minimum Degree of Redundancy required by Technical Specifications (TS) Section 3.5, Item 6, could not be satisfied until the channel was placed in a tripped condition. TS Section 3.0, which requires that the unit be placed in hot shutdown within eight hours and in cold shutdown within the next 30 hours, was applicable to this condition since the plant was not in the hot shutdown condition as required by TS Table 3.5-2, Item No. 6. The cause of this occurrence was an equipment malfunction. The safety significance is considered to be low since protection of the core was maintained with the two remaining operable OPDT channels during the time that the TS action requirements were not satisfied. Following discovery of the inoperable protection channel, the channel was placed in the tripped condition, satisfying the TS Minimum Degree of Redundancy, and TS Section 3.0 was no longer applicable. This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).</p> <p>A change to the TS has been submitted to provide an allowed outage time for instrumentation channels.</p> | | | | | | | | | | | |

NRC FORM 366A
(4-95)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)
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| | | YEAR | SEQUENTIAL | REVISION | |
| H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 | 05000-261 | 95 | 008 | 00 | 2 OF 4 |

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

I. DESCRIPTION OF EVENT

On November 14, 1995, H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 was operating at 100% power. At 0614 hours, licensed Operators in the Control Room identified from Reactor Turbine Generator Board (RTGB) indication that the Reactor Protection System (RPS) (EIIS System Code: JE) Loop 3 Overpower Delta-Temperature (OPDT) instrument TI-432B (EIIS Component Code: TI) setpoint indicated a higher value than that of instrumentation in the other two loops. This setpoint, which is based on a formula contained in Technical Specifications (TS) Section 2.3.1.2.e, is generated by electronic modules in the RPS circuitry which monitor various parameters that determine the setpoint value. Loop 3 protection Delta-temperature, as indicated by TI-432B, is compared to actual Delta-temperature of the Reactor Coolant System (RCS) (EIIS System Code: AB) loop to determine if a reactor trip condition is warranted. An evaluation to determine equipment operability was initiated in accordance with plant procedures, and at 0805 hours the OPDT channel was declared out of service to facilitate troubleshooting. The instrument bistable was placed in the tripped condition at that time.

The subsequent engineering review of this condition concluded that, based on voltage readings, the output of the setpoint module had drifted out of the acceptable tolerance band in the high direction by approximately five percent. This would have caused a reactor trip from this channel to have occurred at a Delta-temperature that was higher than that specified in the TS. At 1252 hours, following notification of this conclusion, plant Operators declared the protection channel associated with TI-432B inoperable as of 0614 hours on November 14, 1995.

From the time that TI-432B was declared inoperable until the time that the associated protection channel was placed in the tripped condition (i.e., approximately one hour and 49 minutes), the Minimum Degree of Redundancy required by TS Section 3.5, "Instrumentation Systems," Table 3.5-2, "Reactor Trip Instrumentation Limiting Operating Conditions," Item 6, was not satisfied, and the immediate action, "Maintain Hot Shutdown," was not taken. As a result, from 0614 hours on November 14, 1995, TS Section 3.0, which requires that the unit be placed in hot shutdown within eight hours and in cold shutdown within the next 30 hours, was applicable until 0805 hours when the Loop 3 OPDT channel was placed in the tripped condition.

II. CAUSE OF EVENT

The cause of this occurrence was an equipment malfunction. Faulty filter capacitors in the signal summator caused the setpoint to shift. Since the drift of this instrument was in the non-conservative direction and the channel was not in the tripped condition, the Minimum Degree of Redundancy required by TS Table 3.5-2 was not satisfied. Since the associated TS action statement requires that the plant be immediately placed in the hot shutdown condition without an associated time allowance to place the inoperable channel in the tripped condition, TS Section 3.0 was entered. Although the failure rate of electrolytic capacitors in RPS modules is not considered excessive based on the age of the installed units, a program to refurbish or replace these modules was previously established.

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III. ANALYSIS OF EVENT

The protective instrumentation setpoints in the TS ensure the combination of power, temperature, and pressure will not exceed core safety limits. The setpoint for the OPDT reactor trip is calculated for each protection channel based on the formula provided in TS Section 2.3. The Basis for TS Section 2.3 states that the OPDT reactor trip prevents power density anywhere in the core from exceeding 118% of design power density as discussed in Section 7.2.2 of the Updated Final Safety Analysis Report (UFSAR). Section 7.2.2 of the UFSAR states that the OPDT trip function protects against power level, and trips the reactor on coincidence of two out of the three signals, with one set of temperature measurements per loop. However, the UFSAR Chapter 15 accident analysis does not credit this reactor trip.

The safety significance of this occurrence is considered low because the possibility of an RCS temperature transient occurring while the TS required Minimum Degree of Redundancy was not satisfied and the coincident failure of one of the two operable OPDT channels is considered to be very small. In the unlikely scenario where such an event did occur, other RPS features would have been available to mitigate the transient. Under worst case assumptions, had an RCS temperature transient occurred during the time that the Loop 3 OPDT channel was not tripped, coincident with an assumed single failure of another redundant channel of the OPDT feature, automatic actuation of the mitigating features associated with OPDT reactor trip would have been delayed and may not have occurred as designed. However, as described in the UFSAR Section 7.2.1.2.1, in addition to reactor trips initiated by OPDT, reactor trips on nuclear overpower and low reactor coolant flow would provide adequate protection of the core.

TS Section 3.5.1.3 states that in the event the number of channels of a particular subsystem in service falls below the required Minimum Operable Channels, or the Minimum Degree of Redundancy cannot be achieved, operation shall be limited in accordance with the requirements of TS Table 3.5-2. TS Table 3.5-2, Item 6, requires two operable OPDT channels with a Minimum Degree of Redundancy of one, or the plant shall be maintained at hot shutdown conditions, i.e., reactor subcritical and Tavg is greater than 200 degrees F. With the Loop 3 OPDT channel out of service in the non-conservative direction and not placed in the tripped condition, the two remaining OPDT channels remained operable; however, the Minimum Degree of Redundancy required by TS Table 3.5-2, Item 6 was not maintained. Since the Minimum Degree of Redundancy could not be satisfied, the plant entered TS Section 3.0, a condition prohibited by the TS. Therefore, this report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

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IV. CORRECTIVE ACTIONS

At 0805 hours the Loop 3 OPDT setpoint was removed from service in accordance with Operations Work Procedure (OWP)-028, "Tavg/DT Protection," to facilitate repairs. At this time, TS Section 3.0 was no longer applicable since the inoperable channel was now in the tripped condition, and the Minimum Degree of Redundancy requirement of TS Table 3.5-2, Item 6, was satisfied.

A TS change to provide an allowed outage time for instrumentation channels was submitted on December 11, 1995.

V. ADDITIONAL INFORMATION

A. Failed Component Information

EIIS Code: System, JE; Component, TI; Manufacturer, W-120.

B. Previous Similar Events

LER 95-006

LER 95-007