CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9603060104 DOC.DATE: 96/02/28 NOTARIZED: NO DOCKET #
FACIL:50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-007-01:on 951029,failed to meet minimum degree of redundancy due to equipment malfunction.Loop 2 OTDT setpoint replaced.W/960227 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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CATEGORY 1 DOCUMENT

10 CFR 50.73

CP&L

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

Robinson File No.: 13510C
Serial: RNP-RA/96-0042

FEB 27 1996

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. 95-007-01

Gentlemen:

The enclosed Supplemental Licensee Event Report (LER), is submitted in accordance with 10 CFR 50.73. The revised information is indicated by a right-hand margin bar.

Very truly yours,

Dale E Young

D. E. Young
Plant General Manager

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

040113

IE22

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

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-6 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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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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
10	29	95	95	-- 007 --	01	02	28	96		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	N
POWER LEVEL (10)	100

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

20.2201(b)	20.2203(a)(2)(v)	X 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	TELEPHONE NUMBER (Include Area Code)
A. L. Garrou, Manager - Licensing/Regulatory Programs (Acting)	(803) 857-1544

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	JE	TI	W120	Y						

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		2	29	96

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On October 29, 1995, and on November 5, 1995, with H. B. Robinson Steam Electric Plant, Unit No. 2 operating at 100% power, a Reactor Protection System (RPS) Loop 2 Overtemperature Delta-Temperature (OTDT) Temperature Indicator was found to have drifted beyond the acceptable tolerance, and the associated protection channel was declared inoperable. The Minimum Degree of Redundancy required by Technical Specifications (TS) Section 3.5 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 entered since the plant was not in the hot shutdown condition as required by TS Table 3.5-2, Item No. 5. The cause of each occurrence was an equipment malfunction. The safety significance is considered to be low because the possibility of a temperature transient occurring with the coincident failure of one of the two operable OTDT channels is very small during the time that the TS action requirements were not satisfied. Following each event, the channel was placed in the tripped condition, satisfying the TS Minimum Degree of Redundancy, and TS Section 3.0 was exited. A change to the TS has been submitted to the NRC by letter dated December 10, 1995, to provide an allowed outage time for instrumentation channels delineated in TS 3.5. This report is submitted in accordance with 10 CFR 50.73(a)(2)(B).

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

I. DESCRIPTION OF EVENT

On October 29, 1995, and again on November 5, 1995, with H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 operating at 100% power, licensed Operators in the Control Room identified from Reactor Turbine Generator Board (RTGB) indication that, with no prior alarms or indications, Reactor Protection System (RPS) (EIIS System Code: JE) Loop 2 Overtemperature Delta-Temperature (OTDT) Trip Setpoint Indicator TI-422C (EIIS Component Code: TI), had drifted upscale beyond the acceptable tolerance. The Loop 2 protection OTDT setpoint, as indicated by TI-422C, is compared against Delta Temperature, and as Delta-Temperature increases to the OTDT setpoint, protective features are activated (i.e., a turbine runback, block of automatic and manual control rod withdrawal, and an automatic reactor trip). By drifting out of the acceptable tolerance band in the high direction, the difference between actual Delta-Temperature and the OTDT setpoint was increased, resulting in the non-conservative increase of the OTDT setpoint. Thus, the time is increased from a point when an actual Reactor Coolant System (RCS) (EIIS System Code: AB) temperature or pressure transient begins to the point when automatic actuation of the protective features occurs. At 0730 hours on October 29, and at 0405 hours on November 5, 1995, Operators declared the protection channel associated with TI-422C inoperable.

During each of these events, from the time that TI-422C was declared inoperable until the time that the protection channel associated with TI-422C (i.e., the Loop 2 OTDT channel) was placed in the tripped condition, the Minimum Degree of Redundancy required by Technical Specifications (TS) Section 3.5, "Instrumentation Systems," Table 3.5-2, "Reactor Trip Instrumentation Limiting Operating Conditions," Item 5, was not satisfied and the immediate action, "Maintain Hot Shutdown," was not taken. The Minimum Degree of Redundancy could not be satisfied prior to placing the Loop 2 OTDT channel in the tripped condition because the two remaining operable channels in the two out of three logic for the OTDT would not actuate the OTDT trip functions, assuming a single failure of one of the two remaining operable channels. As a result, at 0700 hours on October 29, 1995, and at 0405 hours on November 5, 1995, based on review of plant computer data, TS Section 3.0 was entered, which requires that the unit be placed in hot shutdown within eight hours and in cold shutdown within the next 30 hours. On October 29, 1995, and on November 5, 1995, the plant remained within TS Section 3.0 for 42 minutes, and 14 minutes, respectively. On each of these dates, TS Section 3.0 was exited when the Loop 2 OTDT channel was placed in the tripped condition.

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

II. CAUSE OF EVENT

The cause of both the October 29, 1995, and the November 5, 1995, occurrences was an equipment malfunction. Our initial assessment was that the lead-lag controller (EIIS Code: CNV) for TI-422C caused the instrument to drift out of tolerance. 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. Following additional troubleshooting, our investigation on November 22, 1995, revealed that a bare wire in the instrument module apparently touched the side of the instrument module chassis. Intermittent contact of this wire with the chassis which is grounded, caused this erratic operation.

III. ANALYSIS OF EVENT

Section 7.2.1.1.2.d of the Updated Final Safety Analysis Report (UFSAR) states that the OTDT trip function maintains operating limits to avoid bulk boiling and from reaching the Departure from Nucleate Boiling (DNB) Ratio safety limits. Avoidance of bulk boiling assures that proper trip compensation is taken for the DNB influencing parameters, i.e., coolant temperature and pressure. The Basis for TS Section 2.3 describes the OTDT reactor trip as providing core protection against DNB for all combinations of RCS pressure, nuclear power, RCS temperature, and axial power distribution, provided only that (1) the transient is slow with respect to transport to, and response time of, the temperature detectors (i.e., approximately 4 seconds), and (2) pressure is within the range between the high and low pressure reactor trip setpoints.

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 OTDT 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 2 OTDT channel was not tripped, coincident with an assumed single failure of another redundant channel of the OTDT feature, automatic actuation of the mitigating features associated with OTDT reactor trip would have been delayed and may not have occurred when required. However, UFSAR Section 7.2.1.2.1 states that in addition to reactor trips initiated by OTDT or overpower delta-temperature signals, "Reactor Trips on nuclear overpower and low reactor coolant flow are provided for direct, immediate protection against rapid changes in these parameters."

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III. ANALYSIS OF EVENT (Cont'd.)

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 5, requires two operable OTDT 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 2 OTDT channel out of service in the non-conservative direction and not placed in the tripped condition, the two remaining OTDT channels remained operable; however, the Minimum Degree of Redundancy required by TS Table 3.5-2, Item 5 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)(B).

IV. CORRECTIVE ACTIONS

At 0742 hours on October 29, 1995, and at 0419 hours on November 5, 1995, the Loop 2 OTDT setpoint was removed from service in accordance with Operations Work Procedure (OWP)-028, "Tavg/DT Protection," to facilitate repairs. At these times, TS Section 3.0 was exited since the inoperable channel was now in the tripped condition, and the Minimum Degree of Redundancy requirement of TS Table 3.5-2, Item 5, was satisfied.

With regard to the October 29, 1995, event, troubleshooting by Instrumentation and Control personnel found that the proximate cause was the lead-lag controller module, TM-422E (EIIS Code: IMOD), had drifted out of the acceptable tolerance band. The capacitors were replaced in the TM-422E module, the loop calibration was checked satisfactorily, and the loop was returned to service.

The investigation into the November 5, 1995, failure of TM-422E found that the proximate cause was the instrument summator (i.e., TM-422F) was over-loading the output of the lead/lag unit, making it appear that the lead/lag unit was not functioning properly. Testing and troubleshooting revealed that a capacitor had been previously installed with its polarity reversed. The capacitor in the summator was replaced and the unit was installed with the correct polarity. The unit was tested satisfactorily, and the loop was returned to service.

On November 22, 1995, new potentiometers in module TM-422F were installed, and the bare wire found in the instrument module was repaired. This repair will prevent recurrence of intermittent grounding of this wire. The instrument loop was satisfactorily tested and returned to service.

A change to the TS has been submitted to the NRC by letter dated December 10, 1995, to provide an allowed outage time for instrumentation channels delineated in TS 3.5.

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V. ADDITIONAL INFORMATION

A. Failed Component Information

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

B. Previous Similar Events

LER 95-006