

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN FOR RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-33); U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20545 AND TO THE PAPERWORK REDUCTION PROJECT (3180-01M); OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503

FACILITY NAME (1): Point Beach Nuclear Plant, Unit 2
 DOCKET NUMBER (2): 0 5 0 0 0 3 0 1 1 1 OF 0 5

TITLE (4): Improper Calibration of One Channel of Over-Temperature Delta T, Resulting in a Technical Specification Violation

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 (8)	
02	17	92	92	001	0	03	17	92		0	5

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 43 (Check one or more of the following) (11)

OPERATING MODE (9): N	30.402(b)	30.406(a)	30.79a(2)(iv)	73.71a)
POWER LEVEL (10): 11010	30.406a(1)(ii)	30.406a(1)(i)	30.79a(2)(vi)	73.71a)
	30.406a(1)(iii)	30.406a(2)	30.79a(2)(vii)	OTHER (Specify in Abstract Area and in Text, NRC Form 305A)
	30.406a(1)(iv)	X 30.79a(2)(ii)	30.79a(2)(viii)	
	30.406a(1)(v)	30.79a(2)(iii)	30.79a(2)(ix)	
	30.406a(1)(vi)	30.79a(2)(iv)	30.79a(2)(x)	

LICENSEE CONTACT FOR THIS LER (12):
 NAME: John A. Palmer, Manager - Instrument and Control
 TELEPHONE NUMBER: 413 147 1515 - 12131211
 AREA CODE: 413

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

CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14):
 YES (If yes, complete EXPECTED SUBMISSION DATE)
 NO
 EXPECTED SUBMISSION DATE (15):

ABSTRACT (Limit to 1000 spaces - 4 spaces normally reserved for special typewritten notes) (16)

ABSTRACT:
 On February 17, 1992, with both units operating at 100% reactor power, one channel of over-temperature delta T protection was rendered inoperable during the performance of Instrumentation and Control Procedure (ICP) 2.8, "Nuclear Instrumentation Power Range Axial Offset Calibration." This resulted in a violation of the minimum operable channels and degree of redundancy specified in Technical Specification Table 15.3.5-2, Item 5. This was discovered during the performance of ICP 2.8, and the affected channel was subsequently restored to service.

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TEXT OF THIS REPORT IS AVAILABLE FOR ADDITIONAL NRC ACTION ONLY BY (17)

EVENT DESCRIPTION:

On February 17, 1992, with both units operating at 100% reactor power, Reactor Engineering Surveillance Procedure (RESP) 6.1, "Core Power Distribution and Nuclear Power Range Detector Calibration" was satisfactorily performed. The purposes of this procedure are to perform a core power distribution flux map to confirm that hot channel factors are within limits, perform a check of the in-core thermocouple system, perform a check of the calibration currents of the power range channels, and obtain burn-up distribution data for special nuclear material accountability. This procedure is performed in order to meet three separate Technical Specification surveillance requirements.

After obtaining all of the required data, Section 6.2 of RESP 6.1 directs the review of the data to determine if any additional action must be taken. Step 6.2.5 of this section requires the reactor engineer to compare the 100% calibration currents obtained for each power range detector during the procedure with the calibration values currently in use. The calculated and in-use currents for power range channel N-43, detector B differed by 3.4%, exceeding the specified limit of 3%. Exceeding this limit required the performance of Instrumentation and Control Procedure (ICP) 2.8, "Nuclear Instrumentation Power Range Axial Offset Calibration."

ICP 2.8 requires performance of an axial offset calibration of the individual detector (two detectors per channel) outputs for each of the four nuclear instrumentation power range channels. This axial offset calibration affects the delta flux input used in the determination of the over-temperature delta T setpoint. One of the preliminary steps in this procedure requires that the 105% calibration currents obtained during RESP 6.1 for all eight power range detectors be included in a table in ICP 2.8.

The reactor engineer improperly transcribed the calibration currents from the printout obtained in RESP 6.1 onto the table in ICP 2.8. Instead of transcribing the 105% calibration currents, he mistakenly transcribed the 100% calibration currents. He then approved ICP 2.8 for use. There is currently no requirement to have a second individual check the transcribed information before it is used.

An Instrumentation and Control technician trainee, under the direction of a qualified technician, commenced ICP 2.8. He started by calibrating power range channel N41. Using the improper calibration currents resulted in adjusting the ion current gains to voltages equivalent to 105% power, although the calibration currents input into the instrument channel were equivalent to 100% power. This improper calibration rendered the over-temperature delta T function inoperable. The trainee

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TEXT of event report is required on appropriate NRC Form 2664 (117)

then commenced calibrating power range channel N42, which required, as per ICP 2.8, placing that channel's over-temperature delta T function in trip. This resulted in having one channel of over-temperature delta T inoperable because a calibration was in progress and one other considered inoperable because of a miscalibration. This is a violation of Technical Specification Table 15.3.5-2 Item 5, specifically operating with fewer than the required number of operable channels and with a less-than-required degree of redundancy.

While the trainee was calibrating channel N42, the qualified technician noted that the full-power meter on the associated power range drawer was indicating approximately 100%. The expected reading during this portion of ICP 2.8 was approximately 105%. The technician suspected that a problem existed and stopped the calibration. The I and C supervisor was then contacted for assistance. The supervisor discussed the calibration with the technician and the reactor engineer, and it was determined that incorrect calibration currents had been transcribed into ICP 2.8.

The proper current values were transcribed into ICP 2.8, and the trainee recommenced the calibration procedure. The calibration of channel N42 was completed, followed by N41. This restored the over-temperature delta T functions associated with channels N41 and N42 to operation. Channels N42 and N44 were calibrated, and ICP 2.8 was satisfactorily completed.

COMPONENT AND SYSTEM DESCRIPTION:

The basic reactor operating philosophy at Point Beach Nuclear Plant is to define an allowable region of power and coolant temperature conditions. This allowable region is bounded by the primary tripping functions: the nuclear overpower trip, the over-power delta T trip, and the over-temperature delta T trip.

The over-temperature delta T reactor trip provides core protection such that no combination of power, temperature, pressure, and axial power distribution can result in a Departure from Nucleate Boiling Ratio (DNBR) less than 1.30 with reactor coolant pumps running. With a normal axial power distribution, the reactor trip limit is always below the core safety limit. If axial power peaks are greater than design, as indicated by a difference between top and bottom power range nuclear instrument detectors, the reactor trip limit is automatically reduced. The over-temperature delta T reactor trip is actuated upon receipt of two out of four signals.

A turbine runback is also generated by the over-temperature delta T function. This feature will occur prior to the reactor trip and serves to maintain a margin to trip which gives the operator the opportunity to adjust rods to reshape the core flux before a reactor trip occurs.

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TEXT OF THIS REPORT IS SUBJECT TO THE PROVISIONS OF 10 CFR 15.35 (1)

CAUSE AND CORRECTIVE ACTION:

Immediately following the determination that the improper calibration current values had been used, the table was corrected and completed using the proper calibration current values. The trainee then performed the calibration procedure on channel N42, followed by channel N41. This returned the over-temperature delta T functions associated with these two channels back to service. The trainee then completed ICP 2.8 satisfactorily by calibrating channels N43 and N44.

After the event, a complete review was conducted. The cause of the event was determined to be a personnel error on the part of the reactor engineer who transcribed the information from the printout obtained during the performance of RESP 6.1. A contributing factor to this event is that there was no independent verification of the accuracy of the data transcribed onto the table in ICP 2.8.

To help ensure that accurate data is being used in ICP 2.8, a revision will be made to require an independent verification of the data transcribed into the procedure. This revision will be in place before ICP 2.8 is used again. Additionally, this concern is also being addressed as part of the ongoing procedure upgrade project. The goal of this project is to review and improve the effectiveness of plant procedures by implementing procedural upgrades that address human factor concerns.

REPORTABILITY:

For a period of time, with one channel of over-temperature delta T inoperable during a calibration and one other considered inoperable due to a miscalibration, the minimum number of operable channels and the minimum degree of redundancy as required by Technical Specification Table 15.3.5-2 Item 5 were not met. Therefore, this event is being reported in accordance with the requirements in 10 CFR 50.73(a)(2)(i), "Any operation or condition prohibited by the plant's Technical Specifications." An NRC notification, in accordance with 10 CFR 50.72, was not required in response to this event. The Resident Inspector was informed of this event at 1515 on February 17, 1992.

SAFETY ASSESSMENT:

The over-temperature delta T function requires the actuation of two of the available four channels to result in a trip. During this event, the over-temperature delta T function associated with power range channel N41 was rendered inoperable by the improper axial offset calibration. This improper calibration of this channel may have prevented the automatic reduction of this reactor trip limit from occurring at the required rate,

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TEXT OF REPORT APPEARS IN REGULATOR AND OPERATOR (NRC Form 2004) (11)

if the axial power peaks were greater than designed. Additionally, for a period of time, the over-temperature delta T function associated with channel N42 was being calibrated. During the time that a channel is being calibrated, the over-temperature delta T function of that channel is in trip. This results in a trip signal input into the reactor protection system for the channel being calibrated. Therefore, only one of the two remaining channels would have to actuate in order to generate a protective function. This ensures that a single failure of the over-temperature delta T function in either of the remaining two operable channels would not prevent the occurrence of a protective function. Additionally, during the period when the over-temperature delta T function of channel N41 was rendered inoperable, the nuclear over-power and over-power delta T reactor trips were available to ensure that core safety limits were maintained. Therefore, this event did not pose a health or safety hazard to plant personnel or the general public.

SIMILAR OCCURRENCES:

A review of Licensee Event Reports was conducted. Unit 1 Licensee Event Report 88-005-00, "Delta T Setpoint Trip Minimum Degree of Redundancy Not in Conformance With Technical Specifications" details the finding of a condition where the minimum degree of redundancy for over-power and over-temperature delta T channels was not maintained during routine instrument calibrations. This condition occurred because past practices did not require placing over-power and over-temperature delta T channels in trip prior to performing power range instrument calibrations. It was, therefore, possible during certain portions of the procedure for the trip setpoints to be nonconservative. Revisions that required placing the delta T channels in trip were made to the calibration procedures, thus correcting the problem. These revisions were performed in June 1988.