NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Wolf Creek Generating Station	0 5 0 0 0 4 8 2	1 OF 0 7

TITLE (4) Technical Specifications Violation On Two Instrument Setpoints Due To Faulty Procedure

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)
										0 5 0 0 0
0 5	1 3	8 8	8 8	0 0 7	0 0	0 6	1 3	8 8		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
1 0 0		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)	X 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
Merlin G. Williams - Superintendent of Regulatory, Quality and Administrative Services	AREA CODE 3 1 6 3 6 4 - 8 8 3 1

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	

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

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

At 1230 CDT on May 13, 1988, while reviewing the surveillance test methodology, the utility Reactor Engineering supervisor and a utility Instrument and Control (I&C) supervisor determined that the procedures for setting the trip point for Overpower Differential Temperature (OPdT) and Overtemperature Differential Temperature (OTdT) instrument loops did not comply with Technical Specifications 2.2.1, action statement "a", by not requiring the trip points to be reset to the conservative side of the required setpoint. This was caused by a cognitive personnel error by the I&C personnel which occurred at the time of procedure development.

This procedure error has existed since the OPdT and OTdT instruments were first calibrated on May 18, 1985, prior to initial criticality. The actual setpoint was always within the Allowable Value specified in Technical Specifications Table 2.2-1.

When the error was discovered, it was determined that two OPdT and three OTdT instrument loops were affected. The affected bistable trip setpoints were properly adjusted by 2056 CDT on May 13, 1988. The procedures that verified the other setpoints of Technical Specifications Table 2.2-1 were reviewed to ensure this error did not exist in other setpoints. The surveillance test procedures have been revised to prevent further occurrences.

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INTRODUCTION

At 1230 CDT on May 13, 1988, while reviewing the surveillance test methodology, the utility Reactor Engineering supervisor and a utility Instrument and Control (I&C) supervisor determined that the procedures for setting the trip point for Overpower Differential Temperature (OPdT) and Overtemperature Differential Temperature (OTdT) instrument loops [JC-AS] contained an error. It was determined that the surveillance test procedure for the Analog Channel Operational Test of the 7300 Process Instrumentation [JC-IA] did not comply with Technical Specifications 2.2.1, action statement "a", which states:

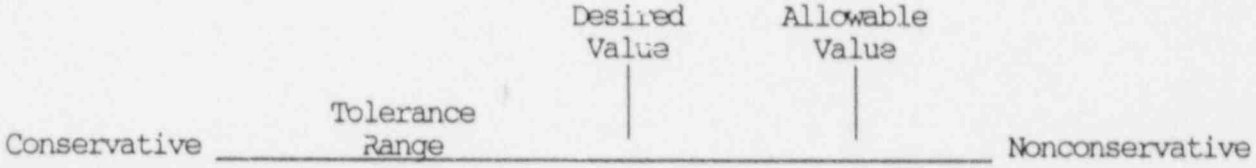
"a. With a Reactor Trip System Instrumentation or Interlock Setpoint less conservative than the value shown in the Trip Setpoint column but more conservative than the value shown in the Allowable Value column of Table 2.2-1, adjust the Setpoint consistent with the Trip Setpoint value."

The unit was operating in Mode 1, Power Operation, at 100 percent power when this problem was identified. This Licensee Event Report (LER) is being submitted pursuant to 10CFR 50.73(a)(2)(i)(B), as a violation of Technical Specification 2.2.1.

DESCRIPTION

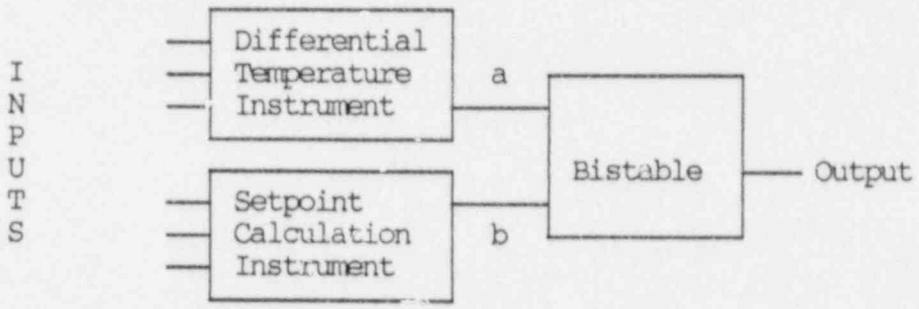
The subject surveillance test procedure tests the setpoint for each of the reactor trip signals generated by the 7300 Process Instrumentation. The general methodology used therein is to inject a test signal at the detector and to note the trip point of the applicable bistable. For each trip function, there is listed a desired value, a tolerance range and an allowable value. The relationship of these three are shown in Figure 1. The desired value corresponds to the Trip Setpoint of Technical Specifications, Table 2.2-1; the tolerance range is conservative with respect to the desired value and the allowable value of the procedure corresponds to the Allowable Value Column of Table 2.2-1. During calibration the trip point of each bistable is reset to the tolerance range unless it is found already in the tolerance range.

FIGURE 1



Because of the complexity of the OPdT and the OTdT instrument loops the procedure calibrated each instrument loop in three sections. Figure 2 provides a simplified block diagram of one instrument loop. The bistables for the OPdT and OTdT instrument loops have two inputs; one corresponding to the differential temperature and the other corresponding to a calculated trip setpoint. The surveillance test procedure calibrated the OPdT and OTdT bistables by supplying a test signal at the two inputs to the bistables (labeled "a" and "b" on Figure 2) and setting the trip in the normal manner. Each of the input instruments feeding the bistable was calibrated to a plus or minus tolerance on either side of the nominal value.

FIGURE 2



The procedure assumed that a perfect signal would be supplied at "a" and "b" and set the bistable trip point accordingly. The procedure failed to recognize that instrument error in the two input instruments would affect the instrument loop trip point. The resultant error for the instrument loop is the sum of the bistable error plus the error in each input instrument. Since the resultant error could be nonconservative, this procedure allowed the instrument loop trip setpoint of OPdT and OTdT instruments to be less conservative than the value shown in the Trip Setpoint columns of Technical Specifications Table 2.2-1, resulting in violation of action statement "a".

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

ANALYSIS

This procedure error has existed since the OPdT and OTdT instruments were first calibrated on May 18, 1985, prior to initial criticality. Since that time, the unit has operated in all modes from Mode 6, Refueling, through Mode 1, Power Operation, at power levels up to 100 percent power. This surveillance test procedure is done monthly when the unit is in Mode 1 (Power Operation) or Mode 2 (Startup). There are four OPdT instrument loops and four OTdT instrument loops that are calibrated each time the surveillance test procedure is accomplished. Of the 256 instrument calibrations that have been completed during this time, 154 (about 60 percent) resulted in the instrument being left with a nonconservative setting. Tables 1 and 2 list the specific dates that the OPdT and OTdT instruments were left with nonconservative setpoints.

It should be pointed out that the specific setpoint was always within the Allowable Value column of Technical Specifications Table 2.2-1. The OPdT and OTdT instrument loops are very stable. The amount of drift noted during the monthly surveillance test has never been enough to require any adjustment. Therefore, the instruments were always considered operable. If a condition had occurred that required these instruments to trip, they would have done so within the values analyzed in the Accident Analysis. Therefore, there was no adverse safety significance as a result of this event. There was no damage to plant equipment or release of radioactivity as a result of this event. At no time did conditions develop that may have posed a threat to the health and safety of the public.

ROOT CAUSE

The root cause of this event was an error in an approved procedure that was caused by a cognitive personnel error by I&C personnel during procedure development. The procedure assumed perfect input signals and required the bistable to be set on the conservative side of the desired value. However, the procedure failed to recognize that the instruments that supplied the signals to the bistables might have tolerance error in their values in the nonconservative direction such that, when added together, the loop setpoint error could be nonconservative with respect to the Technical Specifications required sepoint.

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

ACTION TAKEN

When the error was discovered, the most recently completed surveillance test procedure was examined to determine which instruments were left with nonconservative trip points. It was determined that two OPdT and three OTdT instrument loops were affected. New setpoints were then calculated and a temporary procedure was approved for resetting the bistable trip setpoint for each of these. The affected bistable trip setpoints were properly adjusted by 2056 CDT on May 13, 1988. All procedures that verified the other setpoints of Technical Specifications Table 2.2-1 were reviewed to ensure this error did not exist in other setpoints. The surveillance test procedures have been revised to prevent further occurrences.

ADDITIONAL INFORMATION

There have been fourteen LERs caused by inadequate procedures at Wolf Creek Generating Station, five of which have concerned I&C procedures. One of the LERs caused by inadequate I&C procedures concerned an inappropriate setpoint, LER 86-056-00, but that LER was caused by having confusing information that was supplied by the vendor. None of these LERs are considered to have a similar root cause.

TABLE 1

Dates that OPdT instruments were improperly set:

Protection Set I		Protection Set II		Protection Set III		Protection Set IV	
From	To	From	To	From	To	From	To
						05/18/85	06/17/85
						06/17/85	07/17/85
		07/09/85	08/08/85			07/17/85	08/14/85
				08/13/85	09/16/85		
		09/11/85	10/08/85	09/16/85	10/08/85		
		10/08/85	11/14/85				
		11/14/85	12/19/85				
				12/20/85	01/11/86	12/22/85	01/21/86
				01/11/86	02/17/86		
		02/13/86	03/21/86	02/17/86	03/25/86	02/21/86	03/27/86
03/18/86	04/18/86	03/21/86	04/18/86	03/25/86	04/19/86	03/27/86	04/19/86
				04/19/86	05/23/86		
05/20/86	06/25/86	05/22/86	06/27/86	05/23/86	06/30/86		
06/25/86	07/21/86					07/02/86	07/23/86
07/21/86	08/21/86					07/23/86	08/23/86
08/21/86	09/23/86	08/21/86	09/24/86				
09/23/86	12/06/86					09/24/86	12/09/86
		12/08/86	01/10/87	12/08/86	01/10/87		
						01/11/87	02/13/87
				02/12/87	03/13/87	02/13/87	03/13/87
		03/12/87	04/13/87	03/13/87	04/10/87		
05/14/87	06/15/87	05/19/87	06/19/87	05/13/87	06/20/87.	05/22/87	06/20/87
		06/19/87	07/15/87	06/20/87	07/13/87	06/20/87	07/23/87
07/21/87	08/19/87	07/15/87	08/20/87	07/13/87	08/14/87	07/23/87	08/27/87
08/19/87	09/11/87	08/20/87	09/24/87				
						09/25/87	12/20/87
01/20/88	02/22/88	01/20/88	02/22/88			01/20/88	02/22/88
		02/22/88	03/21/88			02/22/88	03/21/88
03/21/88	04/21/88	03/21/88	04/21/88	03/21/88	04/21/88	03/21/88	04/21/88
		04/21/88	05/13/88			04/21/88	05/13/88

TABLE 2

Dates that OTdT instrumenmts were improprly set:

Protection Set I		Protection Set II		Protection Set III		Protection Set IV	
From	To	From	To	From	To	From	To
05/18/85	06/06/85	05/15/85	06/05/85	05/17/85	06/17/85		
06/06/85	07/07/85			06/17/85	07/16/85	06/17/85	07/17/85
				07/16/85	08/13/85		
08/06/85	09/06/85			08/13/85	09/16/85	08/14/85	09/19/85
		09/11/85	10/08/85	09/16/85	10/08/85		
		10/08/85	11/14/85	10/08/85	11/15/85		
		11/14/85	12/19/85			11/20/85	12/22/85
12/13/85	01/11/86			12/20/85	01/11/86	12/22/85	01/21/86
01/11/86	02/10/86			01/11/86	02/17/86		
02/10/86	03/18/86			02/17/86	03/25/86	02/21/86	03/27/86
03/18/86	04/18/86			03/25/86	04/19/86	03/27/86	04/19/86
04/18/86	05/20/86			04/19/86	05/23/86	04/19/86	05/25/86
05/20/86	06/25/86			05/23/86	06/30/86		
06/25/86	07/21/86			06/30/86	07/22/86	07/02/86	07/23/86
07/21/86	08/21/86			07/22/86	08/22/86		
08/21/86	09/23/86			08/22/86	09/24/86		
09/23/86	12/06/86			09/24/86	12/08/86	09/24/86	12/09/86
		12/08/86	01/10/87	12/08/86	01/10/87		
01/09/87	02/10/87			01/10/87	02/12/87	01/11/87	02/13/87
				02/12/87	03/13/87	02/13/87	03/13/87
03/11/87	04/14/87	03/12/87	04/13/87	03/13/87	04/10/87	03/13/87	04/15/87
				04/10/87	05/13/87	04/15/87	05/22/87
05/14/87	06/15/87	05/19/87	06/19/87	05/13/87	06/20/87	05/22/87	06/20/87
06/15/87	07/21/87	06/19/87	07/15/87	06/20/87	07/13/87	06/20/87	07/23/87
07/21/87	08/19/87	07/15/87	08/20/87	07/13/87	08/14/87	07/23/87	08/27/87
08/19/87	09/11/87	08/20/87	09/24/87	08/14/87	09/11/87	08/27/87	09/25/87
09/11/87	12/18/87	09/24/87	12/18/87	09/11/87	12/20/87	09/25/87	12/20/87
		12/18/87	01/20/88	12/20/87	01/20/88	12/20/87	01/20/88
01/20/88	02/22/88	01/20/88	02/22/88	01/20/88	02/22/88	01/20/88	02/22/88
		02/22/88	03/21/88	02/22/88	03/21/88		
03/21/88	04/21/88	03/21/88	04/21/88	03/21/88	04/21/88	03/21/88	04/21/88
		04/21/88	05/13/88	04/21/88	05/13/88	04/21/88	05/13/88

WOLF CREEK
NUCLEAR OPERATING CORPORATION

John A. Bailey
Vice President
Engineering and Technical Services

June 13, 1988

ET 88-0082

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Subject: Docket No. 50-482: Licensee Event Report 88-007-00

Gentlemen:

The attached Licensee Event Report (LER) is submitted pursuant to 10 CFR 50.73 (a) (2) (i).

Very truly yours,

John A. Bailey
Vice President
Engineering & Technical Services

JAB/jad

Attachment

cc: B. L. Bartlett (NRC), w/a
D. D. Chamberlain (NRC), w/a
R. D. Martin (NRC), w/a
P. W. O'Connor (NRC), w/a (2)

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