Nebraska Public Power District

COOPER NUCLEAR STATION
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NLS950027

January 19, 1995

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

Dear Sir:

Cooper Nuclear Station Licensee Event Report 94-033 is forwarded as an attachment to this letter.

Sincerely,

J. T. Herron
Plant Manager

/nr

Attachment

cc: L. J. Callan
G. R. Horn
J. H. Mueller
R. G. Jones
R. A. Sessoms
K. C. Walden
R. L. Koch
INPO Records Center
NRC Resident Inspector
R. J. Singer
CNS Training
CNS Quality Assurance

250046

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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)
COOPER NUCLEAR STATION	05000298	1 OF 4

TITLE (4)
Safety Relief Valve Setpoint Variance Not Within Technical Specification Limits

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
12	20	94	94	-033-	00	01	19	95	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	000	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vii)	OTHER
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		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 (Include Area Code)
Art Alford, Senior Staff Nuclear Licensing & Safety Engineer	(402) 825-3811

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	SB	RV	T020	Y						

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 15 single-spaced typewritten lines) (16)

While the plant was shutdown during the current outage, eight Safety Relief Valves (SRVs) were removed and sent to the Westinghouse testing facility in Banning, California for testing in accordance with the Technical Specifications. Four of the SRV lift pressures were higher than their required setpoint tolerance of +1%. One was lower than its required setpoint tolerance of -1%. This has been an industry-wide problem for a number of years. The eight installed SRVs were tested in 1993 and seven of the eight were higher than their required tolerance of +1%. Similar failures have been noted in the past.

Additionally, one valve had a part of the disc spring break during testing/refurbishment and two valves were found with springs approximately two inches shorter than a new spring.

Although CNS is still in Cycle 16, it has been approximately eighteen months since the last test and it was considered prudent to test the installed SRVs at this time.

Per NUREG-1022, the cause of this event is attributed to Design, Manufacturing, Construction/Installation, NUREG-1022 code B, specifically corrosion bonding of the pilot disc to the pilot seat.

The corrective actions include having General Electric review the results of the testing and confirm the conclusions that the as-found setpoints would not adversely affect plant safety. Also, CNS will replace 1/2 of the valve discs with a platinum catalyst alloy.

Plant Status

The plant was in cold shutdown at the time of the event.

Event Description

In May 1994, the plant was shutdown due to surveillance testing deficiencies.

The eight Main Steam SRVs were removed in December 1994 and sent to the Westinghouse facility in Banning, California for testing. The Limiting Safety System Setting tolerance is +/-11 psi (1%) from their required setpoints. The results of this testing were as follows:

SERIAL NO.	LOCATION	SET PRESS	AS FOUND	% DRIFT
379	A	1100	1116	+1.4
380	B	1100	1156	+5.1
381	F	1080	1067	-1.2
382	G	1100	1195	+8.6
383	C	1090	1112	+2.0
385	H	1090	1088	-0.2
386	E	1090	1098	+0.73
387	D	1080	1072	-0.74

Additionally, after several tests during the testing/refurbishment process, SRV Serial Number 381 had the main disc spring break at the end of the coil after disassembly and reassembly of the actuator.

SRV Serial Numbers 382 and 383 were both found to have main springs approximately two inches shorter than a new main disc spring, indicating that they may have taken a set.

The SRVs were refurbished as necessary and recertified.

The SRVs installed at CNS are Target Rock pilot actuated valves which are typical for BWRs. Setpoint drift of Target Rock SRVs above their required setpoint tolerance of +1% has been an industry-wide problem that the BWROG has been actively pursuing resolution of for several years.

Cause

The cause is attributed to corrosion bonding of the pilot disc to the pilot seat. Recent industry information has indicated that radiolytically produced hydrogen and oxygen can concentrate in the immediate vicinity of the pilot disc and seat interface as a result of condensation of reactor steam. This results in the concentration of oxygen that increases the electro-chemical potential of the pilot disc material.

Safety Significance

A previous analysis by General Electric has concluded, that an Upper Limit value of 1210 psig on the SRV opening pressure and 1277 psig for the SVs is acceptable and has no significant safety impact in vessel overpressure margin, thermal limits, ECCS/LOCA performance, HPCI/RCIC performance, containment response, containment integrity, or steam line integrity.

None of the SRVs tested in December 1994 exceeded the upper limit of 1210 psig. One SRV drifted below the -1% setpoint tolerance to -1.2%. This is within the +/-3% tolerance analyzed as acceptable for CNS by General Electric. The lower lift point may be an operational concern, but is not a safety concern.

The as-found condition of the shortened main spring SRVs resulted in exceeding the valve reseat acceptance criteria (not a Technical Specification limit) by milliseconds; the effect of this is minimal, per discussions with Target Rock Corporation. A shortened main spring will not adversely affect valve set point since set point is controlled via the pilot assembly.

The main disc spring was broken after several tests during the testing/refurbishment process after disassembly and reassembly of the actuator. The effect of this is under investigation.

After refurbishment, the valves passed four consecutive tests and were recertified.

Corrective Action

The SRVs have been inspected, refurbished, and satisfactorily retested at the test facility. General Electric is in process of confirming the conclusions that these setpoint variances do not adversely affect plant safety.

Additionally, the BWROG determined that a catalyst should be installed that would recombine the oxygen and hydrogen in the vicinity of the disc and seat interface so as to maintain the oxygen concentration below that required to facilitate corrosion. After evaluating several catalysts, the BWROG recommended replacing the Stellite 6 pilot discs with new pilot discs made from Stellite 6 alloyed with 0.3% platinum. As a result of this, CNS has installed the 0.3% platinum discs in half of the SRVs (MS-RV-71GRV, MS-RV-71ERV, MS-RV-71FRV, and MS-RV-71DRV, Serial Numbers 376, 377, 381, and 387) to assess their effectiveness. If operation demonstrates this is effective, the remaining seats will be replaced in a future outage.

The cause and effect of the main spring breaking and the other two springs taking a set are under investigation. As results become available, they will be addressed accordingly. Also, a Nuclear Notification is being issued concerning the main springs.

Similar Events

LER 93-013 - Safety/Relief and Safety Valve Setpoint Variance Not Within Technical Specification Limits

LER 91-015 - Safety/Relief and Safety Valve Setpoint Variance Not Within Technical Specification Limits

LER 90-003 - Safety/Relief and Safety Valve Setpoint Variance Not Within Technical Specification Limits

LER 89-015 - Safety/Relief and Safety Valve Setpoint Variance Not Within Technical Specification Limits

LER 88-009 - Setpoint Variance and Operability Concerns Associated With Safety Relief Valves Discovered During Surveillance Testing

LER 86-032 - Main Steam Safety Relief Valve Setpoint Drift and Stuck Pilot Valve Inoperability Discovered During Scheduled Valve Testing and Refurbishment

LER 85-003 - Setpoint Drift of Safety and Safety Relief Valves

Correspondence No: NLS940027

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
If operation demonstrates 0.3% platinum discs in SRVs is effective the remaining seats will be replaced in a future outage.	N/A
Address the results of the main spring breakage and the other two springs taking a set.	N/A