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June 6, 2005
JAFP-05-0088

T.A. Sullivan
Site Vice President - JAF

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: Docket No. 50-333
LICENSEE EVENT REPORT: LER-05-002 (CR-JAF-2005-01296)

Safety Relief Valve Setpoints Outside of Allowable Tolerances

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications..."

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. Rick Plasse at (315) 349-6793.

Very truly yours,

A handwritten signature in black ink, appearing to read "T.A. Sullivan", is written over a printed name.

T.A. Sullivan

TAS:DD:dd
Enclosure

cc: USNRC, Region 1
USNRC, Project Directorate
USNRC Resident Inspector
INPO Records Center

IE22

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

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1. FACILITY NAME James A. FitzPatrick Nuclear Power Plant	2. DOCKET NUMBER 05000333	3. PAGE 1 OF 5
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4. TITLE
Safety Relief Valve Setpoints Outside of Allowable Tolerances

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	05	05	05	02	00	06	03	05	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000

9. OPERATING MODE	10. POWER LEVEL	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	100	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
		20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
		20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
		20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
		20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER
		20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
		20.2203(a)(2)(v)	X 50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
		20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
		20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME Mr. Darren Deretz, Sr. Regulatory Compliance Specialist	TELEPHONE NUMBER (Include Area Code) (315) 349-6851
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	SB	RV	T020	Y					

14. SUPPLEMENTAL REPORT EXPECTED

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

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

Review of the as-found setpoints for 11 Safety Relief Valve (SRV) [SB] pilot assemblies, removed at the end of Cycle 16, determined that 5 SRVs were outside the allowable as-found tolerance of 1145 psig +/- 34.3 psig (+/- 3%) required by Technical Specifications (TS) Surveillance Requirement (SR) 3.4.3.1. This report documents the failure to meet this SR for 5 of the 11 SRVs.

The effect of 5 SRVs being out of tolerance during Cycle 16 is analyzed in this report. The results of this analysis show that Reactor Pressure Vessel (RPV) overpressure protection and nuclear plant safety were not adversely affected. Each of the five out of tolerance SRV setpoints was determined to be caused by corrosion bonding between the SRV pilot disc and seat, a recognized industry generic problem. One of the five out of tolerance SRV pilots (serial number 1047) remained high out of tolerance during the three subsequent tests. This was caused by internal binding between the SRV pilot rod and spherical collar which resulted from a lack of a chamfer on the spherical collar. This is considered a unique case as industry operating experience as well as Target Rock Corporation refurbishment experience reveals that there were no previous similar failures.

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EIS Codes in []

Event Description:

On April 5, 2005, while the plant was operating at 100 percent power, FitzPatrick was notified that five Safety Relief Valve (SRV) [SB] pilot assemblies removed at the end of Cycle 16 (October 2004 Refueling Outage) had as-found setpoints outside the allowable tolerance of 1145 psig +/- 34.3 psig (+/- 3%).

This allowable tolerance (1110.7 to 1179.3 psig) is required per Technical Specifications (TS) Surveillance Requirement (SR) 3.4.3.1. The five SRVs exceeded the high limit of 1179.3 psig.

The removed SRV pilots were tested at Wyle Laboratories during the period March 16, 2005 through March 24, 2005. The results from these tests were reported to FitzPatrick by Wyle Laboratories on April 5, 2005.

Test Results:

Pilot Serial Number	Plant Valve Number	Initial Lift As-Found Setpoint	Initial Lift > 3% Above Setpoint
1238	02RV-71A	1169	No
1050	02RV-71B	1155	No
1080	02RV-71C	1159	No
1192	02RV-71D	1258	Yes
1088	02RV-71E	1129	No
1052	02RV-71F	1265	Yes
1047	02RV-71G	1249	Yes
1056	02RV-71H	1157	No
1193	02RV-71J	1246	Yes
1062	02RV-71K	1158	No
1194	02RV-71L	1180	Yes

TS LCO 3.4.3 requires nine operable SRVs when in Modes 1, 2 or 3. Specifically, the TS states:

The safety function of 9 S/RVs shall be OPERABLE.

Since five pilot valves exceeded the allowable setpoint range, this report is being made under 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications..."

Cause of Event:

The cause of each of the five high out of tolerance pilot setpoints was determined to be corrosion bonding between the SRV pilot disc and seat [Cause Code B]. With a bond forming between the pilot disc and seat, more pressure is needed to raise the pilot disc off the seat. Since the normal balance of pilot assembly spring force and steam pressure force necessary to lift the pilot disc corresponds to the nominal setpoint of the SRV, the pilot disc to seat bond results in a higher pilot lift setpoint.

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Cause of Event: (continued)

An oxygen rich environment in the pilot assembly, due to the radiolytic breakdown of water to hydrogen and oxygen, causes the corrosion bonding. Oxygen accumulates in the area of the pilot disc because the pilot assembly is a high point on the main steam [SB] line.

Although SRV pilot serial number 1047 (installed at beginning of Cycle 16) exhibited corrosion bonding during its initial lift test, the subsequent three test results remained high out of tolerance with resulting lift setpoints of 1194 psig, 1191 psig and 1190 psig, respectively. The cause of this SRV pilot testing high on subsequent tests was determined to be binding of a spherical collar on the pilot rod assembly, which was caused by the lack of a chamfer on the inside radius of the spherical collar [Cause Code B]. This cause is considered a unique case as industry operating experience as well as Target Rock Corporation refurbishment experience reveals that there were no previous similar failures.

Event Analysis:

The SRVs provide overpressure protection for the Reactor Coolant Pressure Boundary (RCPB) as required by the ASME Boiler and Pressure Vessel Code. SRV pilots actuating at pressures higher than the required setpoint may be significant if adequate overpressure protection is not available. Two analyses are used in determining the adequacy of overpressure protection; the RCPB Overpressure Analysis and the Anticipated Transient Without Scram (ATWS) analysis.

The Anticipated Transient Without Scram (ATWS) analysis and the ASME overpressure analysis were re-evaluated using the as-found SRV setpoint data. The acceptance criteria for both of these analyses were met. The peak vessel pressure would have been 1374 psig for the ATWS analysis, which is well below the 1500 psig limit. The peak vessel pressure would have been 1320.8 psig for the RCPB Overpressure Analysis, which is well below the 1375 psig limit.

Additionally, the SRV pilot lift pressures were compared to FitzPatrick's Mark I Containment Analysis inputs to determine any potential effect on the SRV tailpipe system. Although two SRV pilot valves lifted at pressures slightly higher than the Mark I analysis assumption of 1250 psig, the resultant load increase is only 1.5%, which would not have affected the functionality of the SRV tailpipe system or the ability of the primary containment to perform its function during any design basis accident or transient.

Consequently, the safety significance of this event was minimal.

Extent of Condition:

All of the SRVs are susceptible to setpoint drift due to pilot disc to seat corrosion bonding. This is a recurring industry issue that has been the subject of both NRC and BWROG generic assessment.

As part of FitzPatrick's efforts to improve the performance of the SRV pilots, Stellite 21 discs were installed in five of the eleven SRVs at the beginning of Cycle 16. One of these five upgraded SRV pilot valves tested high out of tolerance due to corrosion bonding. To further improve SRV pilot performance, all eleven SRV pilot valves installed in the plant currently contain Stellite 21 discs.

In addition, the BWROG recommended modification to provide pressure switch actuation of the SRVs has been installed and was operational during Cycle 16. This modification provides an electric actuation of SRV pilot valves based upon a pressure switch actuating at a predetermined setpoint. This provides a diverse, redundant method of SRV actuation, which overcomes the pilot disc-seat corrosion bonding effect.

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Extent of Condition: (continued)

The SRV pilot that tested high out of tolerance due to internal binding between the pilot rod and spherical collar, which resulted from a lack of a chamfer on the spherical collar, is considered a unique case. Industry operating experience as well as Target Rock Corporation refurbishment experience reveals that there were no previous similar failures. Since the spherical collar binding is rotational and not axial, the electric actuation of the SRV is not affected.

Corrective Actions:*Corrective Actions Completed Prior to this Report:*

1. All SRV Pilots were removed from the plant during Refuel Outage 16 (October 2004) and replaced with newly refurbished and test certified pilots (using Stellite 21 discs) for Cycle 17.
2. The BWROG recommended modification to provide pressure switch actuation of the SRVs was operational during Cycle 16 when these valves were in service.
3. All SRV pilot assemblies are tested and replaced each operating cycle.

Corrective Actions for this Event:

1. Submit a Corrective Action Request (CAR) to Target Rock Corporation to ensure their 2-stage SRV pilot refurbishment procedures require inspection of the SRV pilot valve spherical collar chamfer during refurbishment of JAF SRV pilot valves. (Reference JAF-CR-2005-01837 CA001)

*(Complete)***Safety System Functional Failure Review:**

This event did not result in a safety system functional failure as defined by NEI 99-02, Revision 3.

Similar Events:

1. JAF LER-03-002 "Safety Relief Valve Setpoint Drift," October 16, 2003.
2. JAF LER-01-005 "Safety Relief Valve Setpoint Drift," August 17, 2001.
3. JAF LER-99-003 "Safety Relief Valve Setpoint Drift," March 16, 1999.
4. JAF LER-98-002 "Safety Relief Valve Setpoint Drift," April 9, 1998.

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Failed Component Identification:

Manufacturer: Target Rock Corporation
 Model Number: 7567F-10
 NPRDS Manufacturer Code: T020
 NPRDS Component Code: Valve
 FitzPatrick Component ID: 02RV-071D, F, G, J & L

References:

1. GE-NE-0000-0040-2937-RO, FitzPatrick Cycle 16 Overpressure Analyses at As Found SRV Setpoints
2. JAF Condition Report CR-JAF-2005-1418, Apparent Cause Evaluation of SRV pilot serial number 1047 testing high out of tolerance.
3. JAF Engineering Request JAF-05-19313, Effect of out of tolerance SRV pilot setpoints on Mark I Containment Analysis.
4. JAF Condition Report CR-JAF-2005-01837 CA001, Initiate a Corrective Action Request to Target Rock Corporation for an incorrect configuration found in the SRV pilot valves.