



LR-N12-0061

February 9, 2012

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

LER 272/2011-005
Salem Nuclear Generating Station Unit 1
NRC Docket No. 50-272
SUBJECT: Technical Specification Incorrect NIS Trip Setpoints Result in
TS 3.0.3 Entry

The Licensee Event Report, "Technical Specification Incorrect NIS Trip Setpoints Result in TS 3.0.3 Entry," is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(i)(B), "any operation or condition which was prohibited by the plant's Technical Specifications."

The attached LER contains no commitments. Should you have any questions or comments regarding the submittal, please contact Ms. Kreasy King at 856-339-2922.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Fricker", with a long horizontal flourish extending to the right.

Carl J. Fricker
Site Vice President – Salem

Attachments (1)

*TE22
NRR*

cc Mr. W. Dean, Administrator – Region 1, NRC
 Mr. R. Ennis, Licensing Project Manager – Salem, NRC
 Mr. D. Schroeder, USNRC Senior Resident Inspector, Salem (X24)
 Mr. P. Mulligan, Manager IV, NJBNE
 Mr. T. Joyce, President and Chief Nuclear Officer – Nuclear
 Mr. T. Cachaza, Salem Commitment Tracking Coordinator
 Mr. L. Marabella, Corporate Commitment Tracking Coordinator

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Salem Generating Station - Unit 1	2. DOCKET NUMBER 05000272	3. PAGE 1 of 3
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4. TITLE
Incorrect NIS Trip Setpoints Results in TS 3.0.3 Entry

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	24	11	2011	0 0 5	0	02	09	12		DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)			
10. POWER LEVEL 55%	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Kreasy King, Compliance Engineer	TELEPHONE NUMBER (Include Area Code) (856) 339 -2922
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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
A	IG								

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

This report is being made in accordance with 10CFR50.73(a)(2)(i)(B), "Any event or condition which was prohibited by the plant's Technical Specification."

On November 23, 2011 with Unit 1 at 47% reactor power, the full power intermediate range trip setpoints were calculated in accordance with the Intermediate Range (IR) Nuclear Instrumentation System (NIS) Setpoint Evaluation and Determination procedure. On November 24, 2011 with Unit 1 at 55% reactor power, I&C technicians installed the IR NIS trip setpoints. Prior to the installation of the setpoints, the IR High Level Trip and Rod Stop bistables were in the tripped condition, as expected. Once the setpoints were installed, the IR High Level Trip and Rod Stop bistables were not tripped for both 1N35 and 1N36 channels. With reactor power at 55%, the proper state of the bistables would be tripped. The fact that the bistables were not in the tripped condition after the setpoints were installed was not immediately identified by the plant staff.

On December 11, 2011, with Unit 1 at 100% reactor power, the Unit 1 reactor operator observed that the IR NIS bistables were not in a tripped condition, as would be expected. The IR NIS trip setpoints were determined to be incorrect and the IR NIS channels were declared inoperable. Technical Specification 3.0.3 was entered at 1258 hours. New IR trip setpoints were calculated and installed in 1N35 and Technical Specification (TS) 3.0.3 was exited at 1628 hours. 1N36 was completed and declared operable at 1733 hours.

The cause was the failure to properly record the input data (IR currents) used to calculate the IR trip setpoints. This lead to the miscalculation of the IR trip setpoints that were installed. Corrective actions included the installation of the correct IR trip setpoints and a procedure revision to include a Concurrent Verification when obtaining the data used to calculate the IR trip setpoints.

LICENSEE EVENT REPORT (LER)

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NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor (PWR/4)

Reactor Monitoring System {IG/-}

* Energy Industry Identification System {EIIIS} codes and component function identifier codes appear as {SS/CCC}

IDENTIFICATION OF OCCURRENCE

Event Date: November 24, 2011

Discovery Date: December 11, 2011

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in Operational Mode 1 at 55% Reactor Power prior to the November 24, 2011 occurrence and at 100% reactor power on December 11, 2011 at the time of discovery.

No additional structures, systems or components were inoperable at the time of the discovery that contributed to the event.

DESCRIPTION OF OCCURRENCE

On November 23, 2011 full power intermediate range trip setpoints {IG/-} were calculated in accordance with the Intermediate Range (IR) Nuclear Instrumentation System (NIS) Trip Setpoint Evaluation and Determination procedure. This activity is completed with the reactor at approximately 47% Rated Thermal Power (RTP). Power ascension was placed on hold for data collection and for reactor engineering to perform a flux map.

On November 24, 2011, I&C technicians installed the IR NIS trip setpoints. Prior to the installation of the new trip setpoints, the IR High Level Trip and Rod Stop bistables were in the tripped condition, as expected. Once the new setpoints were installed, the IR High Level Trips and Rod Stop bistables were not tripped on both 1N35 and 1N36 channels. This was not expected for the current reactor power of 55% since the nominal High Level trip should correspond to 25% RTP. The fact that the bistables were not in the tripped condition after the new setpoints were installed was not immediately identified by the plant staff.

On December 11, 2011, the Unit 1 reactor operator observed that the IR NIS trip bistables were not in the tripped condition, as expected, and questioned the current configuration. Technical Specification (TS) 3.0.3 was entered for failure to meet TS 3.3.1.1 requirements for the minimum channels operable. IR trip setpoints were recalculated and installed for 1N35 and 1N36. The 1N35 channel was declared operable at 1628 hours and TS 3.0.3 was exited. The channel 1N36 was declared operable at 1733 hours.

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NARRATIVE

CAUSE OF OCCURRENCE

The cause was the failure to accurately record the input data (IR currents) used to calculate the IR trip setpoints. This resulted in the miscalculation of the IR trip setpoints and subsequent installation of incorrect setpoints on both of the IR NIS channels.

PREVIOUS OCCURRENCES

A review of LERs for the previous three years did not identify any previous similar events.

SAFETY CONSEQUENCES AND IMPLICATIONS

There was no actual safety consequence associated with this event.

The intermediate range (IR) NIS detectors 1N35 and 1N36 are designed for multiple decade use and have a compensated ion chamber. The detector current is a function of the detector characteristics and the neutron and gamma flux leakage from the core, which is proportional to reactor power. The primary function of the IR NIS detectors is to provide a relative indication of reactor power when transitioning from the source range through the power range. The IR NIS channels provide a High Flux Reactor Trip at an IR Detector current equivalent to 25% RTP, increasing (1 of 2 logic). This trip should reset at 70 percent of the setpoint detector current, decreasing. This trip is required by Technical Specifications, but no credit is taken for this trip in the safety analysis.

Technical Specification (TS) Table 3.3-1, Reactor Trip System Instrumentation, requires that both trains of IR NIS detectors be operable while in Modes 1 and 2 and when the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal.

The intermediate range trip at 25% power is intended to mitigate the consequences of a rod cluster control assembly (RCCA) bank withdrawal accident from sub-critical conditions, a boron dilution event, or a rod ejection accident.

Chapter 15, Accident Analysis, of the UFSAR credits the NIS Power Range (PR) low setting trip for protection in the event of a RCCA bank rod withdrawal. The boron dilution event analysis credits Over Temperature Delta Temperature (OTDT) for protection. Rod Ejection event analysis credits the PR high and low range trips.

Though the IR NIS detectors provide backup protection for the accident scenarios and are currently required by TS, no credit is taken for their use in ensuring shutdown of the reactor and maintaining it in a safe condition. Inoperability of both IR NIS detectors would not be safety significant as they serve as backup to the PR NIS and OTDT systems.

CORRECTIVE ACTIONS

1. New IR NIS trip setpoints were calculated and installed for 1N35 and 1N36.
2. Procedures were enhanced to require a Concurrent Verification

COMMITMENTS

No commitments are made in this LER.