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GNRO-2017/00073

10CFR50.73

December 18, 2017

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Licensee Event Report 2017-004-01, Outside-of-Tech-Spec-Allowable-Value Automatic Depressurization System Initiation Timer Relay due to Inadequate Procedures
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Attached is Supplemental Licensee Event Report (LER) 2017-004-01, Outside-of-Tech-Spec-Allowable-Value Automatic Depressurization System Initiation Timer Relay due to Inadequate Procedures, which is a final report.

This letter contains no new commitments. Should you have any questions or require additional information, please contact Douglas Neve at (601) 437-2103.

Sincerely,

Eric A. Larson
Site Vice President
Grand Gulf Nuclear Station

EAL/tdf

Attachment: Licensee Event Report 2017-004-01

cc: (See Next Page)

IE22
NRR

cc: with Attachment and Enclosures

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bcc:
OUTLOOK MAIL: **DISTRIBUTION IS ALL ELECTRONIC**

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OTHER – Licensing Files		LRS_DOCS (GNRI or GNRO)
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Required Reading Coordinator	ALL LER's	

Attachment to GNRO-2017/00073

Licensee Event Report 2017-004-01

NRC FORM 366 (04-2017) | U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Outside-of-Tech-Spec-Allowable-Value Automatic Depressurization System Initiation Timer Relay due to Inadequate Procedures

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
									N/A	05000 N/A
05	26	2017	2017 - 004 – 01			07	13	2017	FACILITY NAME N/A	DOCKET NUMBER 05000 N/A

9. OPERATING MODE

MODE 1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
	☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

Licensee Contact	TELEPHONE NUMBER *(Include Area Code)*
Douglas Neve / Manager, Regulatory Assurance	(601) 437-2103

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
D	AD	RLY2	Agastat	Yes	NA	NA	NA	NA	NA

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)*

On May 26, 2017, while performing the Automatic Depressurization System (ADS) quarterly surveillance, the time delay on the Trip System A (Division 1) ADS initiation timer relay was found outside of its Technical Specification (TS) Allowable Value of ≤ 115 seconds. Specifically, the ADS timer requirements in TS 3.3.5.1, Emergency Core Cooling System Instrumentation, Table 3.3.5.1-1, Emergency Core Cooling System Instrumentation, Function 4, Sub-function c. ADS Initiation Timer, Allowable Value was not met. The cause was determined to be inadequate preventive maintenance and review of the previous test results. This event is reportable as a license event report (LER) in accordance with 10CFR50.73(a)(2)(i)(B), as a "condition prohibited by Technical Specifications" because the same relay failed its previous test and could not be considered as OPERABLE during the full interval between tests. Corrective actions included replacement of the defective timer relay and planned actions to replace the corresponding timer relays in ADS and the Feedwater Control System. In addition, the applicable preventive maintenance procedures were revised. The event posed no threat to the health and safety of the general public or to nuclear safety as ADS would have performed as designed. No Technical Specification safety limits were challenged or violated.

1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV. NO.
Grand Gulf Nuclear Station, Unit 1	05000 416	2017	- 004 –	01

NARRATIVE

DESCRIPTION

On May 26, 2017, while performing Automatic Depressurization System (ADS) [AD][C23] quarterly surveillance, the time delay on the Trip System A ADS initiation timer relay [RLY2] was found outside of its Technical Specification (TS) Allowable Value of ≤ 115 seconds. Specifically, the ADS timer requirements that are specified in Technical Specifications 3.3.5.1, Emergency Core Cooling System (ECCS) Instrumentation, Table 3.3.5.1-1, Emergency Core Cooling System Instrumentation, Function 4, Sub-function c. ADS Initiation Timer, Allowable Value were not met.

The failure mechanism is degradation of the timing function in the ADS initiation timer relay (Agastat Model TR14D3EC750) that delays initiation of ADS in order to allow time for high pressure injection to restore reactor water level. The TS Allowable Value for this timer is less than or equal to 115 seconds. The as found value was beyond this value. This surveillance is performed on a quarterly basis. This same condition was found during the last surveillance performed on February 23, 2017. This condition was not found during the surveillance performed prior to that on November 18, 2016.

The Automatic Depressurization System is required in Modes 1, 2, and 3 with the reactor above 150 psig. Between November 18, 2016 and January 30, 2017, the plant was in Mode 4. Therefore this function was not required from November 18, 2016 to January 30, 2017, which is when the reactor reached 150 psig in Mode 2.

The ADS was required to be Operable from January 30, 2017, until May 26, 2017. ADS initiation is accomplished by energization of either the Trip System A (Division 1) or Trip System B (Division 2) solenoids [FSW] associated with each of the ADS valves. The logic for each Trip System is separate and either trip system will cause all the ADS relief valves to open. Therefore, the automatic safety function would still be accomplished within the allowable time provided that the Trip System B was Operable. Trip System B initiation logic was taken out of service on March 10, 2017, to support performance of the quarterly ADS channel calibration surveillance procedure. An additional review was performed to determine if the Trip System A logic would have initiated within the allowable time during the period when the Trip System B logic was out of service. The average rate of change of the setpoint between surveillances was 0.402 seconds/day for the first interval (November 18, 2016 – February 23, 2017) and 0.424 seconds/day for the second interval (February 23, 2017 – May 26, 2017). Use of the larger rate of change is conservative, and therefore a rate of 0.424 seconds/day was assumed for the second interval. Linearly extrapolating from an as left condition of 104 seconds on February 23, 2017, it is concluded that the setpoint would have been approximately 110.4 seconds on March 10, 2017. This value is within the 115 second TS AV. Therefore, it is concluded that no loss of safety function occurred for this condition.

REPORTABILITY

This event is reportable as a license event report (LER) in accordance with NUREG-1022, Section 3.2.2, and 10CFR50.73(a)(2)(i)(B), as a "condition prohibited by Technical Specifications" because the same relay failed its previous test and could not have been considered operable for the full interval between tests. The timer relay would have been considered inoperable for a time period such that the Technical Specification 3.3.5.1 completion time would not have been met.

NARRATIVE

CAUSE

The direct cause of the failure is the degradation of timing function for ADS initiation timer relay 1B21-K5A, most likely due to the electrolytic capacitor degradation.

The cause of the failure was an inadequate preventive maintenance task and inadequate procedural guidance. The procedures did not require periodic replacement of the relay nor did they require an engineering review of the test results.

CORRECTIVE ACTIONS

Immediate:

The defective timer relay in Trip System A was replaced.

Completed:

Preventive maintenance tasks were revised to require periodic replacement of the relays.

Surveillance testing was revised to require timely engineering review of the completed quarterly surveillance tests.

Planned:

The corresponding relays in ADS and the Feedwater Control System will be replaced. This action has been entered in the corrective action program and may be modified in accordance with that program.

SAFETY SIGNIFICANCE

Initiation of the ADS is accomplished by energizing either the Trip System A or Trip System B solenoids associated with each of the ADS valves. Each separate trip system will cause all the ADS relief valves to open. Therefore, the automatic safety function would still be accomplished within the allowable time with Trip System A inoperable provided that Trip System B was Operable. Trip System B initiation logic was taken out of service on March 10, 2017, to support performance of the quarterly ADS Channel B calibration surveillance procedure. An additional review was performed to determine if the Trip System A logic would have initiated within the allowable time during the period when the Trip System B logic was out of service. The conclusion was that the "A" setpoint would have been approximately 110.4 seconds on March 10, 2017. This value is within the 115 second TS AV. Therefore, at least one division of ADS was always available to perform the safety function. In addition, manual actuation was available, and operators are trained on the conditions requiring manual actuation and the associated procedures.

The ADS acts as a backup to High Pressure Core Spray System [BG] for a small break loss of coolant accident. The High Pressure Core Spray System was not impacted by the degraded condition of ADS.

The event posed no threat to the health and safety of the general public or to nuclear safety as ADS would have performed as designed. No Technical Specification safety limits were challenged or violated. Industrial safety was not challenged, and there was no potential or actual radiological release during the event.

PREVIOUS SIMILAR OCCURRENCES

LER 2017-001-00 High Pressure Core Spray Jockey Pump Trip
LER 2009-002-00 Emergency Diesel Actuation Caused By Degraded DC Control Battery

The identified licensee event reports were attributed to inadequate maintenance procedures. The events were reviewed and it has been determined that the causes and corrective actions were sufficiently different that they could not have predicted or prevented the occurrence of this event.