UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

November 10, 2016

Mr. Vin Fallacara
Acting Site Vice President Operations
Entergy Operations, Inc.
Grand Gulf Nuclear Station
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000416/2016003

Dear Mr. Fallacara:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Grand Gulf Nuclear Station. On October 13, 2016, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented four findings of very low safety significance (Green) in this report. Three of these findings involved violations of NRC requirements. Further, inspectors documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Grand Gulf Nuclear Station.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC resident inspector at the Grand Gulf Nuclear Station.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Greg Warnick, Branch Chief
Project Branch C
Division of Reactor Projects

Docket No. 50-416
License No. NPF-29

Enclosure:
Inspection Report 05000416/2016003
w/ Attachment 1: Supplemental Information

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Letter to Vin Fallacara from Greg Warnick dated November 10, 2016

SUBJECT: GRAND GULF NUCLEAR STATION - NRC INTEGRATED INSPECTIONREPORT 05000416/2016003

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RIV RSLO (Bill.Maier@nrc.gov)
ROPreports.Resource@nrc.gov
ROPassessment.Resource@nrc.gov

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000416
License:	NPF-29
Report:	05000416/2016003
Licensee:	Entergy Operations, Inc.
Facility:	Grand Gulf Nuclear Station, Unit 1
Location:	7003 Baldhill Road Port Gibson, MS 39150
Dates:	July 1 through September 30, 2016
Inspectors:	M. Young, Senior Resident Inspector N. Day, Resident Inspector B. Correll, Project Engineer J. Drake, Senior Reactor Inspector J. McHugh, Senior Reactor Technology Instructor C. Young, Senior Project Engineer
Approved By:	Greg Warnick Chief, Project Branch C Division of Reactor Projects

SUMMARY

IR 05000416/2016003; 07/01/2016 - 09/30/2016, Grand Gulf Nuclear Station; Equipment Alignment, Heat Sink Performance, Problem Identification and Resolution.

The inspection activities described in this report were performed between July 1, 2016, and September 30, 2016, by the resident inspectors at Grand Gulf Nuclear Station and inspectors from the NRC's Region IV office and other NRC offices. Four findings of very low safety significance (Green) are documented in this report. Three of these findings involved violations of NRC requirements. Further, inspectors documented a licensee-identified violation of very low safety significance in this report. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Initiating Events

- Green. The inspectors identified a finding for the licensee's failure to aggressively and fully communicate an operational decision-making instruction implementation action plan, particularly the trigger points and those actions if trigger points are exceeded, to the appropriate operations shift personnel via operations management in accordance with Procedure EN-OP-111, "Operational Decision-Making Issue Process." Specifically, on July 3, 2016, Grand Gulf Nuclear Station operations management created an operational decision-making instruction, but did not communicate to onshift operators the trigger points and actions associated with uncontrolled power oscillations that occurred on June 17, 2016. The licensee implemented immediate corrective actions by communicating the operational decision-making instruction trigger points to all onshift operators, as well as creating an offnormal event procedure. This finding was entered into the licensee's corrective action program as Condition Report CR-GGN-2016-06032.

  The failure to follow Procedure EN-OP-111 to aggressively and fully communicate an operational decision-making instruction implementation action plan, particularly the trigger points and those actions if trigger points are exceeded, to the appropriate operations shift personnel via operations management was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, operations management did not communicate operational decision-making instruction trigger points and actions to ensure appropriate operator response to limit the liklihood of events that upset plant stability, similar to the reactor pressure and power oscillations that occurred on June 17, 2016. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and Inspection Manual Chapter 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because the finding did not cause a reactor trip.

The inspectors determined that the finding has a change management cross-cutting aspect within the human performance area because licensee management failed to use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. Specifically, the licensee failed to use the operational decision-making instruction process effectively such that the operational decision-making instruction was communicated and could be implemented as intended [H.3]. (Section 4OA2.2.3)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," which states, in part, "conditions adverse to quality are promptly identified and corrected." Specifically, prior to April 2012, the licensee did not correct identified deficiencies affecting work order instructions and acceptance criteria to perform surveillance requirements associated with safety-related fuel pool cooling and cleanup heat exchangers. In response to this issue, the licensee revised the associated procedure to provide appropriate quantitative and qualitative acceptance criteria. This finding was entered into the licensee's corrective action program as Condition Report CR-GGN-2016-07257.

  The failure to promptly correct procedures and work order instructions used to perform program testing of safety-related heat exchangers was a performance deficiency. Specifically, the licensee did not promptly correct identified inadequate work order instructions or acceptance criteria to perform surveillance requirements associated with safety-related fuel pool cooling and cleanup heat exchangers from April 2012 until September 30, 2016. The inspectors determined that it was reasonable for the licensee to be able to foresee and prevent occurrence this deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., fuel damage). Specifically, the inspectors concluded that without appropriate quantitative and qualitative acceptance criteria, the availability, reliability, and capability of the fuel pool cooling and cleanup heat exchangers would not be effectively ensured through the performance of surveillance requirements. The inspectors evaluated this finding using NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that the finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of a safety function of a system or a single train for greater than its technical specification allowed outage time, and did not screen potentially risk significant due to external events. The finding has a cross-cutting aspect in the area of human performance, documentation, because the licensee did not create and maintain complete, accurate, and up-to-date documentation for the safety-related heat exchanger testing program [H.7]. (Section 1R07)

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify a condition adverse to quality. Specifically, operations personnel failed to identify oscillations in the reactor core isolation cooling transmitter logic system during technical specification surveillance control panel walk-downs. This resulted in an automatic isolation of the reactor core isolation cooling system from its steam supply. Approximately six hours after the isolation, maintenance personnel performed a flow transmitter system fill and vent, and the system was returned to

an operable condition. This finding was entered into the licensee's corrective action program as Condition Report CR-GGN-2016-03070.

The failure to promptly identify oscillations in the reactor core isolation cooling transmitter logic system was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operations personnel failed to identify oscillations in the reactor core isolation cooling transmitter logic system, which resulted in an isolation and unavailability of the reactor core isolation cooling system. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding is of very low safety significance (Green) because it was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program.

In addition, the inspectors determined that the finding has a challenge the unknown cross-cutting aspect within the human performance area because the licensee failed to stop when faced with uncertain conditions and evaluate and manage risk before proceeding. Specifically, when performing multiple sets of operator control panel walk-downs, which should have resulted in the identification of oscillations in the reactor core isolation cooling transmitter logic system, the operators failed to recognize and correlate that the small oscillations were an abnormal system condition and could lead to a reactor core isolation cooling system isolation [H.11]. (Section 1R04)

- Green. The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a for the failure to establish a procedure for combating malfunctions of the reactor pressure control system. Specifically, on June 17, 2016, operators combated a malfunction in the reactor pressure control system associated with an unexpected turbine stop valve closure without having appropriate procedures. The licensee implemented immediate corrective actions by creating a standing order that gave clear guidance on how to control issues that cause oscillations, and has since created an offnormal event procedure for reactor pressure control system malfunctions. This finding was entered into the licensee's corrective action program as Condition Report CR-GGN-2016-04834.

  The failure to establish a procedure for combating malfunctions of the reactor pressure control system was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators were combating a malfunction in the reactor pressure control system associated with an unexpected turbine stop valve closure without having a procedure. As a result, the operators were unable to reconcile the

pressure control malfunction, did not manually scram the reactor, and ultimately caused an automatic reactor scram. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding resulted in themismanagement of reactivity by operators and required an evaluation using Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria." A senior reactor analyst performed an evaluation to bound the increase in core damage frequency of the finding. Based on the results of this evaluation, the final significance of the finding was determined to be very low safety significance (Green).

In addition, the inspectors determined that the finding has an identification cross-cutting aspect within the problem identification and resolution area because the licensee failed to identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to identify that they were missing an offnormal event procedure for malfunctions of the reactor pressure control system following a 2015 half scram that occurred while conducting the same testing as that which led to this event [P.1]. (Section 4OA2.2.2)

Licensee-Identified Violations

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and associated corrective action tracking numbers are listed in Section 4OA7 of this report.

PLANT STATUS

Grand Gulf Nuclear Station began the inspection period in Mode 4.

On July 10, 2016, operators commenced power ascension, and on July 11, 2016, at 8 percent power, operators manually shut down the reactor due to a turbine bypass valves issue.

On July 16, 2016, operators commenced power ascension, and on July 24, 2016, Grand Gulf Nuclear Station reached 100 percent power.

On July 28, 2016, operators reduced power to 86 percent power to exercise control rods to address an elevated leak rate issue. On July 29, 2016, operators restored the plant to 100 percent power.

On September 8, 2016, operators commenced a reactor shutdown to Mode 4 to comply with technical specifications to replace the residual heat removal pump A due to a failed surveillance test.

Grand Gulf Nuclear Station remained in Mode 4 at the end of the inspection period (See Preliminary Notification PNO-IV-16-003, ML16273A330).

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors performed partial system walk-downs of the following risk-significant systems:

- On August 31, 2016, low pressure core spray, following a planned system outage
- On September 2, 2016, reactor core isolation cooling, to troubleshoot and mitigate reactor coolant system leakage rate
- On September 7, 2016, residual heat removal (RHR) subsystem B, due to inoperable RHR subsystem A

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems or trains were correctly aligned for the existing plant configuration.

These activities constituted three partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” for failure to promptly identify a condition adverse to quality. Specifically, operations personnel failed to identify oscillations in the reactor core isolation cooling (RCIC) transmitter logic system during technical specification surveillance control panel walk-downs.

Description. On March 26, 2016, a fill and vent of the RCIC transmitter logic fluid system was performed in accordance with Integrated Operating Instruction 03-1-01-1, "Cold Shutdown to Generator to Carrying Minimum Load,” Revision 169. On March 29, 2016, following plant startup from a refueling outage, Grand Gulf Nuclear Station (GGNS) received an automatic reactor scram due to improper current transformer ratio wiring on the B phase main transformer. During corrective maintenance activities GGNS remained in Mode 3, with reactor pressure at approximately 300 pounds per square inch. After the repairs were made to the B phase main transformer, the plant was restarted on March 30, 2016. Since the plant remained in Mode 3 during the forced outage, with reactor pressure above 150 pounds per square inch, the RCIC system remained operable, and plant personnel determined that another fill and vent was not needed. On April 1, 2016, at 6:00 p.m., the main control room received a RCIC high steam line differential pressure alarm. The alarm immediately cleared. Approximately four hours later, the main control room received a RCIC high steam line differential pressure alarm, and the RCIC system automatically isolated from its steam supply. The observed plant response was consistent with conditions the inspectors identified through a review of operating experience that described instrumentation inaccuracies caused by noncondensible gases that led to gas entrapment and voids post depressurization of the reactor.

The licensee determined that the isolation occurred due to oscillations in the RCIC transmitter. The oscillations began to increase in magnitude starting on March 31, 2016, and became great enough to cause a RCIC high steam line differential pressure alarm on April 1, 2016, at 6:00 p.m. The alarm response instruction for this condition assumes that an isolation of the steam supply to the RCIC system takes places when this alarm comes in. However, a RCIC steam supply isolation did not take place, and the alarm automatically cleared. Operations personnel incorrectly determined that the alarm was due to an annunciator circuit issue. The oscillations continued to increase in magnitude, and became great enough to cause a RCIC high steam line differential pressure alarm and automatic isolation on April 1, 2016, at 10:03 p.m. The automatic isolation rendered the RCIC system inoperable which resulted in unplanned unavailability. On April 2, 2016, at 4:15 a.m., maintenance personnel completed the fill and vent of the RCIC transmitter logic fluid system and returned the system to an operable and available status.

Daily system control panel walk-downs are performed by operations personnel in accordance with Operations Procedure 06-OP-1000-D-0001, “Daily Operator Logs,” Revision 148. Data Sheet II, Step 175, of this procedure is performed every 12 hours to meet Technical Specification Surveillance Requirement 3.3.6.1.1 for a channel check of the RCIC/RHR Steam Line Flow High function. The inspectors reviewed the plant data system history for the RCIC header differential pressure and determined that the oscillations were noticeable starting March 31, 2016, at 2:34 p.m. The subsequent channel check of RCIC/RHR Steam Line Flow High function did not promptly identify

that there were oscillations during the channel check, such that a timely fill and vent of the RCIC transmitter logic system could have been performed to prevent an automatic RCIC isolation.

The licensee initiated Condition Report CR-GGN-2016-3070, which included planned and completed corrective actions. This condition report included an apparent cause analysis which identified the apparent cause as an untimely fill and vent of the RCIC transmitter logic system. The inspectors determined that operations personnel failed to recognize that a fill and vent was needed when performing technical specification surveillance requirements.

Analysis. The failure to promptly identify oscillations in the RCIC transmitter logic system was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operations personnel failed to identify oscillations in the RCIC transmitter logic system, which resulted in an isolation and unavailability of the RCIC system. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding is of very low safety significance (Green) because it was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program.

In addition, the inspectors determined that the finding has a challenge the unknown cross-cutting aspect within the human performance area because the licensee failed to stop when faced with uncertain conditions and evaluate and manage risk before proceeding. Specifically, when performing multiple sets of operator control panel walk-downs, which should have resulted in the identification of oscillations in the RCIC transmitter logic system, operators failed to recognize and correlate that the small oscillations were an abnormal system condition and could lead to a RCIC system isolation [H.11].

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that "conditions adverse to quality are promptly identified." Contrary to the above, on April 1, 2016, the licensee failed to promptly identify a condition adverse to quality. Specifically, operations personnel failed to promptly identify that oscillations in the RCIC transmitter logic system was a condition adverse to quality. As a result, the oscillations continued to increase which resulted in an isolation and unavailability of the RCIC system. Approximately six hours after the isolation, maintenance personnel performed a RCIC flow transmitter system fill and vent, and the RCIC system was returned to an operable status. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report

CR-GGN-2016-03070, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 5000416/2016003-01, "Failure to Promptly Identify Conditions Adverse to Quality in the RCIC System."

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on four plant areas important to safety:

- On July 9, 2016, area CWPH-01, the circulating water pumphouse
- On July 12, 2016, areas OC703 and OC503, the upper control room and main control room
- On July 29, 2016, area 1A109, the high pressure core spray pump room
- On August 1, 2016, area 1A201, the main feedwater pump and turbine lube oil rooms

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On September 2, 2016, the inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose the standby diesel generator building which contained risk-significant structures, systems, and components that were susceptible to flooding.

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

These activities constituted completion of one flood protection measures sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed licensee programs to verify heat exchanger performance and operability for the following heat exchangers:

- 1T46B001B electrical switchgear room cooler
- 1G41B005A fuel pool cooling and cleanup (FPCCU) heat exchanger
- 1P75B004A Division 1 diesel jacket water cooler
- P43-B001B turbine building cooling water heat exchanger

The inspectors verified that testing, inspection, maintenance, and chemistry control programs were adequate to ensure proper heat transfer. The inspectors verified that the periodic testing and monitoring methods, as outlined in commitments to NRC Generic Letter 89-13, utilized proper industry heat exchanger guidance. Additionally, the inspectors verified that the licensee's chemistry program ensured that biological fouling was properly controlled between tests. The inspectors reviewed previous maintenance records of the heat exchangers to verify that the licensee's heat exchanger inspections adequately addressed structural integrity and cleanliness of their tubes. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of four triennial heat sink inspection samples, as defined in Inspection Procedure 71111.07.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because the licensee did not promptly correct procedures and work order instructions used to perform program testing of safety-related heat exchangers. Specifically, the licensee did not promptly correct identified deficiencies affecting work order instructions and acceptance criteria to perform surveillance requirements associated with safety-related fuel pool cooling and cleanup heat exchangers.

Description. During a review of the fuel pool cooling and cleanup heat exchangers, the inspectors identified an issue of concern related to the procedures and work order instructions used to conduct the test program to verify the heat transfer capability of all safety-related heat exchangers cooled by service water. Specifically, the procedure and work order instructions used to demonstrate operability of the fuel pool cooling and cleanup heat exchangers did not have correct acceptance criteria or adequate instructions to accomplish the task satisfactorily. The inspectors noted that the licensee initially identified the issue of concern with the fuel pool cooling and cleanup heat exchangers in April 2012, then in March 2014, and again in March 2016. The fuel pool

cooling and cleanup heat exchangers are used to maintain spent fuel pool temperature within requirements of Technical Requirements Manual 6.7.4. The licensee determined that this condition identified that actual heat exchanger heat removal capacity was less than original design heat removal capacity. However, the spent fuel pool temperature remained within requirements of Technical Requirements Manual 6.7.4; therefore, the fuel pool cooling and cleanup heat exchangers were determined to be functional for this condition.

Analysis. The failure to promptly correct procedures and work order instructions used to perform program testing of safety-related heat exchangers was a performance deficiency. Specifically, the licensee did not promptly correct identified inadequate work order instructions or acceptance criteria to perform surveillance requirements associated with safety-related fuel pool cooling and cleanup heat exchangers from April 2012 until September 30, 2016. This performance deficiency is more than minor, and therefore a finding, because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., fuel damage). Specifically, the inspectors concluded that without appropriate quantitative and qualitative acceptance criteria, the availability, reliability, and capability of the fuel pool cooling and cleanup heat exchangers would not be effectively ensured through the performance of surveillance requirements. The inspectors evaluated this finding using NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that the finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of a safety function of a system or a single train for greater than its technical specification allowed outage time, and did not screen potentially risk significant due to external events.

In addition, the inspectors determined that the finding has a documentation cross-cutting aspect within the human performance area because the licensee did not create and maintain complete, accurate, and up-to-date documentation for the safety-related heat exchanger testing program [H.7].

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, "conditions adverse to quality are promptly identified and corrected." Contrary to the above, from April 2012 until September 30, 2016, the licensee failed to promptly correct a condition adverse to quality. Specifically, the licensee did not correct identified deficiencies affecting work order instructions and acceptance criteria to perform surveillance requirements associated with safety-related fuel pool cooling and cleanup heat exchangers. As a result, the capability of the heat exchangers to perform their required function was not effectively ensured through the performance of surveillance requirements. In response to this issue, the licensee revised the associated procedure to provide appropriate quantitative and qualitative acceptance criteria. This finding was entered into the licensee's corrective action program as Condition Report CR-GGN-2016-07257. Because this finding was of very low safety significance, and it was entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000416/2016003-02, "Failure to Promptly Correct Procedures and Work Order Instructions used for Safety-Related Heat Exchanger Testing."

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On September 7, 2016, the inspectors observed Just-In-Time-Training in the simulator for an operating crew. The training consisted of downshifting the recirculation pumps to slow speed, manually inserting a reactor scram and placing shutdown cooling in service. The inspectors assessed the performance of the operators and the evaluators' critique of their performance.

These activities constituted completion of one quarterly licensed operator requalification program sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of onshift licensed operators in the plant's main control room. The inspectors observed the operators' performance of the following activities during a period of heightened activity or risk:

- On July 8 and 9, 2016, during plant startup activities following a forced outage, the inspectors observed the operators transition the plant to Mode 2; the withdrawing of control rods to reactor criticality; and communications, troubleshooting, and decision-making following unplanned bypass valve movements following main turbine latching.

- On July 20 and 21, 2016, during plant startup activities following a forced outage, the inspectors observed the operators start up the plant and synchronize the turbine generator to the grid.

- On September 8, 2016, during plant shutdown activities for a forced outage.

In addition, the inspectors assessed the operators' adherence to plant procedures, including Procedure EN-OP-115, "Conduct of Operations," Revision 17, and other operations department policies.

These activities constituted completion of three quarterly licensed operator performance samples, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

On August 4, 2016, the inspectors completed a review of Grand Gulf Nuclear Station's 34.5KV electrical systems and switchyard due to a degraded condition identified on June 30, 2016. The inspectors reviewed the extent of condition of possible common cause structure, system, or component failures and evaluated the adequacy of the licensee's corrective actions. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule).

This activity constituted completion of one maintenance effectiveness sample, as defined in Inspection Procedure 71111.12.

b. Findings

A licensee-identified violation associated with the maintenance rule monitoring program is documented in Section 4OA7 of this report.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed three risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- On August 11, 2016, during shutdown conditions, risk management actions to maintain operability of residual heat removal subsystem C during alternate decay heat removal maintenance
- On August 17, 2016, during shutdown conditions, risk management actions to maintain availability of residual removal system A during minimum flow line instrumentation surveillance
- From September 6 - 9, 2016, Forced Outage 21-04 risk assessment due to residual heat removal pump A failed surveillance test and pump replacement

The inspectors verified that these risk assessments were performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

From July 23 - 28, 2016, the inspectors also observed portions of emergent work activities that had the potential to cause an initiating event. The work activities were associated with the mitigation of an elevated reactor coolant system leakage rate by reducing the reactor power level and exercising control rods.

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to

minimize the impact of the work activities on unaffected structures, systems, and components (SSCs).

These activities constituted completion of four maintenance risk assessments and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed six operability determinations that the licensee performed for degraded or nonconforming structures, systems, or components (SSCs):

- On July, 19, 2016, operability assessment of a safety relief valve due to an issue with a hydraulic snubber
- On July 26, 2016, operability assessment for drywell leakage rate due to an instanteous rate increase to 4 gallons per minute
- On August 25, 2016, operability determination of reactor core isolation cooling system due to flow controller drift while in manual
- On September 1, 2016, operability determination of emergency core cooling systems due to foreign material identified in containment
- On September 8, 2016, operability determination of the residual heat removal subsystem B during the transition to shutdown cooling when the pump breaker was racked out
- From August 31 – September 9, 2016, operability determination of reactor core isolation cooling due to visual examinations of piping not performed in accordance with the ASME code

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded SSC.

On August 12, 2016, the inspectors reviewed operator actions taken or planned to compensate for degraded or nonconforming conditions. The inspectors verified that the licensee effectively managed these operator workarounds to prevent adverse effects on the function of mitigating systems and to minimize their impact on the operators' ability to implement abnormal and emergency operating procedures.

These activities constituted completion of six operability and functionality review samples and one operator work-around sample, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On September 15, 2016, the inspectors reviewed one temporary plant modification that affected risk-significant structures, systems, and components (SSCs). The licensee modified the plant to remove a high energy line break wall and install a lifting beam in the residual heat removal subsystem A room to lift the pump out of the room. The inspectors verified that the licensee had installed and removed this temporary modification in accordance with technically adequate design documents. The inspectors verified that this modification did not adversely impact the operability or availability of affected SSCs. The inspectors reviewed design documentation and plant procedures affected by the modification to verify the licensee maintained configuration control.

These activities constituted completion of one sample of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed four post-maintenance testing activities that affected risk-significant structures, systems, or components (SSCs):

- On July 14, 2016, residual heat removal subsystem B following repair of a leak at a weld
- On July 15, 2016, turbine control logic cards that were replaced following refurbishment
- On August 25, 2016, low pressure core spray pump following a maintenance outage
- On September 22, 2016, residual heat removal pump A following pump replacement and reinstallation

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constituted completion of four post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

From June 25 – July 16, 2016, the inspectors evaluated the licensee's forced outage activities. The licensee entered the forced outage due to malfunctions in the turbine pressure control logic system. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Monitoring of heat-up and startup activities

On September 8, 2016, the inspectors evaluated the licensee's forced outage activities. The licensee entered the forced outage to conduct replacement of the residual heat removal pump A after failing a surveillance test. At the end of this inspection period, Grand Gulf Nuclear Station remained in the forced outage to implement corrective actions to assess and resolve operational performance concerns (See Preliminary Notification PNO-IV-16-003, ML16273A330). The inspectors continued to verify that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintains defense-in-depth during outage activities

These activities constituted completion of one outage activities sample and one partial completion of an outage activities sample, as defined in Inspection Procedure 71111.20.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed four risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the structures, systems, and components (SSCs) were capable of performing their safety functions:

In-service tests:

- On September 22, 2016, residual heat removal pump A, quarterly surveillance test following replacement of the pump

Other surveillance tests:

- On July 21, 2016, turbine stop and control valve testing
- On August 19, 2016, residual heat removal subsystem A time delay relay testing
- On August 25, 2016, technical specification surveillance for operator control panel walk-downs

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constituted completion of four surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On August 18, 2016, the inspectors observed licensed operator requalification training that included implementation of the licensee's emergency plan. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the evaluators and entered into the corrective action program for resolution.

These activities constituted completion of one training observation sample, as defined in Inspection Procedure 71114.06.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index: High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 1, 2015, through June 30, 2016, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for high pressure injection systems, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Heat Removal Systems (MS08)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 1, 2015, through June 30, 2016, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for heat removal systems, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: Residual Heat Removal Systems (MS09)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of July 1, 2015, through June 30, 2016, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for residual heat removal systems, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected two issues for an in-depth follow-up:

- On June 30, 2016, Grand Gulf Nuclear Station experienced a loss of electrical power to Division 2 and Division 3 safety-related electrical buses due to an electrical fault on a 34.5-kV non-safety related cable supplying balance of plant transformer 23. The fault location was such that the immediate upstream breaker, 552-2103, would not detect the fault, causing the upstream breaker, 552-2106, to open and isolate the fault. This resulted in a loss of 34.5-kV bus 21R, and a loss of Engineered Safeguard Feature (ESF) transformer 21, and subsequently a loss of Division 2 and Division 3 safety-related busses. Both diesel generators started and supplied all required loads, and all safety systems responded as designed.

  On August 2, 2016, the inspectors completed their review of the event as documented in Condition Report CR-GGN1-2016-05153. The condition report assessed the licensee's categorization of adverse conditions and reporting loss of safety functions as required per 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors."

  The inspectors assessed the licensee's problem identification threshold, electrical coordination, design basis of the 34.5-kV switchyard, and compensatory actions associated with the event. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

- On June 17, 2016, a malfunction in the electro-hydraulic control (EHC) system during turbine stop valve testing caused power and pressure oscillations that resulted in an automatic reactor scram. The inspectors' initial response associated with this event is document in Inspection Report 05000416/2016002, Section 4OA3.6 (ML16216A137).

  On September 23, 2016, the inspectors completed a focused review of this event. The inspectors reviewed Condition Report CR-GGN-2016-04834 which assessed operator decisions prior to the automatic reactor scram that occurred on June 17, 2016. The inspectors assessed the licensee's problem identification threshold, cause analysis, extent of condition, standing orders and operational decision making instructions. The inspectors performed interviews of licensed operators and station management to determine whether the licensee appropriately prioritized the planned corrective actions, and that these actions were adequate to correct the condition.

These activities constituted completion of two annual follow-up samples, as defined in Inspection Procedure 71152.

b. Findings and Observations

.1 Operator Fundamental Weaknesses

The inspectors developed the following observations associated with their review of operator, and licensee response to the June 17, 2016, reactor power and pressure oscillations, and reactor scram event:

- Operations personnel quickly identified that the event was not thermal hydraulic instability and determined that the cause of the power and pressure oscillations were a result of a problem with the turbine EHC system. Once this was determined, operations management and operations personnel began to troubleshoot the problem. Operations management did not stay in their oversight role which contributed to lengthy troubleshooting activities without procedural guidance.

- Operations personnel became desensitized to undemanded EHC control valve movement. Over a three year period, eight condition reports had been written that documented control valve movement of 5 to 10 percent, but no corrective maintenance actions had been taken to address the abnormal condition.

- Operations management, operations personnel, and reactor engineering personnel that were in the control room during the power oscillations were focused on turbine control valve fluctuations and did not recognize and appreciate the reactivity impact due to the large pressure swings caused by the turbine control valves. This, in part, contributed to the duration of the event lasting over 40 minutes before an automatic scram occurred.

.2 Operator Response to Unexpected Valve Closure During Turbine Stop Valve Testing

Introduction. The inspectors reviewed a Green, self-revealed, non-cited violation of Technical Specification 5.4.1.a, for the failure to establish a procedure for combating malfunctions of the reactor pressure control system. Specifically, on June 17, 2016, operators combated a malfunction in the reactor pressure control system associated with an unexpected stop valve closure without having appropriate procedures.

Description. On June 16, 2016, the licensee reduced reactor power to 65 percent to perform a control rod sequence exchange and turbine stop valve testing. The power reduction and sequence exchange were conducted with no issues. During the turbine stop valve testing, the B stop valve was to be cycled closed; however, upon performing that action, the B and D stop valves unexpectedly closed. When both the B and D valves closed, this provided input to the reactor protection system and caused a half scram condition on Division 2.

The electro-hydraulic control (EHC) trip fluid pressure was fluctuating by approximately 8 psi, which caused the turbine control valves to cycle. This valve cycling resulted in reactor pressure and power swings. The EHC average sensed power (steamline pressure) was fluctuating between 930 – 971 psig. The average power range monitors were fluctuating between 63 – 76 percent power for approximately 40 minutes. Due to the fluctuating power and pressure, operators inserted control rods to overcome the fluctuations. They were not able to stabilize the power and pressure oscillations, and approximately one minute later, on June 17, 2016, at 2:57 a.m., an automatic reactor scram occurred due to a valid oscillating power range monitor (OPRM channels 1 and 4) input to the reactor protection system.

In 2015, while conducting the same test, the licensee encountered a system malfunction while attempting to reset a stop valve that was being tested. This resulted in a half scram; however, a second stop valve did not close. Through troubleshooting efforts, the operators were able to recover the system by resetting the affected valve; therefore, there were no power oscillations, and the activity did not result in a reactor scram. The licensee had an opportunity in 2015 to identify that an offnormal event procedure for malfunctions of the reactor pressure control system did not exist. On June 17, 2016, the operators attempted to troubleshoot and fix the reactor pressure control system problems, similar to the previous test, by utilizing a variety of system operating instructions and surveillance procedures. An offnormal event procedure did not exist to combat issues with malfunctions in the reactor pressure control system. The licensee implemented immediate corrective actions by creating a standing order that gave clear guidance on how to control issues that cause oscillations, and has since created an offnormal event procedure for reactor pressure control system malfunctions. The licensee entered this into their corrective action program as Condition Report CR-GGN-2016-04834.

Analysis. The failure to establish a procedure for combating malfunctions of the reactor pressure control system was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators were combating a malfunction in the reactor pressure control system

associated with an unexpected stop valve closure without having a procedure. As a result, the operators were unable to reconcile the pressure control malfunction, did not manually scram the reactor, and ultimately caused an automatic reactor scram. Using Inspection Manual Chapter 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” and Inspection Manual Chapter 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” the inspectors determined that the finding resulted in the mismanagement of reactivity by operators and required an evaluation using Inspection Manual Chapter 0609, Appendix M, “Significance Determination Process Using Qualitative Criteria.”

A senior reactor analyst performed an evaluation to bound the increase in core damage frequency of the finding. In this evaluation, the analyst assumed that the occurrence of power oscillations was a transient which would have demanded a scram by the reactor protection system, but the reactor protection system did not respond. The occurrence was analyzed as an event, and the analyst performed an event assessment in the Grand Gulf Nuclear Station SPAR model, Revision 8.22, using SAPHIRE, Version 8.1.4. The analyst then assumed that, because of the performance deficiency, the operators did not scram the reactor and set the basic event RPS-XHE-XE-SCRAM, “Manual Scram Fails,” to TRUE. The analyst considered these assumptions to be bounding because the reactor protection system ultimately functioned to scram the reactor. The increase in core damage frequency was estimated to be 3.7E-8/year, which made the finding of very low safety significance (Green). The analyst used NRC Inspection Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004, to determine that since the total increase in core damage frequency of the finding was less than 1.0E-7/year, the increase in large early release frequency was of very low safety significance (Green). The dominant core damage sequences were anticipated transients without scrams; the significance of these dominant sequences was mitigated by the capability to trip the reactor recirculation pumps. Since the bounding analysis was of very low safety significance (Green), the final significance of the finding was determined to be Green.

In addition, the inspectors determined that the finding has an identification cross-cutting aspect within the problem identification and resolution area because the licensee failed to identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to identify that they were missing an offnormal event procedure for malfunctions of the reactor pressure control system following the 2015 half scram that occurred during the same testing [P.1].

Enforcement. Technical Specification 5.4.1.a, requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 6.t of Appendix A of Regulatory Guide 1.33, Revision 2, requires procedures for combating malfunctions of the pressure control system. Contrary to the above, since original plant startup, the licensee failed to establish a procedure for combating malfunctions of the pressure control system. As a result, operators were unable to reconcile the turbine stop valve malfunction that impacted reactor pressure and power control, did not manually scram the reactor, and ultimately caused an automatic reactor scram. The licensee implemented immediate corrective actions by creating a standing order that gave clear guidance on how to control issues that cause reactor pressure and power oscillations, and has since created an offnormal event procedure for reactor pressure control system malfunctions. Because this finding is of very low safety significance and has been

entered into the licensee's corrective action program as Condition Report CR-GGN-2016-04834, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000416/2016003-03, "Failure to Have an Offnormal Event Procedure for Malfunctions of the Pressure Control System."

.3 Process Used to Communicate Critical Guidance to Operations Staff

Introduction. The inspectors identified a Green finding for the licensee's failure to aggressively and fully communicate an operational decision-making instruction (ODMI) implementation action plan, particularly the trigger points and those actions if trigger points are exceeded, to the appropriate Operations shift personnel via Operations management in accordance with Station Procedure EN-OP-111, "Operational Decision-Making Issue Process." Specifically, on July 3, 2016, operations management created an ODMI, but did not communicate to onshift operators the trigger points and actions associated with the June 17, 2016, uncontrolled power oscillations.

Description. On August 3, 2016, the inspectors interviewed operations personnel as a follow-up of the June 17, 2016, automatic reactor scram due to power oscillations caused by turbine stop valve malfunctions associated with the electro-hydraulic control system. The inspectors identified through the interviews that station management created a standing order on June 18, 2016, in order to give clear guidance and trigger points for onshift operations personnel. On July 3, 2016, an ODMI was created to take the place of the standing order until an offnormal event procedure was developed. The trigger points that were implemented in the ODMI were more conservative, in that, operators were prompted to manually scram the reactor if there were sustained power oscillations that exceed 50 megawatts electric (~3.5 percent power).

Station Procedure EN-OP-111, "Operational Decision-Making Issue (ODMI) Process," step 5.1[3] states, "to aggressively and fully communicate an ODMI implementation action plan, particularly the trigger points and those actions if trigger points are exceeded, to the appropriate Operations shift personnel via Operations management." The inspectors determined through inspection and interviews that the onshift operations personnel did not know that an ODMI existed for this scenario. The operations personnel knew that the standing order was in place and would have acted in accordance with the less conservative standing order if a similar pressure control malfunction had occurred. The licensee implemented immediate corrective actions by communicating the ODMI trigger points to all onshift operators, as well as creating an offnormal event procedure. The licensee entered this into their corrective action program as Condition Report CR-GGN-2016-06032.

Analysis. The failure to follow Procedure EN-OP-111 to aggressively and fully communicate an ODMI implementation action plan, particularly the trigger points and those actions if trigger points are exceeded, to the appropriate operations shift personnel via operations management was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it is associated with the human performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, operations management did not communicate ODMI trigger points and actions to ensure appropriate operator response to limit the liklihood of events that upset

plant stability, similar to the reactor pressure and power oscillations that occurred on June 17, 2016. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and Inspection Manual Chapter 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because the finding did not cause a reactor trip.

The inspectors determined that the finding has a change management cross-cutting aspect within the human performance area because the licensee management failed to use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. Specifically, the licensee failed to use the ODMI process effectively such that the ODMI was communicated and could be implemented as designed [H.3].

Enforcement. The inspectors did not identify a violation of regulatory requirements associated with this finding: FIN 05000416/2016003-04, "Failure to Use the Operational Decision-Making Issue Process to Communicate Trigger Points for Power and Pressure Oscillations."

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 Planned Plant Shutdown due to Turbine Bypass Valve Control Issue

a. Inspection Scope

On July 10, 2016, operators commenced a reactor startup, and at approximately eight percent power, operators noticed that the turbine bypass valves were moving without being demanded. On July 11, 2016, the licensee performed a controlled plant shutdown to investigate the issue. The inspectors independently reviewed data logs, toured plant areas and observed control room indications to confirm the appropriate plant response was obtained to achieve safe shutdown conditions. The licensee entered this event into their corrective action program as Condition Report CR-GGN-1-2016-05379.

b. Findings

No findings were identified.

.2 Operators Identified that Alternate Decay Heat Removal System was not Available

a. Inspection Scope

On September 23, 2016, prior to placing the alternate decay heat removal (ADHR) system in operation following replacement of a residual heat removal pump, operators discovered that the cooling water supplies to each of the ADHR heat exchangers from the plant service water (PSW) system were danger tagged closed. This configuration had been established on August 10, 2016, to isolate the system for power operations. Following the September 8, 2016, shutdown, operators did not properly align the ADHR

system for a standby lineup and did not verify that the system was available to meet technical specification requirements.

The inspectors independently reviewed procedures, work orders, tag outs and toured plant areas to understand the issue. The inspectors also verified that the plant maintained the capability of shutdown cooling using residual heat removal subsystems A and B following the discovery. The inspectors also reviewed the reportability requirements for this event. The licensee entered this event into their corrective action program as Condition Report CR-GGN-1-2016-07281. The inspectors provided event details for the NRC to perform an evaluation in accordance with NRC Management Directive 8.3, "NRC Incident Investigation Program." This evaluation determined that the appropriate NRC response was to conduct a Special Inspection to identify the circumstances surrounding this event and review the licensee's actions to address the causes of the event. This inspection began on October 31, 2016.

b. Findings

Findings related to this event will be documented in the inspection report associated with the Special Inspection that began on October 31, 2016.

.3 Unintended Reactor Water Level Increase while in Mode 4

a. Inspection Scope

On September 24, 2016, while in the process of isolating residual heat removal subsystem B in accordance with station procedures, operations personnel opened a valve that was isolating the condensate/feedwater system from the reactor vessel. This resulted in a reactor water level increase from 33 inches narrow range to 151 inches on the wide range level indication. The licensee returned the valve to the closed position after it went to the full open position, and subsequently restored reactor water level back to the normal level of approximately 33 inches on the narrow range.

The inspectors independently reviewed procedures, drawings and operator logs. The inspectors verified that following the event, the licensee understood what happened, and confirmed that the plant was in a stable condition. The inspectors also reviewed the reportability requirements for this event. The licensee entered this event into their corrective action program as Condition Report CR-GGN-1-2016-07280.

b. Findings

Findings related to this event will be documented in the inspection report associated with the Special Inspection that began on October 31, 2016.

These activities constituted completion of three event follow-up samples, as defined in Inspection Procedure 71153.

4OA5 Other Activities

Follow Up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period

a. Inspection Scope

The inspectors performed Inspection Procedure (IP) 92723, "Follow Up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period," based on the results of the NRC's annual review of station performance as documented in the 2015 assessment letter dated March 2, 2016, (ML16061A361). In 2015, the NRC issued the following seven Severity Level (SL) IV traditional enforcement violations in the area of impeding the regulatory process:

- NCV 05000416/2015002-03, "Failure to Update the Final Safety Analysis Report after the Extended Power Uprate"
- NCV 05000416/2015007-05, "Failure to Maintain a Safety-Related Cable Tray Overfill Analysis Record"
- NCV 05000416/2015007-07, "Failure to Update the Final Safety Analysis Report"
- NCV 05000416/2015007-08, "Incomplete and Inaccurate Response to NRC Bulletin 88-04"
- NCV 05000416/2015007-09, "Failure to Obtain a License Amendment for Use of Probabilistic Methods to Evaluate Tornado Missile Hazards"
- NCV 05000416/2015008-04, "Failure to Make Required Event Notification"
- NCV 05000416/2015004-03, "Failure to Make a Required Eight-Hour Report for Loss of Safety Function"

The inspectors reviewed the licensee's cause evaluation and corrective actions associated with these issues in order to determine whether the licensee's actions met the IP 92723 inspection objectives to provide assurance that: (1) the cause(s) of the violations are understood by the licensee, (2) the extent of condition and extent of cause of the violations are identified, and (3) licensee corrective actions to the violations are sufficient to address the cause(s).

b. Findings and Observations

No findings were identified.

The inspectors determined that the licensee's actions to identify the causes of the violations, evaluate the extent of condition and extent of cause of the violations, and develop appropriate corrective actions to address the causes of the violations were adequate to meet the inspection objectives stated above.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 23, 2016, the inspectors presented the final inspection results to Mr. V. Fallacara, Acting Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials

examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 29, 2016, the inspectors presented the results of the IP 92723 inspection to Mr. V. Fallacara, Acting Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On October 13, 2016, the inspectors presented the inspection results to Mr. V. Fallacara, Acting Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

4OA7 Licensee-Identified Violations

The following licensee-identified violation of NRC requirements was determined to be of very low safety significance (Green) and meets the NRC Enforcement Policy criteria for being dispositioned as a non-cited violation.

The inspectors reviewed a violation of 10 CFR Part 50.65(b)(2)(iii), which requires, in part, that the scope of the monitoring program shall include non-safety related structures, systems, and components whose failure could cause a reactor scram or actuation of a safety-related system. Contrary to the above, from inception of the facility's monitoring program through August 2, 2016, the licensee failed to include a non-safety related system and components whose failure could cause a reactor scram or actuation of a safety-related system in the scope of the maintenance monitoring program. Specifically, the 34.5-kV switchyard and components were not included in the maintenance monitoring program. This violation was entered into the licensee's corrective action program as CR-GG1-2016-05915 and CR-GG1-2016-06027. The inspectors determined the issue was of very low safety significance (Green) because the violation was not the direct cause of the loss of safety-related buses such that all screening questions in Inspection Manual Chapter 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," could be answered "no".

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Benson, Superintendent, Radiation Protection
A. Burks, Supervisor, Radiation Protection
B. Wertz, Manager, Operations
T. Meyer, Regulatory Assurance
T. Coutu, Director, Regulatory Assurance and Performance Improvement
V. Fallacara, Acting Site Vice President
M. Giacini, General Manager Plant Operations
G. Hawkins, Director, Recovery
D. James, Senior Technician, Radiation Protection
M. Lanni, Supervisor, Radiation Protection
R. Meister, Regulatory Assurance
R. Miller, Manager, Radiation Protection
R. Millison, Vice President, Site Coordination
T. Moncure, Supervisor, Radiation Protection
J. Nadeau, Manager, Regulatory Assurance
P. Stokes, Supervisor, Radiation Protection
S. Sweet, Regulatory Assurance
P. Williams, Director, Engineering

NRC Personnel

R. Deese, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000416/2016003-01	NCV	Failure to Promptly Identify Conditions Adverse to Quality in the RCIC System (Section 1R04)
05000416/2016003-02	NCV	Failure to Promptly Correct Procedures and Work Order Instructions used for Safety-Related Heat Exchanger Testing (Section 1R07)
05000416/2016003-03	NCV	Failure to Have an Offnormal Event Procedure for Malfunctions of the Pressure Control System (Section 4OA2.2.2)
05000416/2016003-04	FIN	Failure to Use the Operational Decision-Making Issue Process to Communicate Trigger Points for Power and Pressure Oscillations (Section 4OA2.2.3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Procedures

Number	Title	Revision
03-1-01-1	Cold Shutdown to Generator Minimum Carrying Load	169
04-1-01-E51-1	System Operating Instruction for Reactor Core Isolation Cooling System	135
04-1-02-1H13-P601-21A-C1	Alarm Response Instruction for RCIC DIV 1 STM LINE dP HI	100
06-OP-1000-D-0001	Daily Operating Logs	148
04-1-01-E21-1	Low Pressure Core Spray	041

Condition Reports (CR-GGN-)

2015-05012 2016-03070

Miscellaneous

Number	Title	Revision
M-1083A	Piping and Instrumentation Diagram Reactor Core Isolation Cooling System	38
M-1083B	Piping and Instrumentation Diagram Reactor Core Isolation Cooling System	39
M1061A	P&I Diagram Standby Service Water System	68

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
07-S-14-12	Fire Extinguisher Maintenance Check	43
06-OP-SP64-M-0047	Unit 1 Fire Hose Station and Fire Extinguisher Maintenance	117
A-06	Pre-Fire Plan HPCS Room 1A109	2
C-13	Pre-Fire Plan Main Control Room OC503	4
C-17	Pre-Fire Plan Upper Control Room OC703	3
CWPH-01	Pre-Fire Plan Fire Water Pumphouse	0

Section 1R06: Flood Protection Measures

Miscellaneous

Number	Title	Revision/ Date
Section 3C.3	GG UFSAR	2
	R.L. Mays Telephone Call Record for Diesel Generator Building Moderate Energy Piping	June 16, 1986
GGNS-MS-52	Mechanical Standard for HELB Impact Review	0

Section 1R07: Heat Sink Performance

Procedures

Number	Title	Revision
17-S-03-29	GL-89-13 Thermal Performance Data Collection and Analysis	7
EN-DC-316	Heat Exchanger Performance and Condition Monitoring	7
EN-DC-159	System and Component Monitoring	8
EN-EP-S-039-G	Testing Standard for Safety-Related Heat Exchangers Cooled by Standby Service Water	2, 3
EN-OP-104	Operability Determination Process	11
04-S-04-1	General Operating Instruction System Fill and Vent Non-Safety-Related	12
04-1-03-T46-2	Equipment Performance Instruction 'B' ESF Switchgear Room Coolers Flow Test Safety-Related	25
04-1-03-T46-1	'A' ESF Switchgear Room Coolers Flow Test	25
07-S-24-P75-B004	Jacket Water Heat Exchanger Maintenance Safety-Related	7
07-S-24-P75-B006	Lube Oil Heat Exchanger Maintenance Safety-Related	5
07-S-14-52	ESF Electrical Switch Gear Room Cooler Inspection	9
05-1-02-III-12	SSW basin Level Control	0
08-S-04-400	Chemistry Water Treatment Performance Monitors Safety-Related	3

Calculations

Number	Title	Revision
MC-Q1 P41-0301	Standby Service Water Maximum Allowable Post-LOCA System Leakage	3
MC-Q1 P41-11 001	GGNS Standby Service Water Ultimate Heat Sink Thirty Day Performance at EPU	0
MC·N1P43·92046	Evaluation Of TBCW Heat Exchanger Performance	0
MC-Q1P41-97020	Determination of minimum Allowable SSW Flows (LOCA Lineup) to Safety-related Heat Exchangers	11

Thermal Performance Analyses

Number	Title	Date
1T46B002A	Perform Thermal Performance Test Of ESF Room Cooler	April 4, 2014
1T46B002A	Perform Thermal Performance Test Of ESF Room Cooler	April 27, 2016
1T46B002B	Perform Thermal Performance Test Of ESF Room Cooler	December 20, 2014
1T46B002B	Perform Thermal Performance Test Of ESF Room Cooler	December 8, 2015
1T46B003A	Perform Thermal Performance Test Of ESF Room Cooler	April 7, 2014
1T46B003A	Perform Thermal Performance Test Of ESF Room Cooler	April 27, 2016
1T46B003B	Perform Thermal Performance Test Of ESF Room Cooler	April 10, 2013
1T46B003B	Perform Thermal Performance Test Of ESF Room Cooler	October 15, 2014

Miscellaneous

Number	Title	Revision
M-1070a	P&I Diagram Standby Diesel Generator System Unit 1	46
M1062A	P&I Diagram Turbine Building Cooling Water System	29
M1061A	P&I Diagram Standby Service Water System	68
M1061B	P&I Diagram Standby Service Water System	52
M1061C	P&I Diagram Standby Service Water System	38
M1061D	P&I Diagram Standby Service Water System	40

Condition Reports (CR-GGN-)

2003-02238	2004-00477	2013-01623	2013-03863	2013-04856
2013-05611	2013-07579	2014-04862	2014-04897	2014-05215
2015-00383	2015-03980	2015-06142	2015-06166	2016-03223
2016-03339	2016-03348	2016-03488	2016-04287	2016-04493
2016-05420	2016-07189	2016-07190	2016-07193	2016-07194
2016-07196	2016-07197	2016-07200		

Work Orders

52446947	52552429	52421360	52533089	52443643	52552430
52482478	52325227	00259946	00259953	52325227	52471958
52489450	52572700	00425801	00452813	00339739	00369233
00385142	00400288	00369324	00399796	52323684	52477677
52323686	52435096	52357220	52481400	52213368	52431792

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Procedures

Number	Title	Revision
03-1-01-3	Plant Shutdown	129
03-1-01-2	Power Operations	167
EN-OP-115	Conduct of Operations	17

Section 1R12: Maintenance Effectiveness

Procedures

Number	Title	Revision
EN-DC-203	Maintenance Rule Program	2
EN-DC-204	Maintenance Rule Scope and Basis	3
EN-DC-205	Maintenance Rule Monitoring	5

Condition Reports (CR-GGN-)

2015-01550	2015-05427	2016-04454	2016-05167	2016-05198
2016-05207	2016-05223			

Miscellaneous

Number	Title	Revision
NUMARC 93-01	Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	4A

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Number	Title	Revision
EN-OP-104	Operability Determination Process	10
OPG-047	Protected Equipment Postings Strategy	008
EN-FAP-OP-006	Operator Aggregate Impact Index Performance Indicator	2
01-S-18-6	Risk Assessment of Maintenance Activities	018
05-1-02-VI-1	Off Normal Event Procedure for Flooding	114
EN-WM-104	Online Risk Assessment	14
EN-WM-101	Online Work Management Process	13
EN-OP-119	Protected Equipment Postings	8
04-1-01-R21-1	Load Shedding and Sequencing System	105
05-1-02-I-4	Off Normal Event Procedure for Loss of AC Power	045
04-1-0-R21-1	System Operating Instruction for Load Shedding and Sequencing System	105
06-EL-1E12-Q-0001	RHR Pump Start Time Delay Relay Functional Test and Calibration	102

Condition Report (CR-GGN-)

2014-02364

Miscellaneous

Number	Title	Revision
	UFSAR Section 3.4.1.3	8
	UFSAR Table 3.4-2	
TS 3.5.1	Emergency Core Cooling Systems and Reactor Core Isolation Cooling System	175
TS Table 3.3.5.1-1	Emergency Core Cooling System Instrumentation	169
SR for TS 3.3.5.1		197

Miscellaneous

Number	Title	Revision
Basis for TS 3.3.5.1		LDC 06007
TRM Table TR3.3.5.1-1	Technical Specification Emergency Core Cooling System Trip Setpoints and Response Times	LBDCR 11047
JC-Q1E12-90023	LPCI Time Delay Calculation	1

Work Orders

52579026-01 52586654-01 52696187-01

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

Number	Title	Revision/ Date
06-OP-1E51-Q-0003	RCIC System Quarterly Pump Operability Verification	August 22, 2016
EN-OP-109	Drywell Leakage	2
	ODMI Implementation Action Plan Unidentified Drywell Leakage	0
04-1-01-E12-2	Shutdown Cooling and Alternate Decay Heat Removal Operation	120
EN-OP-104	Operability Determination Process	10
EN-OP-104	Operability Determination Process	11
10-S-01-39	Grand Gulf Equipment Important to Emergency Response	004
05-S-01-EP-4	Emergency Procedure for Auxiliary Building Control	029
10-S-01-38	EAL Contingency Planning	004
EN-FAP-OP-006	Operator Aggregate Impact Index Performance Indicator	2
EN-OP-111	Operational Decision-Making Process	13

Drawing

Number	Title	Revision
P-0030	I.S.I Boundary Diagram Drawing Index Sheet	010

Condition Reports (CR-GGN-)

2016-06637	2016-07047	2016-07225	2016-06900	2016-06683
2016-07052	2016-05800	2016-05728	2015-04760	2016-04919
2016-05211				

Miscellaneous

Number	Title	Date
DMC-2000	Mirion Technologies DMC-2000 Electronic Radiation Dosimeter Product Information	2014
	List of Operator Aggregate Index Inputs (Section of the Plan of the Day Report)	August 12, 2016
Standing Order 16-0018	Actions Needed for Tornado Warning issued for GGNS	July 18, 2016

Section 1R18: Plant Modifications

Procedures

Number	Title	Revision
EN-DC-115	Engineering Change Process	18
EN-DC-136	Temporary Modifications	13

Drawings

Number	Title	Date
C-1310C	Unit 1 Auxiliary Building Misc Embedded Steel Miscellaneous Steel Details	September 7, 2016
C-1314	Unit 1 Auxiliary Building Misc. and Embedded Steel Rigging Beams Details	September 7, 2016

Engineering Change (EC)

Number	Title	Date
66530	Haul Path, Rigging and Other Instructions to Facilitate the Removal RHR Pump A, 1E12C002A	September 9, 2016

Section 1R19: Post-Maintenance Testing

Procedures

Number	Title	Revision
EN-FAP-OM-021	Critical Decision Procedure for Replacement of Valve Controller cards 350 and 354	4

Procedures

Number	Title	Revision
06-OP-1E12-Q-0023	LPCI/RHR Subsystem A Quarterly Functional Test	130

Condition Reports (CR-GGN-)

2016-06798 2016-07450 2002-02089

Work Orders

00449267-14 00449267-16

Miscellaneous

Number	Title	Revision/Date
	UFSAR Table 3.6A-15	10
	UFSAR Figure 3.6A-006	8
	UFSAR Figure 3.6A-9	2
	Pump Curve Comparison Chart	
	Failure Modes Analysis for RHR Pump A	
TS 3.5.1	Emergency Core Cooling Systems and Reactor Core Isolation Cooling System	175
SR 3.5.1.4	LPCI Quarterly/IST Required Surveillance Requirement Acceptance Criteria	202
GGN-16S-552	Commercial Grade Dedication Receipt for RHR A O-ring	September 21, 2016
EC-66845		0

Section 1R20: Refueling and Other Outage Activities

Procedures

Number	Title	Revision/ Date
	Shutdown Operations Protection Plan	September 7, 2016
EN-OP-103	Reactivity Management Program	5

Drawing

Number	Title	Date
	Main Turbine EHC Control	September 21, 2006

Condition Reports (CR-GGN-)

2016-07372	2016-06855	2016-06868	2016-06871	2016-06873
2016-06881	2016-05558	2016-05559		

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision/ Date
06-OP-1000-D-0001	Daily Operating Logs	148
06-OP-1N32-V-0001	Turbine Stop and Control Valve Operability	120
06-OP-1E12-Q-0023	LPCI/RHR Subsystem A Quarterly Functional Test	September 22, 2016

Section 1EP6: Drill Evaluation

Procedure

Number	Title	Revision
10-s-01-1	Emergency Plan Procedure	126

Section 4OA1: Performance Indicator Verification

Procedures

Number	Title	Date
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator High Pressure Injection	Third Quarter 2015
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator High Pressure Injection	Fourth Quarter 2015
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator High Pressure Injection	First Quarter 2016

Procedures

Number	Title	Date
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator High Pressure Injection	Second Quarter 2016
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Heat Removal	Third Quarter 2015
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Heat Removal	Fourth Quarter 2015
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Heat Removal	First Quarter 2016
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Heat Removal	Second Quarter 2016
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Residual Heat Removal	Third Quarter 2015
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Residual Heat Removal	Fourth Quarter 2015
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Residual Heat Removal	First Quarter 2016
Attachment 9.2	NRC Performance Indicator Technique/Data Sheet, Indicator: Mitigating Systems Performance Indicator Residual Heat Removal	Second Quarter 2016

Section 4OA2: Problem Identification and Resolution

Procedures

Number	Title	Revision
EN-OP-111	Operational Decision-Making Issue (ODMI) Process	13
EN-OP-115-03	Shift Turnover and Relief	2
EN-OP-115-04	Operations Briefs	2
EN-LI-102	Corrective Action Program	27
EN-LI-118	Cause Evaluation Process	22
EN-OP-103	Reactivity Management	5

Procedures

Number	Title	Revision
17-S-02-702	Reactivity Maneuver Plan	8
02-S-01-27	Operations Philosophy	66
01-S-06-26	Post Trip Analysis	20
EN-AD-101-01	Procedure Writer Manual	16
EN-AD-101	Procedure Process	26
06-OP-1N32-V-0001	Turbine Stop and Control Valve Operability	101
03-1-01-2	IOI Power Operations	154
EN-HU-106	Procedure and Work Instruction Use and Adherence	3
OPG-12	Operator Workarounds	2
EN-OP-115	Conduct of Operations	14
ONEP 05-1-02-I-1	Reactor Scram	119
ONEP 05-1-02-III-3	Reduction in Recirculation Flow Rates	113
ARI P680-5 A11/B11	APRM CH1/3 UPSC Trip/OPRM Trip/INOP	210/210
ARI-P680-5 B10	APRM/OPRM UPSCL Alarm	206
ARI P680-7 A11/B11	APRM CH2/4 UPSC Trip/OPRM Trip/INOP	210/214

Drawings

Number	Title	Revision
E-0001	Main One Line Diagram	052
E00025	Three Line Meter & Relay Diagram 34.5 KV System	017

Condition Reports (CR)

2016-05153	2016-05615	2016-05915	2016-05198	2016-05207
2016-04766	2016-04834	2016-06032	2016-04998	2016-05542
2016-04786	2016-00727			

Work Order

287097-01

Miscellaneous

Number	Title	Revision/ Date
UFSAR 8.2	Offsite Power System	
IEEE-383	IEEE Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations	2003
ODMI	Main Turbine EHC Reliability	July 3, 2016
16-0014	Standing Order Turbine Control System Malfunctions	June 18, 2016
01-S-06-26	Post-Trip Analysis June 17, 2016 SCRAM No. 139	June 18, 2016
GLP-OPS-C5104	OPRMs Lesson Plan	5
GLP-OPS-N3201	EHC Lesson Plan	12
	Sequence of Events log 6/17/2016 from 0250 to 0300	June 17, 2016
	CR report sorted for EHC from Sept. 2013 to 7/24/2016	August 1, 2016
	Post Trip analysis written statements	June 17, 2016
EN-LI-118	Att. 9.4 Recollection forms from 6/17 /2016 scram	June 17, 2016

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Procedures

Number	Title	Revision
04-1-01-E12-2	Shutdown Cooling and Alternate Decay Heat Removal Operation	120
03-1-01-1	Cold Shutdown to Generator Carrying Minimum Load Mode 2/3 Items Checklist	169

Condition Report (CR)

2016-07280

Miscellaneous

Number	Title	Date
P44-002-1E12B003A/B	Clearance 1C21-1 for ADHR Heat Exchanger Isolation Valves	August 10, 2016

Work Orders

52703656-01 52685648-01

Section 4OA5: Other Activities

Procedures

Number	Title	Revision
EN-OE-100	Operating Experience Program	25
EN-LI-102	Corrective Action Program	27
EN-LI-118	Cause Evaluation Process	22
EN-DC-132	Control of Engineering Documents	7
EN-LI-123-03	Pre-Inspection Assessments for IP92723	1
06-OP-1T48-R-0002	Standby Gas Treatment A Logic and Vacuum Test	116
06-OP-1T48-R-0003	Standby Gas Treatment B Logic and Vacuum Test	117

Condition Reports (CR)

2016-07445	2016-07446	2016-07447	2016-07394	2015-06982
2015-05840	2015-05862	2015-05826	2015-04423	2015-05972
2015-06043	2016-00942	2015-05732	2016-00944	2015-04615
2015-06856	2015-04760	2015-06861	2015-06860	2015-04381
2015-04733	2015-04867	2015-05011	2015-01607	2015-01610
2016-06691	2015-05057	2015-00892	2015-04380	2015-04671
2015-04733	2015-04753	2015-04681	2015-06859	2015-04602
2015-04382	2015-06047	2016-04380	2015-05705	2016-06675