



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II**

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ATLANTA, GEORGIA 30303-1257

November 1, 2016

Mr. David R. Vineyard  
Vice President  
Southern Nuclear Operating Company, Inc.  
Edwin I. Hatch Nuclear Plant  
11028 Hatch Parkway North  
Baxley, GA 31513

**SUBJECT: EDWIN I. HATCH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT  
05000321/2016003 AND 05000366/2016003**

Dear Mr. Vineyard:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Edwin I. Hatch Nuclear Plant Units 1 and 2. On October 19, 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 two findings of very low safety significance (Green) in this report. One of these findings involved a violation of NRC requirements. If you contest the violation or significance of this NCV, 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 II; the Director, Office of Enforcement; and the NRC resident inspector at the Hatch Plant.

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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC, 20555-0001; with copies to the Regional Administrator, Region II; and the NRC resident inspector at the Hatch Plant.

D. Vineyard

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This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

**/RA/**

Shane R. Sandal, Chief  
Reactor Projects Branch  
Division of Reactor Projects

Docket Nos.: 50-321, 50-366  
License Nos.: DPR-57 and NPF-5

Enclosure  
IR 05000321/2016003, 05000366/2016003  
w/Attachment: Supplemental Information

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D. Vineyard

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D. Vineyard

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Letter to David R. Vineyard from Shane R. Sandal dated November 1, 2016

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-321, 50-366, 72-036

License Nos.: DPR-57 and NPF-5

Report No.: 05000321/2016003; and 05000366/2016003

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Edwin I. Hatch Nuclear Plant

Location: Baxley, Georgia

Dates: July 1, 2016 through September 30, 2016

Inspectors: D. Hardage, Senior Resident Inspector  
D. Retterer, Resident Inspector  
B. Collins, Reactor Inspector (Section 1R07)  
D. Lanyi, Senior Operations Engineer (Section 1R11)  
M. Donithan, Operations Engineer (Section 1R11)

Approved by: Shane R. Sandal, Chief  
Reactor Projects Branch 2  
Division of Reactor Projects

Enclosure

## SUMMARY

IR 05000321/2016003; and 05000366/2016003, July 1, 2016 through September 30, 2016; Edwin I. Hatch, Units 1 and 2, Maintenance Effectiveness, Problem Identification and Resolution.

The report covered a three-month period of inspection by resident inspectors, regional operations engineers and a regional reactor inspector. There is one NRC-identified violation and one self-revealing finding documented in this report. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated April 29, 2015. The cross-cutting aspects are determined using IMC 0310, "Aspects within the Cross-Cutting Areas" dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated August 1, 2016. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6. Documents reviewed by the inspectors which are not identified in the Report Details are identified in the List of Documents Reviewed section of the Attachment.

### Cornerstone: Initiating Events

- Green. A self-revealing finding was identified when the licensee failed to install a reactor feed pump (RFP) vent line weld in accordance with plant procedures resulting in a failure that required an unplanned Unit 1 power reduction greater than 20%.

Failure to install the correct weld thickness on the unit 1 "B" RFP vent line, as required by procedures, was a performance deficiency. This performance deficiency was more than minor because it was associated with the 'Equipment Performance' attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective in that an unplanned reactor power reduction was required from 100 percent to 60 percent RTP. The inspectors determined this finding was of very low safety significance (Green) because there was not a reactor trip or loss of mitigation equipment. The inspectors determined that this finding had a cross-cutting aspect in the 'Resolution' aspect of the problem identification and resolution area, because the organization did not take effective corrective actions to address the previous weld configuration issue. [P.3] (Section 1R12)

### Cornerstone: Mitigating Systems

- Green. An NRC-identified non-cited violation (NCV) of 10 CFR Part 26, "Fitness for Duty Programs," was identified when the licensee failed to ensure that personnel subject to work hour controls did not exceed 72 hours in a work week. The licensee entered this condition into their corrective action program as Condition Report 10214872 and restored compliance when the affected individuals received an adequate rest period.

The failure to ensure that work hours for personnel subject to work hour controls were tracked in accordance with licensee procedures was a performance deficiency. The finding was more than minor because, if left uncorrected, the failure to appropriately implement work hour limitations for "covered" workers could adversely impact the conduct and

oversight of work on safety significant components. The inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in an adverse impact to plant safety due to worker fatigue. The inspectors determined this performance deficiency had a cross-cutting aspect of Consistent Process in the Human Performance area because the licensee failed to assess which workers were subject to work hour limits. [H.13] (Section 4AO2)

## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at 100 percent rated thermal power (RTP). On September 10, 2016, operators reduced unit power to 50 percent RTP for circulating water system maintenance. The unit returned to 100 percent RTP on September 12, 2016, and remained at or near 100 percent RTP for the duration of the inspection period.

Unit 2 operated at or near 100 percent RTP for the duration of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather Protection (71111.01)

##### a. Inspection Scope

Readiness to Cope with External Flooding: The inspectors evaluated the licensee's implementation of flood protection procedures and compensatory measures during impending conditions of flooding or heavy rains. The inspectors reviewed the updated final safety analysis report and related flood analysis documents to identify those areas containing safety related equipment that could be affected by external flooding and their design flood levels. The inspectors walked down flood protection barriers, reviewed procedures for coping with external flooding, and reviewed corrective actions for past flooding events. The inspectors verified that the procedures for coping with flooding could reasonably be used to achieve the desired results. For those areas where operator actions are credited, the inspectors assessed whether the flooding event could limit or preclude the required actions. The inspectors conducted walkdowns of the following plant areas that are below flood levels or otherwise susceptible to flooding.

- Unit 1 Intake Area
- Unit 2 Intake Area

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment (71111.04)

##### a. Inspection Scope

Partial Walkdown: The inspectors verified that critical portions of the following systems were correctly aligned by performing partial walkdowns. The inspectors determined the correct system lineup by reviewing plant procedures and drawings listed in the Attachment.

- Unit 1 residual heat removal system following realignment from Torus cooling
- Unit 2 HPCI single train system following a maintenance run
- Unit 1 “B” emergency diesel generator alignment to Unit 2 during the Unit 2 “C” emergency diesel generator emergent maintenance outage

Complete Walkdown: The inspectors verified the alignment of the Unit 1 standby gas treatment system by reviewing plant procedures, drawings, the updated final safety analysis report, and other documents. The inspectors also reviewed records related to the system outstanding design issues, maintenance work requests, and deficiencies.

The inspectors reviewed corrective action documents, including condition reports and outstanding work orders, to verify the licensee was identifying and resolving equipment alignment discrepancies. The inspectors also reviewed periodic reports containing information on the status of risk-significant systems, including maintenance rule reports and system health reports.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)

a. Inspection Scope

Quarterly Inspection: The inspectors evaluated the adequacy of fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program the following five fire areas.

- Unit 2, reactor building 158' elevation working floor
- Unit 2, HPCI pump room
- Unit 1, standby gas and HVAC rooms
- Unit 2, southeast RHR and core spray pump room
- Unit 1 and Unit 2, refueling floor

The inspectors assessed the following:

- control of transient combustibles and ignition sources
- fire detection systems
- water-based fire suppression systems
- gaseous fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program
- material condition and operational status of fire protection equipment

Fire Drill Observation: The inspectors observed the licensee's fire brigade performance during a fire drill on August 12, 2016, and assessed the brigade's capability to meet fire

protection licensing basis requirements. The inspectors observed the following aspects of fire brigade performance:

- capability of fire brigade members
- leadership ability of the brigade leader
- proper use of turnout gear and fire-fighting equipment
- team effectiveness
- compliance with site procedures

The inspectors also assessed the ability of control room operators to combat potential fires including identifying the location of the fire, dispatching the fire brigade, and sounding alarms.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T)

a. Inspection Scope

The inspectors reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results, and cooler inspection results associated with the Unit 2 “A” and “C” Diesel Lube Oil coolers, Unit 2 “A” and “C” Diesel Jacket Coolers, and the Unit 1 “A” residual heat removal (RHR) Cooler. These heat exchangers/coolers were chosen based on their risk significance in the licensee’s probabilistic safety analysis, important safety-related mitigating system support functions, and relatively low margin.

For the Unit 2 “A” and “C” Diesel Lube Oil coolers, Unit 2 “A” and “C” Diesel Jacket Coolers, and the Unit 1 “A” RHR Cooler, the inspectors determined if testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by determining if the test method used was consistent with accepted industry practices, or equivalent; the test conditions were consistent with the selected methodology; the test acceptance criteria were consistent with the design basis values; and by reviewing results of heat exchanger performance testing. The inspectors also determined if the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing, based on trending of test results, was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values, and if the test results considered test instrument inaccuracies and differences.

For the Unit 2 “A” and “C” Diesel Lube Oil coolers, Unit 2 “A” and “C” Diesel Jacket Coolers, and the Unit 1 “A” RHR Cooler heat exchanger, the inspectors reviewed the methods and results of heat exchanger inspections. The inspectors determined if the methods used to inspect and clean heat exchangers were consistent with as-found conditions identified and expected degradation trends and industry standards; the licensee’s inspection and cleaning activities had established acceptance criteria

consistent with industry standards; and the as-found results were recorded, evaluated, and appropriately dispositioned so that the as-left condition was acceptable.

In addition, the inspectors determined if the condition and operation of the Unit 2 "A" and "C" Diesel Lube Oil coolers, Unit 2 "A" and "C" Diesel Jacket Coolers, and the Unit 1 "A" RHR Cooler were consistent with design assumptions in heat transfer calculations and as described in the final safety analysis report. This included determining if the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspectors determined if the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchangers.

The inspectors determined whether the performance of ultimate heat sinks (UHS), and their subcomponents such as piping, intake screens, pumps, valves, etc., was appropriately evaluated by tests or other equivalent methods, to ensure availability and accessibility to the in-plant cooling water systems.

The inspectors reviewed the licensee's operation of service water system and UHS (Altamaha River). This included a review of licensee's procedures for a loss of the service water system or UHS and the verification that instrumentation, which is relied upon for decision making, was available and functional. In addition, the inspectors determined whether macrofouling was adequately monitored, trended, and controlled by the licensee to prevent clogging. The inspectors determined whether the licensee's biocide treatments for biotic control were adequately conducted and whether the results were adequately monitored, trended, and evaluated.

The inspectors performed a system walkdown on service water and/or closed cooling water systems to determine whether the licensee's assessment on structural integrity was adequate. In addition, the inspectors reviewed available licensee's testing and inspections results, licensee's disposition of any active thru wall pipe leaks, and the history of thru wall pipe leakage to identify any adverse trends since the last NRC inspection. For closed cooling water systems, the inspectors reviewed operating logs or interviewed operators or the system engineer, to identify adverse make-up trends that could be indicative of excessive leakage out of the closed system. For buried or inaccessible piping, the inspectors reviewed the licensee's pipe testing, inspection, or monitoring program to determine whether structural integrity was ensured and that any leakage or degradation was appropriately identified and dispositioned by the licensee.

The inspector performed a system walkdown of the service water intake structure to determine whether the licensee's assessment on structural integrity and component functionality was adequate and that the licensee ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspectors determined whether service water pump bay silt accumulation was monitored, trended, and maintained at an acceptable level by the licensee, and that water level instruments were functional and routinely monitored. The inspectors also determined

whether the licensee's ability to ensure functionality during adverse weather conditions was adequate.

Additionally, the inspectors reviewed condition reports related to the heat exchangers/coolers and heat sink performance issues to determine whether the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions.

b. Findings

No findings were identified.

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

a. Inspection Scope

Resident Inspector Quarterly Review of Licensed Operator Regualification: The inspectors observed an evaluated simulator scenario administered to an operating crew as part of the annual regualification operating test required by 10 CFR 55.59, "Regualification". The inspectors assessed:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Resident Inspector Quarterly Review of Licensed Operator Performance: The inspectors observed licensed operator performance in the main control room during entry in emergency operating procedures for high Torus temperature on July 21, 2016. The inspectors assessed:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

Licensed Operator Regualification Program: The inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator regualification program to assess the effectiveness of the facility licensee in implementing regualification requirements identified in 10 CFR Part 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator regualification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Regualification Program." The inspectors also evaluated the licensee's simulation

facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1985, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed two crews during the performance of the operating tests.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the two issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. The inspectors also interviewed system engineers and the maintenance rule coordinator to assess the accuracy of performance deficiencies and extent of condition.

- Unit 1 and 2 "A" main control room air conditioner, condensing unit trip on high pressure
- Unit 1 "B" reactor feed pump suction vent line, condensate leak

b. Findings

Introduction: A self-revealing Green finding was identified when the licensee failed to repair a reactor feed pump (RFP) vent line weld in accordance with plant procedures, resulting in a failure that required a Unit 1 unplanned downpower of greater than 20 percent.

Description: On June 15, 2016, Unit 1 performed an unplanned power reduction from 100 percent rated thermal power (RTP) to 60 percent due to a steam leak caused by a weld failure of the Unit 1 "B" RFP vent line. The vent line was located between the suction valve and the reactor feed pump. The licensee had previously evaluated the vent line using vibration monitoring equipment and concluded it was susceptible to increased vibration. The most significant contributing cause of the failure was an inadequate weld repair of a prior vibration induced failure of the weld joint which occurred on April 29, 2016. Specifically, the weld throat size was less than the 1.09 multiple of nominal pipe wall thickness required in procedure 51GM-MNT-065-0 'Weld Process Control'. The inadequate throat size in conjunction with high vibrations issues led to the premature failure of the "B" RFP vent line.

Analysis: Failure to install the correct weld thickness on the unit 1 "B" RFP vent line, as required by 51GM-MNT-065-0 "Weld Process Control," was a performance deficiency. This performance deficiency was more than minor because it was associated with the

'Equipment Performance' attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective in that a reactor power reduction was required from 100 percent to 60 percent RTP. The inspectors screened this finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) For Findings At-Power", dated June 19, 2012. The finding screened as Green per Section B of Exhibit 1, "Initiating Events Screening Questions," because the finding did not cause a reactor trip and the loss of mitigation equipment. The inspectors determined that this finding had a cross-cutting aspect in the 'Resolution' aspect of the problem identification and resolution area because the organization did not take effective corrective actions to address the previous weld configuration issue. [P.3]

Enforcement: No violation of a regulatory requirement associated with this finding was identified. Because this finding was of very low safety significance (Green), it is identified as FIN 05000321/2016003-01, "Unit Downpower Caused by RFP Vent Line Failure."

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

##### a. Inspection Scope

The inspectors reviewed the four maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities.

- Unit 1 and 2, July 24-July 30, 2016, including 1C RHR service water pump planned outage
- Unit 1 and 2, August 14-August 20, 2016, including 2C EDG emergent work
- Unit 1 and 2, September 7- September 13, 2016, including unit 1 HPCI planned outage and unit 2 division II RHR planned outage
- Unit 1 September 17 – September 24, 2016, including unit 1 RCIC planned outage

##### b. Findings

No findings were identified.

## 1R15 Operability Determinations and Functionality Assessments (71111.15)

### a. Inspection Scope

Operability Determinations and Functionality Assessments Review: The inspectors selected the four operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that technical specification operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the technical specification and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- CR 10266769, Non-conservative technical specification for HPCI CST low-level swap
- CR 10247055, Inadequate swaging and adherence of silicone O-rings
- CR 10242851, Division II PSW piping has thru wall leak
- CR 10279068, Core Spray Breakers tripping outside of acceptable range

Operator Workaround Management: The inspectors performed a detailed review of the licensee's operator workarounds to verify that they are identified at an appropriate threshold and addressed in a manner that effectively manages adverse effects on operators and equipment. The inspectors verified that the licensee identified the full extent of issues, performed appropriate evaluations, and planned appropriate corrective actions regarding operator workarounds. The inspectors also reviewed compensatory actions and the cumulative effects of other operator workarounds on plant operation.

### b. Findings

No findings were identified.

## 1R18 Plant Modifications (71111.18)

### a. Inspection Scope

For plant modification SNC647906, Replacement of Westinghouse FB3045MRL Circuit Breaker for 1R24-S021, the inspectors

- verified that the modifications did not affect the safety functions of important safety systems
- confirmed the modifications did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components

- verified modifications performed during plant configurations involving increased risk did not place the plant in an unsafe condition
- evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements
- reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the following six maintenance activities to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- SNC 551147, 1C RHRSW pump motor oil change and meggar, July 25, 2016
- SNC 436481, 1B SBLC pump motor lubrication, oil change, rotation checks and meggar. August 8, 2016
- SNC810759, 2C EDG engine driven oil pump replacement, August 24, 2016
- SNC575898, Replace Circuit Breaker for 1E51F010, September 22, 2016
- SNC814481, B MCRAC water regulating valve replacement, September 9, 2016
- SNC654553, 2C41F033A SBLC check valve visual inspection, September 30, 2016

The inspectors evaluated these activities for the following:

- Acceptance criteria were clear and demonstrated operational readiness.
- Effects of testing on the plant were adequately addressed.
- Test instrumentation was appropriate.
- Tests were performed in accordance with approved procedures.
- Equipment was returned to its operational status following testing.
- Test documentation was properly evaluated.

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)a. Inspection Scope

The inspectors reviewed the three surveillance tests listed below. The surveillance test was either observed directly or test results were reviewed to verify testing activities and results provide objective evidence that the affected equipment remain capable of performing their intended safety functions and maintain their operational readiness consistent with the facility's current licensing basis. The inspectors evaluated the test activities to assess for:

- preconditioning of equipment,
- appropriate acceptance criteria,
- calibration and appropriateness of measuring and test equipment,
- procedure adherence, and
- equipment alignment following completion of the surveillance.

Additionally, the inspectors reviewed a sample of significant surveillance testing problems documented in the licensee's corrective action program to verify the licensee was identifying and correcting any testing problems associated with surveillance testing.

Routine Surveillance Tests

- 34SV-R43-001-1, Diesel Generator 1A Monthly Test
- 34SV-SUV-023-2, Jet Pump and Recirculation Flow Mismatch Operability

In-Service Tests (IST)

- 34SV-E41-002-1, HPCI Pump Operability

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)a. Inspection Scope

The inspectors observed the emergency preparedness evolution conducted on August 3, 2016. The inspectors observed licensee activities in the simulator to evaluate implementation of the emergency plan, including event classification, notification, and protective action recommendations. The inspectors evaluated the licensee's performance against criteria established in the licensee's procedures. Additionally, the inspectors attended the post-exercise critique to assess the licensee's effectiveness in identifying emergency preparedness weaknesses and verified the identified weaknesses were entered in the corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 and Unit 2 PIs listed below. The inspectors reviewed plant records compiled between July 2015 and June 2016 to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures.

Cornerstone: Mitigating Systems

- residual heat removal system
- high pressure injection system
- emergency AC power system

The inspectors verified the accuracy of reported data that were used to calculate the PI value. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

The inspectors screened items entered into the licensee's corrective action program in order to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors conducted a detailed review of the following CRs:

- CR 10214872, D&Z covered work hours not tracked
- CR 10241912, 2B reactor feed pump tripped during testing of the low pressure stop valve

The inspectors evaluated the following attributes:

- complete and accurate identification of the problem in a timely manner
- evaluation and disposition of operability and reportability issues
- consideration of extent of condition, generic implications, common cause, and previous occurrences
- classification and prioritization of the problem
- identification of root and contributing causes of the problem
- identification of any additional condition reports
- completion of corrective actions in a timely manner

b. Findings

Introduction. A NRC-Identified Green NCV of 10 CFR Part 26, "Fitness for Duty Programs," was identified for the licensee's failure to ensure that craft labor personnel subject to work hour controls did not exceed 72 hours in a work week. Contract craft workers were changed from "covered" to "non-covered" employees which resulted in craft workers exceeding 72 hours in a work week while performing "covered" work.

Description. The inspectors reviewed time sheets and Personnel Qualification and Scheduling (PQ&S) software records of contract craft personnel for time periods covering February 1, 2016 to February 28, 2016. PQ&S is a software program used by the licensee to track individual hours worked. NMP-AD-016-002, "Scoping of Work Hour Limits," stated in part, "Employees MAY NOT perform covered work unless they are included in the work hour controls group, their work hours have been reviewed and the past work history and scheduled hours meet and will continue to meet the work hour limitations outlined in NMP-AD-016-003, Scheduling and Calculating Work Hours." In February 2016, during the course of the Unit 1 refueling outage, D&Z management removed some individuals from the PQ&S system in order to manage work requirements, thus changing their status from "covered" to "non-covered." A review of payroll hours for craft employees revealed that two ironworkers and four painters performed "covered" work after being placed in a "non-covered" status and exceeded work hour limits established in 10 CFR Part 26 by exceeding 72 hours per week.

Analysis. The failure to ensure that individuals subject to work hour controls are tracked in PQ&S was a performance deficiency. The PD was more than minor because, if left uncorrected, in that the failure to appropriately implement work hour limitations for "covered" workers could adversely affect the conduct and oversight of work on safety significant components. The inspectors performed the initial significance determination using Exhibit 3 of NRC Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings." The inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in an adverse impact to plant safety due to worker fatigue and the exhibit screening was questions

were answered 'no'. The inspectors determined this performance deficiency had a cross-cutting aspect of Consistent Process in the Human Performance area because the licensee failed to assess which workers were performing covered work. [H.13]

Enforcement. Title 10 CFR Part 26, Section 26.205(d), "Work Hours," required, in part, that licensees shall ensure that individuals subject to work hour controls do not exceed 72 work hours in any 7-day period. Contrary to the above, between February 1, 2016, and February 28, 2016, the licensee failed to ensure six craft workers, subject to work hour controls, did not exceed 72 work hours in a 7-day period. The licensee entered this condition into their corrective action program as Condition Report 10214872. The licensee restored compliance when the affected individuals received an adequate rest period. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 0500321/2016002-02, "Failure to Ensure Work Hours are Within Work Hour Limits."

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

##### .1 (CLOSED) Licensee Event Report (LER) 05000366/2016-002-00 Group I Isolation Received During Turbine Testing

###### a. Inspection Scope

With the reactor in Mode 4, Cold Shutdown a valid actuation of the Group I isolation was received during turbine testing when direction in procedure 34SO-N30-002-2, "Turbine Testing and Trip Overrides and Valve Stroking," to bypass the low condenser vacuum signal was not accomplished. The inspectors reviewed this LER and held discussions with licensee staff members to understand the details surrounding this condition. This condition was documented in the licensee's corrective action program as CR 10227168. The inspectors determined the licensee's failure to follow the test procedure was a minor violation of 10 CFR 50 Appendix B, Criterion V, that was not subject to enforcement action in accordance with the NRC's Enforcement Policy because the reactor was in Mode 4 with the main steam isolation valves closed and the drywell open for maintenance activities.

###### b. Findings

No findings of were identified.

#### 4OA5 Other Activities

##### .1 Operation of an Independent Spent Fuel Storage Installation (ISFSI) (60855.1)

###### a. Inspection Scope

The inspectors performed a walkdown of the onsite ISFSI and monitored the activities associated with the dry fuel storage campaign completed on August 16, 2016. The inspectors reviewed changes made to the ISFSI programs and procedures, including

associated 10 CFR 72.48, "Changes, Tests, and Experiments," screens and evaluations to verify that changes made were consistent with the license or certificate of compliance. The inspectors observed the loading activities to verify that the licensee recorded and maintained the location of each fuel assembly placed in the ISFSI. The inspectors also reviewed surveillance records to verify that daily surveillance requirements were performed as required by technical specifications.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 19, 2016, the resident inspectors presented the inspection results to Mr. David Vineyard and other members of the licensee's staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

B. Anderson, Health Physics Manager  
G. Brinson, Maintenance Director  
J. Campbell, Training  
C. Collins, Principal Licensing Engineer  
B. Dean, Training Director  
B. Duval, Chemistry Manager  
B. Hulett, Engineering Director  
G. Johnson, Regulatory Affairs Manager  
E. Jones, Training  
R. Lauer, Operations Manager  
K. Long, Work Management Director  
J. Major, Licensing Engineer  
D. Negron, Plant Service Water System Engineer  
C. Prandini, Site Licensing  
N. Ramos, RHR Service Water System Engineer  
R. Rutan, Training  
R. Spring, Plant Manager  
M. Torrance, Design Engineering Manager  
D. Vineyard, Vice President  
C. Vonier, Operations Director  
B. Wainwright, Ops Training Manager  
A. Wheeler, Site Projects Manager

### **LIST OF REPORT ITEMS**

#### **Closed**

LER 05000366/2016-002-00: Group 1 Isolation Received During Turbine Testing (Section 4OA3.1)

#### **Opened and Closed**

FIN 05000321/2016003-01, Unit Downpower Caused by RFP Vent Line Failure (Section 1R12)  
NCV 05000321, 366/2016003-02, Failure to Ensure Work Hours are Within Work Hour Limits (Section 4OA2.2)

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather**

#### Procedures

E.I Hatch Individual Plant Examination of External Events

Unit 2 Final Safety Analysis Report Section 2.4.3 and 3.4

NMP-OS-017, "Severe Weather," Ver. 1.1

31EO-TSG-001-0, "Technical Support Guidelines," Ver. 16.0

### **Section 1R04: Equipment Alignment**

#### Procedures

34SO-E11-010-1, "Residual Heat Removal System," Ver. 44.8

34SO-T46-001-1, "Standby Gas Treatment," Ver. 21.2

34SO-E41-001-2, "HPCI System," Ver. 30.1

34SO-R43-001-1, "Diesel Generator Standby AC System," Ver. 27.3

#### Drawings

H-16024, "Primary Containment Purge and Inerting System," Ver. 52.0

H-16020, "SBGT PID," Ver. 29.0

H-16174, "SBGT PID," Ver. 25.0

### **Section 1R05: Fire Protection**

#### Procedures

E.I. Hatch Fire Protection Fire Hazards Analysis

52SV-FPX-001-0, "Fire Extinguisher Inspection," Ver. 3.4

42SV-FPX-024-0, "Fire Hose Stations Appendix B Areas," Ver. 4.1

#### Drawings

A-43965 Sheet 109A/B, "Unit 2 Pre-Fire Plan Working Floor North Reactor Building Elevation 158"  
Ver. 5.0

A-43965 Sheet 110A/B, "Unit 2 Pre-Fire Plan Working Floor and Pump Room Reactor Building  
Elevation 158" Ver. 5.0

A-43965 Sheet 103A/B, "Unit 2 HPCI pump room" Ver. 1.0/2.0

A-43965 Sheet 65A/B, "Unit 1 HVAC Room Reactor Bldg. Elevation 164'," Ver. 1.0/2.0

A-43965 Sheet 66A/B, "Unit 1 Standby Gas Filters & Fan Room Reactor Bldg. Elevation 164',"  
Ver. 1.0/2.0

A-43965 Sheet 101A/B, "Unit 2 SE RHR & Core Spray Pump Room Reactor Bldg. El. Below 130',"  
Ver. 1.0/2.0

A-43965 Sheet 123A/B, "Refueling floor El. 228'," Ver. 1.0/2.0

### **Section 1R07: Heat Sink Performance**

#### Procedures

42EN-ENG-026-0, Service Water Systems Heat Exchanger Testing, Ver. 4.9

42IT-ENG-001-0, Visual Examination of Feedwater Heater Impingement Plates, Ver. 1.2

42IT-TET-014-2, Safeguard Equipment Room Cooler Performance Test, Ver. 2.5

52PM-E11-009-0, RHR Heat Exchanger Preventive Maintenance, Rev. 6.1

52PM-R43-015-0, Diesel Generator Turbocharger and Heat Exchanger Inspection, Ver. 12.0

52SV-R43-001-0, Diesel, Alternator and Accessories Inspection, Ver. 25.1

64CH-OPS-006-0, Plant Service Water and Circulating Water Treatment Systems, Ver. 71.1

NMP-ES-012, Heat Exchanger Program, Ver. 10.1  
 NMP-ES-012-001, Inspection of Heat Exchangers, Ver. 1.3  
 NMP-ES-012-002, Cleaning of Heat Exchangers, Ver. 1.2  
 NMP-ES-012-GL01, Heat Exchanger Program Heat Exchanger Inspection, Testing and Condition Assessment, Ver. 4.0  
 NMP-ES-021, Structural Monitoring Program for the Maintenance Rule, Ver. 9.0  
 NMP-ES-036, Underground Pipe and Tanks Monitoring Program, Ver. 12.0  
 NMP-ES-069-001, Fleet Service Water Program Instructions, Ver. 3.2

#### Calculations

SCNH-16-025, Calculation: Plant Hatch River Flow Curve Verification Calculation 2016, dated 7/15/16  
 SCNH-16-026, Calculation: Plant Hatch River Bottom Conditions Verification 2016, dated 7/15/16  
 SMNH-12-019, Calculation: Unit 1 PSW/UHS Reference Summary, Ver. 1

#### Miscellaneous Documents:

42IT-TET-012-1, WO SNC425433, Plant Service Water and RHR Service Water Piping Inspection Visual Inspection Report, dated 4/29/14  
 42IT-TET-012-2, WO SNC524781, Plant Service Water and RHR Service Water Piping Inspection Visual Inspection Report, dated 1/27/15  
 Hatch Heat Exchanger Program Health Report, 1T16  
 Hatch Service Water Program Performance Indicator Report, 1st TRI 2016  
 Hatch Unit 1 PSW System Health Report, Q2-2016  
 Hatch Unit 1 RHRSW System Health Report, Q1-2016  
 Hatch Unit 2 PSW System Health Report, Q2-2016  
 Hatch Unit 2 RHRSW System Health Report, Q1-2016  
 MISTRAS Record of Eddy Current Inspection of Emergency Diesel Generator 2A Water Jacket, Oil & Air Coolers at Plant Hatch, Unit No. 2, dated February/March 2013 (2R22)  
 MISTRAS Record of Eddy Current Inspection of Residual Heat Removal (RHR) Heat Exchanger 2B (2E11-B001B) at Plant Hatch, Unit No. 2, dated April 2011 (2R21)  
 NDE Technology Inspection Summary: Hatch Unit 1 1 B EDG Air Cooler – 1R43B003B, dated April 2014  
 NDE Technology Inspection Summary: Hatch Unit 1 1 B EDG Air Cooler – 1R43B004B, dated April 2014  
 NDE Technology Inspection Summary: Hatch Unit 1 1 B EDG Air Cooler – 1R43B005B, dated April 2014  
 CRs 10184227, 10184229, 10262255, 10262810  
 Drawing H11139, Service Water & Condensate Piping Outside the Buildings, Ver. 23

#### **Section 1R11: Licensed Operator Regualification**

Drill Scenario: LR-SE-00113  
 CARs 254919, 256796

#### Records:

License Reactivation Packages (6 Records Reviewed).  
 LORP Training Attendance Records (1 Crew Reviewed).  
 Medical Files (11 Records Reviewed).

Remedial Training Records (3 Records Reviewed).  
 Remedial Training Examinations (1 Reviewed).  
 Feedback Summaries (6 Records Reviewed).

Written Examinations:

Written Examination 15-7A, 10/15/2015  
 Written Examination 15-7B, 10/22/2015  
 Written Examination 15-7D, 11/5/2015

Procedures:

NMP-TR-212, Systematic Approach to Training Analysis Phase, Version 12.1  
 NMP-TR-215, Systematic Approach to Training Implementation Phase, Version 7.0  
 NMP-TR-406, License Administration, Version 6.2  
 NMP-TR-416, Licensed Operator Continuing Training Program Administration, Version 6.0  
 NMP-TR-424, Licensed Operator Continuing Training Exam Development, Version 4.1  
 NMP-TR-422, Simulator Configuration Control, Version 6.0  
 NMP-TR-422-002, Scenario Based Testing Instruction, Version 1.1  
 NMP-TR-422-004, Plant Hatch Simulator Testing Instruction, Version 4.0  
 NMP-EP-110, "Emergency Classification Determination and Initial Action," Ver. 8.1

Simulator Certification Tests:

505-2, Loss of Coolant – Small Reactor Coolant Breaks Including the Demonstration of Saturation Condition, 06/09/2015  
 525-0, Turbine Trip, 06/11/2015  
 532-0, Main Feed Line Break inside Containment, 06/11/2015  
 604-0, Reactor Trip followed by Recovery to Rated Power, 07/16/2015  
 615-1, Steady State Performance 35% Power, 09/29/2015

Simulator Problem Reports & Design Change Requests:

Simulator DR 20150102  
 Simulator DR 20151204  
 Simulator DR 20151208a

Scenario Packages:

LR-SE-00101, July 25, 2016, Version 4.0  
 LR-SE-00124, August 9, 2016, Version 3.0  
 LR-SE-00161, August 9, 2016, Version 5.0  
 LR-SE-00126, July 25, 2016, Version 4.0  
 LR-SE-00170, July 28, 2016, Version 3.0  
 LR-SE-00174, July 18, 2016, Version 3.0

JPM Packages:

LR-JP-00113A-04.2, Perform RC-1, August 5, 2016.  
 LR-JP-00721-18.2, From the Remote Shutdown Panel, Initiate RHR in Shutdown Cooling, August 8, 2016.  
 LR-JP-01001-20.1, Start the Reactor Protection System (RPS) 120 VAC System, August 5, 2016.  
 LR-JP-01015-16.2, Vent the Scram Air Header, November 19, 2015.

LR-JP-02711-18.3, Transfer an Emergency 4160 VAC Bus from the Emergency to the Normal Power Supply, August 8, 2016.  
 LR-JP-02740A-00.1, Transfer 4160 VAC Bus 2C from Startup Supply to the Auxiliary Transformer, August 8, 2016.  
 LR-JP-02806C-05.2, Start EDG and Energize "2E" 4160 VAC Bus, August 8, 2016.  
 LR-JP-03902C-00.2, Perform a Manual RCIC Startup, Steam Line Break, Manual Isolation, December 9, 2015.  
 LR-JP-20019-08.2, Crosstie Instrument Bus "B" to Instrument Bus "A", August 8, 2016.  
 LR-JP-25060-04.1, Emergency Classification – Complete NMP-EP-110 Checklist 1, August 11, 2015.

#### **Section 1R12: Maintenance Effectiveness**

Z41 Maintenance Rule (MR) Scoping Manual Documents  
 Z41 MR Performance Criteria  
 System Health Report – Z41 System  
 N21 Maintenance Rule (MR) Scoping Manual Documents  
 N21 MR Performance Criteria  
 System Health Report – N21 System  
 NMP-ES-002, "System Monitoring and Health Reporting," Ver. 20.0  
 CRs 10253408, 10236179

#### **Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation**

Equipment out of Service calculations 7/24/16-8/5/16  
 Equipment out of Service calculations 8/14/16-8/27/16  
 Equipment out of Service calculations 9/3/16-9/16/16  
 Equipment out of Service calculations 9/17/16-9/30/16  
 NMP-OS-010-002, "Hatch Protected Equipment Logs," Ver. 10.13

#### **Section 1R15: Operability Evaluations**

NMP-AD-012, "Operability Determinations and Functional Assessments," Ver. 13.0  
 RER SNC800147  
 ASME Code Case N-513-3  
 DOEJ-HRSNC800147-S001  
 SMNH 02-011  
 SMNH 02-011, Rev.2  
 CRs 10247055, 10266769, 10279068, 10242851, 10242851

#### **Section 1R18: Plant Modifications**

NMP-ES-084, "Design Control/Configuration Management Process," Ver. 3.2  
 NMP-ES-084-004-F1, "Equivalent Change Form," Ver. 1.0  
 SNC6477906

#### **Section 1R19: Post Maintenance Testing**

Maintenance Work Orders: SNC551147, SNC417162, SNC804500, SNC436481, SNC810759, SNC575898, SNC814481, SNC654553

**Procedures**

NMP-MA-014-001, "Post Maintenance Testing Guidance," Ver. 4.2  
 52PM-C41-002-0, "SBLC Periodic Maintenance," Ver. 1.1  
 52SV-R43-001-0, "Diesel, Alternator, and Accessories Inspection," Ver. 27.1  
 34SV-R43-006-2, "Diesel Generator 2C Semi-Annual Test," Ver.17.2  
 42IT-TET-004-0, "Operating Pressure Test of Piping and Components," Ver. 9.3  
 52PM-R24-003-1, "Cutler Hammer Low Voltage MCC Inspection (DC)," Ver. 6.2  
 52PM-Z41-002-1, "MCRAC System Maintenance," Ver. 18.0  
 51GM-MNT-058-0, "Piston Lift Check Valve Maintenance," Ver.3.2  
 NMP-ES-024-301, "Liquid Penetrant Examination Color Contrast and Fluorescent," Ver. 12.0

**Section 1R22: Surveillance Testing**

34SV-E41-002-1, "HPCI Pump Operability," Ver. 31.3  
 34SV-R43-001-1, "Diesel Generator 1A Monthly Test," Ver. 24.3  
 34SV-SUV-023-2, "Jet Pump and Recirculation Flow Mismatch Operability," Ver. 7.19

**Section 1EP6: Drill Evaluation**

Drill Scenario: LR-SE-0117-02.0

**Section 4OA1: Performance Indicator Verification**

NMP-AD-029, "Preparation and Reporting of NRC PI Data," Ver. 1.0  
 00AC-REG-005-0, "Preparation and Reporting of NRC PI Data," Ver. 8.0

**Section 4OA2: Identification and Resolution of Problems**

NMP-GM-002, "Corrective Action Program," Ver. 14.0  
 34SO-N30-002-2, "Turbine Testing and Trip Overrides and Valve Stroking," Ver. 3.0  
 CAR 265465

**Section 4OA5: Other Activities**

Docket 72-36 10 CFR 72.212 Report – Revision 18, 2016 Loading Campaign  
 Fuel Assembly Certification Datasheets 2016 Loading Campaign  
 42FH-ERP-014-0, "Fuel Movement," Ver. 23.1  
 Fuel Movement Sheets 2016 Dry Storage – MPC Loading  
 Fuel Loading for Cask Load 2016