



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
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ATLANTA, GEORGIA 30303-1257

May 4, 2017

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 05000321/2017001 AND 05000366/2017001**

Dear Mr. Vineyard:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Edwin I. Hatch Nuclear Plant Units 1 and 2. On April 26, 2017, 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 one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest this 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Hatch Plant.

If you disagree with a cross-cutting aspect assignment 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 II; and the NRC resident inspector at the Hatch Nuclear Plant.

D. Vineyard

2

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 2  
Division of Reactor Projects

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

Enclosure:  
IR 05000321/2017001, 05000366/2017001  
w/Attachment: Supplemental Information

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SUBJECT: EDWIN I. HATCH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT  
05000321/2017001 AND 05000366/2017001 May 4, 2017

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-321, 50-366

License Nos.: DPR-57 and NPF-5

Report No.: 05000321/2017001 and 05000366/2017001

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Edwin I. Hatch Nuclear Plant

Location: Baxley, Georgia

Dates: January 1 through March 31, 2017

Inspectors: D. Hardage, Senior Resident Inspector  
D. Retterer, Resident Inspector  
A. Patz, Project Engineer  
R. Carrion, Senior Reactor Inspector (1R08)  
B. Kellner, Senior Health Physicist (2RS4, 2RS5)  
J. Panfel, Health Physicist (2RS1, 4OA1)  
W. Pursley, Health Physicist (2RS2, 2RS3, 4OA1)  
B. Collins, Reactor Inspector (4OA5)

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

Enclosure

## SUMMARY

IR 05000321/2017001; and 05000366/2017001, January 1, 2017, through March 31, 2017; Plant Edwin I. Hatch, Units 1 and 2, Follow-up of Events and Notices of Enforcement Discretion

The report covered a three-month period of inspection by resident inspectors and regional reactor inspectors. There is one self-revealing violation 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 November 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: Mitigating Systems

- Green. A self-revealing non-cited violation (NCV) of Hatch Unit 2 Technical Specification 5.4.1 was identified when technicians performing maintenance on the 2C emergency diesel generator observed pitting on the lower crank component gears and did not initiate a condition report as required by procedure 52SV-R43-001-0, "Diesel, Alternator, and Accessories Inspection." The licensee's failure to initiate a condition report, as required by 52SV-R43-001-0 'Diesel, Alternator, and Accessories Inspection', for the pitting observed on the lower crank component gears was a performance deficiency. The violation of regulatory requirement occurred on or about November 2015 until the licensee replaced the 2C EDG cross drive assembly and restored compliance on August 25, 2016. The violation was entered into the licensee's corrective action program as CR 10263236.

The performance deficiency was more than minor because if left uncorrected, the failure to evaluate gear pitting would allow progression of a degradation mechanism to the point of EDG inoperability. The inspectors screened this finding using IMC 0609, Appendix A, "The Significant Determination Process (SDP) For Findings At-Power," dated June 19, 2012. Because all four questions in Section A of Exhibit 2, "Mitigating Systems Screening Questions," were answered "no," the finding screened as Green. The inspectors determined that this finding had a cross-cutting aspect in the 'Resources' aspect of the human performance area, because the licensee did not ensure adequate procedural guidance to recognize the difference between normal and destructive pitting. [H.1] (Section 4OA3)

Violations of very low safety significance that were identified by the licensee have been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at 100 percent rated thermal power (RTP). On January 21, 2017 power was reduced to 60 percent RTP due high vibrations on the “B” reactor feed pump. On January 24 operators shutdown the unit to replace the “L” safety relief valve pilot. The unit returned to 100 percent RTP on January 29. On February 28, Unit 1 reduced power to 97 percent RTP to reduce leakage by the “L” safety relief valve pilot and operated at or near 97 percent RTP for the remainder of the inspection period.

Unit 2 began the inspection period at 98 percent RTP in the end of cycle coast down period. On February 6, 2017, operators shut down the unit for a scheduled refueling outage. The unit was restarted on February 25, 2017, and returned to 100 percent RTP on March 1, 2017. The unit operated at or near 100 percent RTP for the remainder of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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

##### a. Inspection Scope

Impending Adverse Weather Conditions: The inspectors reviewed the licensee’s preparations to protect risk-significant systems from cold weather expected during January 9 – 13, 2017. The inspectors evaluated the licensee’s implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of and during the adverse weather conditions. The inspectors reviewed the licensee’s plans to address the ramifications of potentially lasting effects that may result from freezing weather. The inspectors verified that operator actions specified in the licensee’s adverse weather procedure maintain readiness of essential systems. The inspectors verified that required surveillances were current, or were scheduled and completed, if practical, before the onset of anticipated adverse weather conditions. The inspectors also verified that the licensee implemented periodic equipment walk downs or other measures to ensure that the condition of plant equipment met operability requirements.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment (71111.04 – 4 samples)

##### 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, 'B' train RHR following realignment from forced outage
- Unit 2, high pressure coolant injection system following realignment from refueling outage
- Unit 2, RHR following realignment from refueling outage

Complete Walkdown: The inspectors verified the alignment of the Unit 1 Diesel Emergency Power 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 – 5 samples)

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 1 and 2, station service battery rooms, fire areas 1004,1005, 2004 and 2005
- Unit 1 and 2, annunciator rooms, fire areas 1015 and 2015
- Unit 1 and 2, water analysis rooms, fire areas 1006 and 2006
- Unit 1 and 2, reactor protection system motor generator set room and vertical cable chase, fire zones 1013, 2013, and 0040
- Unit 1 and 2, 600V switchgear rooms, fire zones 1016, 1017, 2016, and 2017

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 2 samples)a. Inspection Scope

Internal Flooding: The inspectors reviewed related flood analysis documents and walked down the areas listed below containing risk-significant structures, systems, and components susceptible to flooding. The inspectors verified that plant design features and plant procedures for flood mitigation were consistent with design requirements and internal flooding analysis assumptions. The inspectors also assessed the condition of flood protection barriers and drain systems. In addition, the inspectors verified the licensee was identifying and properly addressing issues using the corrective action program.

- Unit 1, reactor building southeast diagonal
- Unit 1, reactor building northeast diagonal

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07 – 1 sample)a. Inspection ScopeAnnual Review:

The inspectors verified the readiness and availability of the “2B” RHR heat exchanger to perform its design function by verifying the licensee uses the periodic maintenance method outlined in GL 89-13 and observing the licensee’s heat exchanger inspection. Additionally, the inspectors verified that the licensee had entered any significant heat exchanger performance problems into the corrective action program and that the licensee’s corrective actions were appropriate.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08G, Unit 2)a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities: From February 13 – 16, 2017, the inspectors conducted an onsite review of the implementation of the licensee’s in-service inspection (ISI) program for monitoring degradation of the reactor coolant system, emergency feedwater systems, risk-significant piping and components, and containment systems in Unit 2. The inspectors’ activities included a review of non-destructive examinations (NDEs) to



evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of Record: 2001 Edition with 2003 Addenda, 5th Interval, 1st Period, 1st Outage), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned, in accordance with the requirements of the ASME Code, Section XI, acceptance standards.

The inspectors reviewed the following NDEs mandated by the ASME Code, to evaluate compliance with the ASME Code Section XI and Section V requirements, and if any indications and defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement.

- Magnetic Particle Test (MT) of closure head to flange, Component ID 2B11\2HC-2, ASME Class 2
- Liquid Penetrant Test (PT) of 2RC-A Pump Lug-1, Component ID 2B31\2RC-A Pump Lug-1 Restraint Lug, ASME Class 1
- Ultrasonic Test (UT) of valve to pipe weld, Component ID 2E21-1CS-10A-1, ASME Class 1
- UT of closure head studs, Component ID 2B11\2STUD 1 thru 56, ASME Class 1
- Visual Test (VT-3) of mechanical snubber, Component ID 2B21-MSRV-R100
- VT-3 of hydraulic snubber, Component ID 2B21-MS-R34
- VT-3 – In-Vessel Visual Inspection (IVVI) of Core Spray Sparger Brackets
- VT-1 – IVVI of 5° Feedwater End Bracket Pin Area

The inspectors observed the welding activities referenced below (Work Order SNC642945), and reviewed associated documents in order to evaluate compliance with procedures and the ASME Code. The inspectors reviewed the work order, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- Field Weld on 2P64 Area Cooler Valves and Piping Replacement, ASME B31.1, Class 2

In addition, the inspectors reviewed documentation for the following weld-related activities:

- Check Valve Internal Inspection (seal welding of check valve bonnet following disassembly/inspection), ASME Class 2
- Replace PSW Piping 2P41F067 & F065 & F108, ASME Class 3
- Repair/Replace PSW Piping – Torus Bay 3 Upstream of 2P41F1176, ASME Class 3

During nondestructive surface and volumetric examinations performed since the previous refueling outage, the licensee did not identify any relevant indications that were analytically evaluated and accepted for continued service. Therefore, no NRC review was completed for this inspection procedure attribute.

Identification and Resolution of Problems: The inspectors reviewed a sample of ISI-related issues identified by the licensee and entered into the corrective action program (CAP) as condition reports (CRs). The inspectors reviewed the CRs to confirm that the licensee had appropriately described the scope of the problem, and had initiated

corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the report Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11 – 2 samples)

a. Inspection Scope

Resident Inspector Quarterly Review of Licensed Operator Regualification:

The inspectors observed a simulator scenario conducted for training of an operating crew for requalification.

The inspectors assessed the following:

- 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 Unit 2 reactor startup on February 25.

The inspectors assessed the following:

- 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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 2 samples)

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.

- Unit 2, 2B steam jet air ejector, multiple unit down powers due to maintenance preventable functional failure
- Unit 2, 2T48F309 has excessive leakage

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed the five 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, January 23, 2017, Degraded '1B' Reactor Feed pump and '1L' SRV during forced outage
- Unit 1, February 8, 2017, U1 HPCI inoperable due to failed inverter
- Unit 1 and Unit 2, week of February 11- February 17, including protected equipment status reviews for Unit 2 outage and Unit 1 routine maintenance.
- Unit 1 and Unit 2, week of February 18- February 24, including protected equipment status reviews for Unit 2 outage and Unit 1 routine maintenance.
- Unit 1, March 17, 2017, emergent maintenance on '1A' RHR pump

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 samples)

a. Inspection Scope

Operability Determinations and Functionality Assessments Review: The inspectors selected the five 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.

- CR10324008, '1L' SRV Pilot stage temperature fluctuations
- CR10326523, Suspected leaking drywell penetrations
- CR 10335699, 2B SGT flow low during surveillance test
- CR 10338839, IE11F007A RHR minimum flow valve closed on pump start
- CR 10344217, 1B RHR loop pressurizing

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

a. Inspection Scope

For the following plant modification listed below, 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.

TM/SNC630613, "3-Stage SRV Vibration and Pressure Monitoring"

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

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

- SNC843708, DC/AC inverter 1E41K603 repair/replace, February 8
- SNC430194, Upgrade MSIV 2B21F022D valve internals, February 19
- SNC801109, Replace PSW piping 2P41F067&F065&F108, February 20
- SNC474609, Repair 2E11F050A RHR injection check valve, February 23
- SNC810310, Repair 2T48F320 Drywell Vent Outboard Isolation AOV, February 22
- SNC849033, 1E11-F007A min flow valve is not operating properly, March 16
- SNC556116, Replace 2B RHR pump breaker, March 22

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.

1R20 Refueling and Other Outage Activities (71111.20 – 2 samples)

a. Inspection Scope

For the Unit 2 refueling outage from February 6, 2017 through February 25, 2017 and for the Unit 1 forced outage, caused by the degradation of 'L' safety relief valve, from January, 24, 2017 through January 26, 2017, the inspectors evaluated the following outage activities:

- outage planning
- fatigue management
- shutdown, cooldown, refueling, heatup, and startup
- reactor coolant system instrumentation and electrical power configuration
- reactivity and inventory control
- decay heat removal and spent fuel pool cooling system operation
- containment closure

The inspectors verified that the licensee:

- considered risk in developing the outage schedule
- controlled plant configuration in accordance with administrative risk reduction methodologies
- developed work schedules to manage fatigue
- developed mitigation strategies for loss of key safety functions
- adhered to operating license and technical specification requirements

Inspectors verified that safety-related and risk-significant structures, systems, and components not accessible during power operations were maintained in an operable condition. The inspectors also reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with outage activities.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 6 samples)

a. Inspection Scope

The inspectors reviewed the six 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-SUV-012-1, "PSW and RHRSW Valve Position Verification," Ver. 5.5
- 34SV-E51-002-1, "RCIC Pump Operability," Ver. 27.2
- 42SV-R43-008-2, "Diesel Generator 2A LOCA/LOSP LSFT," Ver. 14.0

Containment Isolation Valve

- 42SV-TET-001-0, "LLRT Testing Methodology," Ver. 11.1

In-Service Tests (IST)

- 34SV-E51-001-1, "RCIC Valve Operability," Ver. 18.3

Reactor Coolant System Leak Detection

- 34SV-SUV-019-2, "Surveillance Checks," Ver. 41.9

b. Findings

No findings were identified.

## Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)a. Inspection Scope

The inspectors observed the emergency preparedness drill conducted on March 28, 2017. The inspectors observed licensee activities in the simulator and/or technical support center to evaluate implementation of the emergency plan, including event classification, notification, dose assessment, 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.

## 2. RADIATION SAFETY (RS)

2RS1 Radiological Hazard Assessment and Exposure Controls (Seven Inspection Samples Completed)a. Inspection Scope

Hazard Assessment and Instructions to Workers: During facility tours, the inspectors directly observed radiological postings and container labeling for areas established within the radiologically controlled area (RCA) of the Unit 2 (U2) Reactor Building, U2 Turbine Building and radioactive waste (radwaste) processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed survey records for several plant areas including surveys for airborne radioactivity, gamma surveys with a range of dose rate gradients, surveys for alpha-emitters and other hard-to-detect radionuclides, and pre-job surveys for upcoming tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. The inspectors attended pre-job briefings and reviewed Radiation Work Permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with licensee staff.

Hazard Control: The inspectors evaluated access controls and barrier effectiveness for selected High Radiation Area (HRA), Locked High Radiation Area (LHRA), and Very High Radiation Area (VHRA) locations and discussed changes to procedural guidance for LHRA and VHRA controls with Radiation Protection (RP) supervisors. The inspectors reviewed implementation of controls for the storage of irradiated material within the spent fuel pool. Established radiological controls, including airborne controls and electronic dosimeter (ED) alarm setpoints, were evaluated for selected U2 Refueling Outage 24 (2R24) tasks. In addition, the inspectors reviewed licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations. The inspectors also reviewed the use of personnel dosimetry including extremity dosimetry and multibadging in high dose rate gradients.

Radiation Worker Performance and RP Technician Proficiency: Occupational workers' adherence to selected RWPs and RP technician proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Jobs observed included torus diving, valve 2E11FO50 repair work, U2 RWCU HX work, and various outage maintenance tasks in high radiation and contaminated areas. The inspectors also evaluated worker responses to dose and dose rate alarms during selected work activities.

Problem Identification and Resolution: The inspectors reviewed and assessed condition reports associated with radiological hazard assessment and control. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with licensee procedures. The inspectors also reviewed recent self-assessment results.

Inspection Criteria: Radiation protection activities were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) U2 Chapters 11 and 12, Technical Specifications (TS) Section 5.7, 10 CFR Parts 19 and 20, and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, "Control of Radioactively Contaminated Material". Documents and records reviewed are listed in the Attachment.

b. Findings

The enforcement aspects of this finding are discussed in Section 40A7.

2RS2 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls (Five Inspection Samples Completed)



a. Inspection Scope

Work Planning and Exposure Tracking: The inspectors reviewed work activities and their collective exposure estimates for 2R24. The inspectors reviewed ALARA planning packages for activities related to the following high collective exposure tasks: Rx Vessel Disassembly/Reassembly, Drywell (DW) ISI/FAC, CRD Replacement, MSIV work, and DW scaffold work. For the selected tasks, the inspectors reviewed established dose goals and discussed assumptions regarding the bases for the current estimates with responsible ALARA planners. The inspectors evaluated the incorporation of exposure reduction initiatives and operating experience, including historical post-job reviews, into RWP requirements. Day-to-day collective dose data for the selected tasks were compared with established dose estimates and evaluated against procedural criteria (work-in-progress review limits) for additional ALARA review. Where applicable, the inspectors discussed changes to established estimates with ALARA planners and evaluated them against work scope changes or unanticipated elevated dose rates.

Source Term Reduction and Control: The inspectors reviewed the collective exposure three-year rolling average from 2012 - 2015. The inspectors evaluated historical dose rate trends for reactor coolant system piping and compared them to current levels during 2R24. Source term reduction initiatives, including cobalt reduction and zinc injection, were reviewed and discussed with RP staff. The inspectors also reviewed temporary shielding packages for the 2R24 outage.

Radiation Worker Performance: As part of Inspection Procedure (IP) 71124.01, the inspectors observed pre-job ALARA briefings and radiation worker performance for various HRA jobs in the auxiliary building and containment. While observing job tasks, the inspectors evaluated the use of remote technologies to reduce dose including teledosimetry and remote visual monitoring.

Problem Identification and Resolution: The inspectors reviewed and discussed selected Corrective Action Program (CAP) documents associated with ALARA program implementation. The inspectors evaluated the licensee's ability to identify and resolve the issues. The inspectors also reviewed recent self-assessment results.

Inspection Criteria: ALARA program activities were evaluated against the requirements of UFSAR U2 Chapters 11 and 12, TS Section 5.7, 10 CFR Part 20, and approved licensee procedures. Documents reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (Four Inspection Samples Completed)

a. Inspection Scope

Engineering Controls: The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity during 2R24. The inspectors observed the use of portable air filtration units for work in contaminated areas of the RCA and reviewed filtration unit testing certificates. The inspectors evaluated the effectiveness

of continuous air monitors (CAM) to provide indication of increasing airborne levels, the placement of air samplers in work area “breathing zones,” and inclusion of alpha emitting nuclides in CAM setpoint determination.

Respiratory Protection Equipment: The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included review of devices used for routine tasks and devices stored for use in emergency situations. The inspectors reviewed ALARA evaluations for the use of respiratory protection performed since the last inspection. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPRs) staged for routine and emergency use in the Main Control Room and other locations were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and availability of air bottles. The inspectors reviewed maintenance records for selected SCBA units for the past two years and evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles.

The inspectors observed the use of respirators in the U2 condenser bay and various jobs in the drywell during 2R24. The inspectors discussed training for various types of respiratory protection devices with licensee staff and interviewed radworkers and control room operators on use of the devices including SCBA bottle change-out and use of corrective lens inserts. The inspectors reviewed respirator qualification records (including medical qualifications) for several Main Control Room operators and emergency responder personnel. In addition, inspectors evaluated qualifications for individuals responsible for testing and repairing SCBA vital components.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with airborne controls and respiratory protection activities. The inspectors evaluated the licensee’s ability to identify and resolve the issues. The inspectors also reviewed recent self-assessment results.

Inspection Criteria: Radiation protection program activities associated with airborne radioactivity monitoring and controls were evaluated against details and requirements documented in the U2 UFSAR Chapters 11 and 12; 10 CFR Part 20; Regulatory Guide (RG) 8.15, “Acceptable Programs for Respiratory Protection” and approved licensee procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified

2RS4 Occupational Dose Assessment (Five Inspection Samples Completed)

a. Inspection Scope

Source Term Characterization: The inspectors reviewed the plant radiation characterization (including gamma, beta, alpha, and neutron) being monitored and verified the use of scaling factors to account for hard-to-detect radionuclides in internal dose assessments.

External Dosimetry: The inspectors reviewed National Voluntary Accreditation Program (NVLAP) certification data for the licensee's OSL processor for the current year for Ionizing Radiation Dosimetry. The inspectors observed and evaluated onsite storage of TLDs. Comparisons between ED and OSL results, including correction factors, were reviewed and discussed. The inspectors also evaluated licensee procedures for unusual dosimetry occurrences. ED alarm logs were reviewed as part of Inspection Procedure 71124.01.

Internal Dosimetry: The inspectors reviewed and discussed the in vivo bioassay program with the licensee. Inspectors reviewed procedures that addressed methods for determining internal or external contamination, releasing contaminated individuals, and the assignment of dose. The inspectors evaluated the licensee's program for in vitro monitoring and reviewed in vivo bioassay results, and in vitro sample information, for personnel involved in recent diving activities. The inspectors also reviewed contamination logs and evaluated events with the potential for internal dose.

Special Dosimetric Situations: The inspectors reviewed records for declared pregnant workers (DPW)s from February 2015 through February 2017 and discussed guidance for monitoring and instructing DPWs. Inspectors reviewed the licensee's program for monitoring external dose in areas of expected dose rate gradients, including the use of multi-badging and extremity dosimetry. The inspectors evaluated the licensee's neutron dosimetry program including instrumentation used to perform neutron surveys. In addition, the inspectors reviewed the licensee's program for evaluation of shallow dose equivalent (SDE). The inspectors also reviewed contamination logs and evaluated events with the potential for SDE.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with occupational dose assessment including self-assessments. The inspectors evaluated the licensee's ability to identify and resolve issues.

Inspection Criteria: The licensee's occupational dose assessment activities were evaluated against the requirements of U-2 UFSAR Chapter 12; TS Section 5.4 and 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Documents reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (Three Inspection Samples Completed)

a. Inspection Scope

The inspectors reviewed the licensee's radiation monitoring instrumentation programs to verify the accuracy and operability of radiation monitoring instruments used to monitor areas, materials, and workers to ensure a radiologically safe work environment during normal operations and under postulated accident conditions.

Walkdowns and Observations: During tours of the site areas, the inspectors observed installed radiation detection equipment including the following instrument types: area

radiation monitors (ARMs), CAMs, personnel contamination monitors (PCMs), small article monitors (SAMs), and portal monitors (PMs). The inspectors observed the calibration status, physical location, material condition and compared technical specifications for this equipment with UFSAR requirements. In addition, the inspectors observed the calibration status and functional checks of selected in-service portable instruments and discussed the bases for established frequencies and source ranges with RP staff personnel. The inspectors reviewed periodic source check records for compliance with plant procedures and manufacturer's recommendation for selected instruments and observed the material condition of sources used.

Calibration and Testing Program: The inspectors reviewed calibration data for selected ARMs, PCMs, PMs, SAMs, and laboratory instruments as well as the last calibration and methodology for the whole body counter. The inspectors reviewed calibration data, methodology used and the source certification for the U2 Post-LOCA gamma monitor (2D11-K621), Control Room Area Radiation Monitors (1D21K600B and 1D21K600C), and the U2 Reactor Head Laydown Area Radiation Monitor (2D21K601A). The current output values for the portable instrument calibrator and the instrument certifications used to develop them were reviewed by the inspectors. The inspectors reviewed the licensee's process for investigating instruments that are removed from service for calibration or response check failures and discussed specific instrument failures with plant staff. In addition, the inspectors reviewed 10CFR-61 data to determine if sources used in the maintenance of the licensee's radiation detection instrumentation were representative of radiation hazards in the plant and scaled appropriately for "hard to detect" nuclides.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with radiological instrumentation including licensee sponsored assessments. The inspectors evaluated the licensee's ability to identify and resolve issues

Inspection Criteria: Operability and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, "Clarification of TMI Action Plan Requirements"; U-1 UFSAR Chapter 7 and U-2 UFSAR Chapter 12; TS Section 3.3.3.1, 3.3.6.1, and 3.3.7.1; and applicable licensee procedures. Documents reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Initiating Events (6 samples)

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.

- unplanned scrams per 7,000 critical hours

- unplanned power changes per 7,000 critical hours
- unplanned scrams with complications

The inspectors reviewed plant records compiled between January 2016 and January 2017 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. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. 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.

Cornerstone: Occupational Radiation Safety (1 sample)

The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from May 2016 through January 2017. For the assessment period, the inspectors reviewed electronic dosimeter alarm logs and CRs related to controls for exposure significant areas.

Public Radiation Safety Cornerstone (1 sample)

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from May 2016 through January 2017. For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CRs related to Radiological Effluent Technical Specifications/ODCM issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data.

b. Findings

No findings were identified.

40A2 Problem Identification and Resolution (71152 – 1 sample)

.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 condition report 10344772, "Safety Evaluation for changing SDV instrumentation from safety related to non-safety related."

The inspectors evaluated the following attributes of the licensee's actions:

- 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

No findings were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153 – 2 samples)

.1 (CLOSED) Licensee Event Report (LER) 05000366/2016-003-00 2C Emergency Diesel Generator Inoperable Due to Low Lube Oil Pressure

a. Inspection Scope

The inspectors reviewed this LER for potential performance deficiencies and/or violations of regulatory requirements. Additionally, discussions were held with Operations, Engineering and Licensing staff members to understand the details surrounding this issue. This condition was documented in the licensee's corrective action program as CR 10263236. LER 05000366/2016-003 is closed.

b. Findings

Introduction: A self-revealing Green non-cited violation (NCV) of Hatch Unit 2 Technical Specification 5.4, "Procedures," was identified on August 18, 2016, when the '2C' emergency diesel generator tripped on low lube oil discharge pressure due to a sheared shaft on the cross drive assembly. The licensee's failure to initiate a condition report, as required by 52SV-R43-001-0 'Diesel, Alternator, and Accessories Inspection', for the pitting observed on the lower crank component gears was a performance deficiency.

Description: The cross-drive assembly of the emergency diesel generator is a gear reduction assembly which uses the rotation of the lower crankshaft to power gear-driven auxiliary equipment including the engine driven lube oil pump. The engine driven lube oil pump supplies lubricating oil to the engine during normal operation. On August 18, 2016, the 2C EDG tripped on low lubricating oil pressure 30 minutes into the monthly surveillance run. Engine disassembly revealed that the cross drive shaft that drives the engine driven lube oil pump, was sheared and the supporting cylindrical radial bearing was severely worn. Pitting damage and plastic deformation was found on the cross drive assembly gears and mating gears. Inspectors reviewed maintenance practices related to the cross drive assembly. The cross-drive input gear was visually inspected every two years to assess the health of the gears and identify misalignment, lubrication or backlash issues prior to failure. This visual inspection was a recommended corrective action from Part 21 report 1995-08-9 (Accession No. 9502240086). The recommendation prescribes that "someone expert enough to distinguish between initial pitting which is acceptable and destructive pitting which is not acceptable" was required. Licensee procedure 52SV-R43-001-0 'Diesel, Alternator, and Accessories Inspection' stated, "Visually inspect the following LOWER CRANK components Gears for gear wear pattern, pitting, scrubbing, fretting, AND discoloration,

chipped OR broken teeth. IF abnormalities are found, initiate a CR.” Licensee EDG mechanics who performed the November 2015 visual inspections observed pitting on lower crank component gears, but did not initiate a condition report or take backlash measurements because they had considered the observed pitting to be normal. The licensee mechanics were not trained to distinguish between initial, normal and destructive pitting. Following failure of the 2C EDG, the licensee entered the issue into the corrective action program as CR 10262921 and CR 10263236. Engineering evaluations concluded that had backlash measurements been taken following the November 2015 visual inspection, the measurements would not have been out of tolerance because the cause of the misalignment (and impact on gear backlash) was not similar to the out-of-square bracket condition evaluated in Part 21 Report 1995-08-9. The inspectors reviewed the licensee’s engineering evaluation and concluded that the licensee’s failure to initiate a CR following the November 2015 visual inspection did not result in a missed opportunity to identify the impending failure of the cross drive shaft prior to the 2C EDG failure in August 2016. The licensee replaced the 2C EDG cross-drive assembly and associated gearing, and performed extent of condition inspections on all other EDGs. The 2C EDG was returned to an operable condition on August 25, 2016.

Analysis: The licensee’s failure to initiate a condition report, as required by 52SV-R43-001-0 “Diesel, Alternator, and Accessories Inspection,” for the pitting observed on the lower crank component gears, was a performance deficiency. The failure to initiate a condition report precluded further licensee actions to evaluate and monitor evidence of equipment degradation (i.e., gear pitting). Specifically, the licensee did not implement and track gear lash measurements to identify the potential cause of the pitting and distinguish between initial and destructive pitting. The performance deficiency was associated with the Mitigating Systems cornerstone and was more than minor because if left uncorrected, the failure to evaluate gear pitting would allow progression of a degradation mechanism to the point of EDG inoperability. The inspectors screened this finding using IMC 0609, Appendix A, “The Significant Determination Process (SDP) For Findings At-Power,” dated June 19, 2012. Because all four questions in Section A of Exhibit 2, “Mitigating Systems Screening Questions,” were answered “no,” the finding screened as Green. The inspectors determined that this finding had a cross-cutting aspect in the ‘Resources’ aspect of the human performance area, because the licensee did not ensure adequate procedural guidance to recognize the difference between normal and destructive pitting. [H.1]

Enforcement: Hatch Unit 2 Technical Specification 5.4.1 requires, in part, that procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, section 9.a requires, in part, that maintenance of safety-related equipment is performed in accordance with written procedures appropriate to the circumstances. Procedure 52SV-R43-001-0 ‘Diesel, Alternator, and Accessories Inspection’ required, in part, “Visually inspect the following LOWER CRANK components Gears for gear wear pattern, pitting, scrubbing, fretting, AND discoloration, chipped OR broken teeth. IF abnormalities are found, initiate a CR.” Contrary to the above, in November 2015, the licensee observed pitting on the lower crank component gears and did not initiate a condition report. The violation of regulatory requirement occurred on or about November 2015. The licensee replaced the 2C EDG cross drive assembly and restored compliance on August 25, 2016. This violation is being treated as an NCV, consistent with Section 2.3.2.a of the Enforcement Policy. The

violation was entered into the licensee's corrective action program as CR 10263236. (NCV 5000366/2017001-01; "Failure to identify abnormal condition on 2C EDG cross drive assembly")

.2 (CLOSED) LER 05000366/2016-004-00 Condition Prohibited by Technical Specifications due to Inoperable PCIV

a. Inspection Scope

The inspectors reviewed this LER for potential performance deficiencies and/or violations of regulatory requirements. Additionally, discussions were held with Operations, Engineering and Licensing staff members to understand the details surrounding this issue. This condition was documented in the licensee's corrective action program as CR 10295889. LER 05000366/2016-004 is closed.

b. Findings

The enforcement aspects of this finding are discussed in Section 40A7.

40A5 Other Activities

.1 (Closed) Temporary Instruction (TI) 2515/192, Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems

a. Inspection Scope

The objective of this performance based Temporary Instruction is to verify implementation of interim compensatory measures associated with an open phase condition design vulnerability in electric power system for operating reactors. The inspectors conducted an inspection to determine if the licensee had implemented the following interim compensatory measures. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for open phase condition design vulnerability. The inspectors verified the licensee:

- identified and discussed with plant staff the lessons-learned from the open phase condition events at US operating plants including the Byron Station open phase condition and its consequences. This included conducting operator training for promptly diagnosing, recognizing consequences, and responding to an open phase condition.
- updated plant operating procedures to help operators promptly diagnose and respond to open phase conditions on off-site power sources credited for safe shutdown of the plant.
- established and implemented periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible open phase condition.



- ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, the licensee assessed and managed plant risk in accordance with 10 CFR 50.65(a) (4) requirements.

b. Findings

No findings were identified.

.2 (CLOSED) Notice of Violation EA-16-136, Failure to Provide Complete and Accurate Information for Weld Overlay 1B31-1RC-12BR-E-5

a. Inspection Scope

In accordance with NRC Inspection Procedure 92702, "Follow-Up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternate Dispute Resolution Confirmatory Orders," the inspectors performed a follow-up inspection for SL III Traditional Enforcement Notice of Violation (NOV) EA-16-136. The NOV was issued on October 19, 2016, as NRC Inspection Report 05000321/2016011 (ADAMS Accession Number ML16293A900). The report provided the details surrounding the licensee's failure to provide information that was complete and accurate in all respects, which was determined to be a violation of 10 CFR 50.9, "Completeness and Accuracy of Information."

The inspectors' follow-up actions evaluated the licensee's corrective actions that had occurred since the NOV was issued. Specifically, the licensee revised its procedure governing regulatory correspondence to provide more rigor to the review of documents which would be submitted to NRC.

b. Findings

As part of the inspection effort addressed in 05000321/2016011, the NRC concluded that the corrective actions that the licensee had taken and the results achieved were adequately addressed in Inspection Report 05000321/2016010 (ADAMS accession number ML16224A795), and therefore no licensee response to the NOV was required.

During this inspection period, the inspectors determined that the licensee's corrective actions were sufficient to address the identified cause. Therefore, NOV EA-16-136 is closed.

4OA6 Meetings, Including Exit

On April 26, 2017, 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.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and were violations of NRC requirements which met the criteria of the NRC Enforcement Policy, for being dispositioned as Non-Cited Violations.

- Unit 2 Technical Specification 3.6.1.3 requires each PCIV be operable in Mode 1. With one PCIV inoperable, the affected penetration flow path must be isolated by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. Contrary to the above, on November 6, 2016 at 21:51 operators tagged valve 2E41F111, a PCIV, open with the breaker off. Subsequently, a licensed operator performing a main control room board walk down noted the PCIV was inoperable and, on November 8 at 0151, operators closed and de-activated an automatic valve in the line to restore compliance. Inspectors screened the finding in accordance with IMC 609 Appendix A “The Significance Determination Process (SDP) for Findings at-Power.” The finding screened as very low safety significance (Green) because the questions in Appendix A Exhibit 3 for reactor containment were answered “no”. This issue was documented in the licensee’s corrective action program as CR 10295889. (Section 4OA3.2)
- Technical Specification 5.7.1 requires, in part, entrances into areas in which the intensity of radiation is  $> 100$  mrem/hr but  $< 1000$  mrem/hr, measured at 30 cm from the radiation source or from any surface the radiation penetrates, to be controlled by requiring issuance of a Radiation Work Permit (RWP). Contrary to this, On September 9, 2016, two individuals entered a High Radiation Area in the Unit 2 SE Diagonal 87' elevation to calibrate an RHR Service water transmitter without the proper briefing or RWP. The individuals were briefed and permitted to enter the HPCI Room area instead of this area. This finding was of very low safety significance (Green) because there was no substantial potential for overexposure and the licensee’s ability to assess dose was not compromised. The immediate corrective actions were documented in CR 10271667. The long term corrective actions include continuing training such that all craft personnel are exposed to the remediation scenario. (Section 2RS1)

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

B. Anderson, Radiation Protection Manager  
J. Bailey, Licensing Engineer  
P. Bailey, SNC IVVI Level III  
H. Betsill, Emergency Preparedness Specialist  
G. Brinson, Maintenance Director  
R. Bryant, Radiation Protection Support Superintendent  
J. Collins, Licensing Supervisor  
B. Deen, Training Director  
B. Duvall, Chemistry Manager  
A. Elliot, BWRVIP Owner  
B. Hulett, Engineering Director  
G. Johnson, Regulatory Affairs Manager  
R. Lewis, Operations Support Manager  
K. Long, Operations Director  
B. Mathews, Welding & Repair/Replacement Coordinator  
A. Manning, Work Management Director  
J. Merritt, Security Manager  
R. Outler, Emergency Preparedness Supervisor  
C. Rush, Nuclear Oversight Manager  
R. Spring, Plant Manager  
M. Todd, Engineering Programs Supervisor  
M. Torrance, Design Engineering Manager  
G. Varnadoe, Chemistry Operations Superintendent  
D. Vineyard, Site Vice President  
B. Wainwright, Operations Training Manager  
K. White, SNC ISI Level III

### **LIST OF REPORT ITEMS**

#### **Closed**

LER 05000366/2016-003-00: 2C Emergency Diesel Generator Inoperable Due to Low Lube Oil Pressure (Section 4OA3.1)

LER 05000366/2016-004-00: Condition Prohibited by Technical Specifications due to Inoperable PCIV (Section 4OA3.2)

TI 2515/192: Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (Section 4OA5.1)

NOV 05000321/2016010-01: Inaccurate Information Provided Regarding N2E Nozzle Weld Overlay (Section 4OA5.2)

#### **Opened and Closed**

NCV 05000366/2017001-01: Failure to Identify Abnormal Condition on 2C EDG Cross Drive Assembly (Section 4OA3.1)

## LIST OF DOCUMENTS REVIEWED

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

#### Procedures

52PM-MEL-005-0, "Cold Weather Checks," Ver. 18.1

DI-OPS-36-0989, "Cold Weather Checks," Ver. 23.3

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

#### Procedures

34SO-E11-010-1, "Residual Heat Removal System," Ver. 44.13

34SO-E41-001-2, "HPCI System," Ver. 30.2

34SO-R43-001-1, "Diesel Generator Standby AC System," Ver. 27.4

34SO-E11-010-2, "Residual Heat Removal System," Ver. 42.10

#### Drawings

H260220, H26021, H11631, S13638, S13639, S13640, H45085, S55047, H11037

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

#### Procedures

E.I. Hatch Fire Protection Fire Hazards Analysis

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

#### Drawings

A-43965 sheet 8A/B, Unit 1 Water Analysis Room 112' 0"

A-43965 sheet 19A/B, Unit 2 Water Analysis Room 112' 0"

A-43965 Sheet 26A/B, Unit 1 and 2 RPS and cable tray rooms control building 130' 0"

A-43965 Sheet 11A/B, 12A/B, 17A/B, 18A/B, U1/U2 Station Battery Rooms 112' 0"

A-43965 Sheet 36A/B, 27A/B, Unit 1 and 2 Annunciator Rooms control building 130'0"

### **Section 1R06: Internal Flood Protection**

Updated Final Safety Analysis Report

E.I. Hatch Individual Plant Examination dated December 1992

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

#### Procedures

52SV-R43-001-0, "Diesel, Alternator and Accessories Inspection," Ver. 27.0

#### Drawings

S-71348, Jacket Water Cooler HX Drawing

### **Section 1R08: Inservice Inspection Activities**

#### Corrective Action Documents

CAR 263280, WOL 1B31-1RC-12BR-E-5 Linear Indication Found during PT Exam, dated 3/17/2016

CAR 264357, Historic Error in NRC Data Submittal, dated 3/16/2016

CR 823428, Acknowledgement of receipt of EPRI letter requesting information regarding RPV materials.

CR 10011135, Document receipt and review of BWRVIP letter 2014-173

CR 10056538, Limited ISI Examinations during 2R23  
 CR 10087973, Administrative Control of WO Changes  
 CR 10183672, WOL 1B31-1RC-12BR-E-5 Linear Indication Found during PT Exam, dated 3/17/2016  
 CR 10197850, Historic Error in NRC Data Submittal, dated 3/16/2016  
 CR 10327745, RPV Stud 33 – Ultrasonic Indication Requires Further Evaluation  
 CR 10330062, H2R24 IVVI SHB Indications  
 CR 10330147, Indication found in body casting of 2B21-F028C  
 CR 10330502, Documentation of Previously Issued Severity Level III Violation, dated 2/13/2017  
 CR 10331607, IVVI Core Spray Sparger Bracket Indications during H2R24  
 CR 10331610, IVVI Feedwater Sparger Bracket Indications during H2R24

#### Procedures

Form MNT-1859, Section XI Examination Plan, Version 3.0  
 NMP-AD-043, Regulatory Correspondence Control, Version 2.1  
 NMP-AD-043-F01, Licensing Action, Concurrence and Verification, Version 2.0  
 NMP-ES-018-002, Inservice Inspection Plans, Version 8.2  
 NMP-ES-018-006, Indication Notification, Version 4.2  
 NMP-ES-024-100, Procedure (Written Practice) for Qualification and Certification of Nondestructive Examination Personnel, Version 7.1  
 NMP-ES-024-101, Reference System for Marking, Measuring, and Recording, Version 2.1  
 NMP-ES-024-107, NDE Documentation, Version 2.1  
 NMP-ES-024-202, Visual Examination (VT-2), Version 5.4  
 NMP-ES-024-203, Visual Examination (VT-3), Version 6.0  
 NMP-ES-024-206, Visual Examination of the Reactor Pressure Vessel Internals, Version 12.0  
 NMP-ES-024-207, General Visual Examination (IWE), Version 4.1  
 NMP-ES-024-301, Liquid Penetrant Examination Color Contrast and Fluorescent, Version 12.0  
 NMP-ES-024-401, Magnetic Particle Examination, Version 10.0  
 NMP-ES-024-502, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds (Appendix VIII), Version 5.0  
 NMP-ES-024-504, Manual Ultrasonic Examination of Bolts and Studs (Appendix VIII), Version 4.3  
 NMP-GM-002-F02, Apparent Cause Determination Report (CAR263280), dated 2/16/2017

#### Other Documents

Circle Systems Letter of Certification: Dusting Powder #63, Batch #13210, dated February 1, 2002  
 Hatch Nuclear Plant Unit 2 2R24 Outage Plan Interval 5 – Period 1 – Outage 1, Spring 2017  
 Hatch Nuclear Plant Unit 2 Fifth (5th) Interval Inservice Inspection (ISI) and Third (3rd) Interval Containment Inservice Inspection (CISI) Plan, Volumes 1 - 5  
 Indication Notification Report (INR) H2R24 IVVI 17 04, Core Spray Sparger Brackets  
 INR H2R24 IVVI 17 06, Feedwater Spargers  
 Magnaflux Letter of Certification for SKC-S Spotcheck Cleaner/Remover, Batch # 15G14K, dated 07/29/2015  
 Magnaflux Letter of Certification for SKD-S2 Spotcheck Developer, Batch # 09E02K, dated 06/10/09  
 Magnaflux Letter of Certification for SKL-SP2 Spotcheck Penetrant, Batch # 13K04K, dated 10/24/2013  
 NDE Report S17H2M001, MT of closure head to flange, Component ID 2B11\2HC-2, dated 2-12-17

NDE Report S17H2P001, PT of 2RC-A Pump Lug-1, Component ID 2B31\2RC-A Pump Lug-1 Restraint Lug, dated 2/10/17

NDE Report S17H2U003, UT of valve to pipe weld, Component ID 2E21-1CS-10A-1, dated 2-14-2017

NDE Report S17H2U007, UT of closure head studs, Component ID 2B11\2STUD 1 thru 56, dated 2/11/2017

NDE Report S17H2V007, VT-3 of mechanical snubber, Component ID 2B21-MSRV-R100, dated 2/11/17

NDE Report S17H2V014, VT-3 of hydraulic snubber, Component ID 2B21-MS-R34, dated 2/14/17

Procedure Qualification Record (PQR) 507, GTAW Manual, dated 1-26-84

PQR 510, GTAW/SMAW Manual, dated 2-3-84

PQR 547, GTAW/SMAW Manual, dated 5-7-84

Relief Request No. HNP-151-ALT-5-01, Regarding Fifth 10-Year Inservice Inspection Interval Southern Company NDE Examiner Certification Review (Blackman, VT), dated 1/24/2017

Southern Company NDE Examiner Certification Review (Fetter, VT), dated 1/24/2017

Southern Company NDE Examiner Certification Review (Jackson, UT), dated 1/20/2017

Southern Company NDE Examiner Certification Review (Jennings, UT), dated 1/20/2017

Southern Company NDE Examiner Certification Review (Michael, UT), dated 1/25/2017

Southern Company NDE Examiner Certification Review (Parker, MT), dated 1/20/2017

Technical Evaluation (TE) 823355, Branch Technical Position 5 - 3 Fracture Toughness Requirements Request for Information

TE 907348, BTP 5-3 tracking of industry-NRC interactions

TE 907501, Provide an assessment of applicability of BTP 5-3 potential non-conservatism to the HNP reactor vessels

TE 960287, ISI - Add Hatch Unit 1 and Unit 2 WOL Summary Tables to the ISI Plan

TE 953940, Update the Edwin I. Hatch Nuclear Plant Unit 1 and/or Unit 2 5<sup>th</sup> 10-Year Interval Inservice Inspection (ISI) Plan (Volumes 1-5)

TE 973221, ISI (2R24) - Update the Unit 2 ISI Plan Volumes (1-5) per NMP-ES-018-002

TE 978688, ISI - Update the Applicable Volumes of the 5<sup>th</sup> 10-Year Interval ISI Program Plan

Welding Personnel Qualifications for Barnum, Bellury, Carter, Clemmons, Harrell, James, Johnson, Knowles, Maney, Paige, Phelps, Pittman, Scott, Strickland, Stripling, Thacker, and Wilbanks

Welding Procedure Specification (WPS) T110A-1, GTAW Manual, Revision 3

WPS TS110A-13, GTAW and SMAW Manual, Revision 3

Work Order SNC386528, (2R22 RFO) Contingency Work Order to Replace 3' of 3' Pipe

WO SNC485146, Perform RPV internal examination 2B11

WO SNC485166, 42SV-SUV-047-0 Venting Assembly and Suppression Chamber Surfaces Visual Inspection

WO SNC556057, Check Valve Internal Inspection

WO SNC642945, 2P64 Area Cooler Valves and Piping to be Replaced

WO SNC713831, Engineer Support for ISI Exams

WO SNC783227, 2R24 VT-1 Inspection of RPV Flange Seal Surfaces

WO SNC801109, Replace PSW Piping 2P41F067 & F065 & F108

WO SNC823336, Repair/Replace PSW Leak – Torus Bay 3 Upstream 2P41F1176

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

Drill Scenario: LR-SG-50322-28.0

Procedures

34GO-OPS-001-2, "Plant Startup," Ver. 49.0

34GO-OPS-065-0, "Control Rod Movement," Ver. 13.1

**Section 1R12: Maintenance Effectiveness**

N61 Maintenance Rule (MR) Scoping Manual Documents

N61 MR Performance Criteria

System Health Report –N61 System –4th quarter 2016

T23 Maintenance Rule (MR) Scoping Manual Documents

T23 MR Performance Criteria

NMP-ES-002, "System Monitoring and Health Reporting," Ver. 19.0

Eval-H-T23-00867, T-23 (a)(1) evaluation

CR10314338, CR10234601, CR10329339, CR10333178, CAR 268804, TE975992, TE961252

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

Equipment Out of Service calculations 1/22/17-2/4/17

Equipment Out of Service calculations 2/4/17-2/17/17

Equipment Out of Service calculations 2/18/17-3/3/17

Equipment Out of Service calculations 3/4/16-3/17/17

Procedures

NMP-OS-010-002, "Hatch protected equipment logs," Ver. 10.13

31GO-OPS-024-0, "Outage Safety Assessment," Ver. 4.1

**Section 1R15: Operability Evaluations**Procedures

NMP-AD-012, "Operability Determinations and Functional Assessments," Ver. 13.1

34SO-E11-010-1, Residual Heat Removal System, Ver. 44.13

Condition Reports

10324008, 10326523, 10338708

Other

Risk Based Analysis: RBA-17-002-H, TS 3.0.4.b Mode Change Risk Analysis

**Section 1R18: Plant Modifications**

NMP-ES-084-005, "Temporary Configuration Change Process," Ver. 2.4

NMP-AD-010, "10 CFR 50.59 Screening/Evaluation," Ver. 13.1

NMP-AD-008, "Applicability Determination," Ver. 20.0

TM/SNC630613

**Section 1R19: Post Maintenance Testing**Maintenance Work Orders (MWOs)

SNC832725, SNC485766

Procedures

52GM-B21-006-0, "Main Steam Three Stage SRV Maintenance," Ver. 5.0

NMP-MA-014-001, "Post Maintenance Testing Guidance," Ver. 4.2

57CP-CAL-058-1, "Abacus Static Inverter Calibration," Ver. 9.0

42IT-TET-006-2, "ISI Pressure Test of the Class 1 System and Recirc Pump Runback Test,"  
Ver. 18.9

52SV-B21-001-2, "MSIV Limit Switch Response and Component Inspection/Repair," Ver. 11.0  
 52GM-MNT-039-0, "ASME Section XI Repair/Replacement," Ver. 4.0  
 42IT-TET-004-0, "Operating Pressure Test of Piping and Components," Ver. 9.3  
 42SV-TET-001-2, "Primary Containment Leak Rate Testing," Ver. 37.0  
 NMP-ES-014-010, "AOV Diagnostic Testing and Signature Evaluation," Ver. 4.9  
 34SO-E11-010-2, "Residual Heat Removal System," Ver. 42.10  
 52PM-R22-004-0, "Westinghouse 50DHP-VR-250U Breakers," Ver. 15.0

### **Section 1R20: Refueling and Outage Activities**

#### Operating Logs

34GO-OPS-001-1, "Plant Startup," Ver. 43.1  
 34GO-OPS-013-1, "Normal Plant Shutdown," Ver. 31.2  
 34GO-OPS-015-2, "Maintaining Cold Shutdown of Refuel Conditions," Ver. 15.0  
 34GO-OPS-001-2, "Plant Startup," Ver. 49.0  
 34GO-OPS-065-0, "Control Rod Movement," Ver. 13.1

### **Section 1R22: Surveillance Testing**

34SV-SUV-012-1, "PSW and RHRSW Valve Position Verification," Ver. 5.5  
 34SV-SUV-019-2, "Surveillance Checks," Ver. 41.9  
 34SV-E51-001-1, "RCIC Valve Operability," Ver. 18.3  
 42SV-R43-008-2, "Diesel Generator 2A LOCA/LOSP LSFT," Ver. 14.0  
 34SV-E51-002-1, "RCIC Pump Operability," Ver. 27.2  
 42SV-TET-001-0, "LLRT Testing Methodology," Ver. 11.1  
 42SV-TET-001-2, "Primary Containment Leak Rate Testing," Ver. 37.0

### **Section 1EP6: Drill Evaluation**

EP Exercise Narrative and Timeline for drill conducted March 28, 2017  
 Emergency Notification Forms dated March 28, 2017

### **Section 2RS1: Radiological Hazard Assessment and Exposure Controls**

#### Procedures, Guidance Documents, and Manuals

NMP-HP-001, Radiation Protection Standard Practices, Ver. 6.1  
 NMP-HP-206, Issuance, Use and Control of Radiation Work Permits, Ver. 4.1  
 NMP-HP-300, Radiation and Contamination Surveys, Ver. 4.2  
 NMP-HP-302, Restricted Area Classification, Postings, and Access Control, Ver. 8.2  
 NMP-HP-302-001, Radiological Key Control, Ver. 2.5  
 NMP-HP-302-002, Radioactive Material Labeling Instruction, Ver. 1.1  
 NMP-HP-305, Alpha Radiation Monitoring, Ver. 5.5  
 NMP-HP-404, Release of Materials from the RCA and Protected Areas, Ver. 2.2  
 62RP-RAD-016-0, Control of High Radiation Areas, Ver. 35.0

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E.I. Hatch NSTS Annual Inventory Reconciliation Report, 01/09/2017  
 Area Monitoring Program Results, 02/26/2016  
 Plant Hatch Radioactive Source Inventory, 09/04/2016  
 Radiological Survey # 138916, Plant Hatch U1 Radwaste 108  
 Radiological Survey # 138972, Plant Hatch ISFSI  
 Radiological Survey # 139267, Plant Hatch ISFSI  
 Radiological Survey # 139720, Plant Hatch U2 S.E. Diag. 87  
 Radiological Survey # 140664, Plant Hatch U2 Condenser Bay 112  
 Radiological Survey # 140972, Plant Hatch U2 Steam Chase



Radiological Survey # 141742, Plant Hatch U2 RWCU Hx  
 Radiological Survey # 141815, Plant Hatch U2 CPS A Pump Room  
 Radiological Survey # 142049, Plant Hatch U2 Torus 114  
 Radiological Survey # 143696, Plant Hatch U2 S.E. Diag. 97  
 Radiological Survey # 143576, Plant Hatch U2 DW 147  
 Air Sample Record for Air Sample Survey 17-046-7, U2 DW 147' FO-50A, 02/15/2017  
 Air Sample Record for Air Sample Survey 17-046-12, U2 DW 147' FO-50A, 02/15/2017  
 RWP No. 17-0004, Operations Inspection, Surveillance and Fire Watch  
 RWP No. 17-2005, Chem/I&C Transport Source, Perform Source Check, Cal Monitors- ARM's,  
 Steam Line Monitors & Post LOCA Monitors  
 RWP No. 17-2403 – TB Condenser/Hotwells – Repair/Remove Trash, Sludge, G31 Shielding &  
 Support Activities and High Rad/High Contamination Decon  
 RWP No. 17-2602, DW/SC: Initial Drywell Entry and Surveys, Remove Replace Equipment  
 Hatches, Confined Space Rescue, Hot Torques, Vessel Hydro/Leakage Inspections,  
 1000lb Walkdown & Support  
 RWP No. 17-2613, Drywell B31 Valve Inspection, PMs, Electrical, Repair Recirc Pump Seal,  
 Recirc DCP SNC315666 and Support Activities  
 RWP No. 17-2616, Drywell G31, G41, System Inspection/PMs/Repairs/Modifications and  
 Supporting Activities  
 RWP No. 17-0101, Unit 1 FIN Team Work in High Radiation Areas / LHRA  
 RWP No. 17-2006, RB E11, E21, B21, B31, P11, P41 & T41 Valve Repair, HVAC Filter  
 Replacement, Snubbers, Decon Pull Laundry & Trash  
 62RP-RAD-055-0, Forms HPX-1191 and HPX-1192, Annual Inventory of U1/U2 Spent Fuel  
 Pools, dated 10/18/2016

#### Corrective Action Program (CAP) Documents

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CR 10330658	CR 10313177
CR 10271667	CR 10060140
CR 10247572	CR 10131394
CR 10304052	CR 10168272
CR 10221506	CR 10172274
CR 10195545	CR 10274101
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 Baseline Inspection, 9/9/2016

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 Plant Hatch NL-15-1759, LR-PM-009-0916, 09-21-2016

#### **Section 2RS2: ALARA**

##### Procedures, Guidance Documents, and Manuals

NMP-AD-035, ALARA Program, Ver. 1.6  
 NMP-HP-204, ALARA Planning and Job Review, Ver. 4.7  
 NMP-HP-206, Issuance, Use and Control of Radiation Work Permits, Ver. 4.1  
 NMP-AD-035-001, Departmental Dose Champion Instruction, Ver. 1.0  
 NMP-AD-041, Cobalt Reduction Program, Ver. 1.0  
 NMP-AD-041-001, Cobalt Reduction for Valves, Ver. 1.0  
 NMP-AD-041-002, Valve Maintenance for Cobalt Reduction, Ver. 1.0

62RP-RAD-044-0, Identification and Tracking of Hotspots, Ver. 3.4  
 62RP-RAD-012-0, Selection and Use of Temporary Shielding, Ver. 3.0

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 Plant Edwin I. Hatch Unit 1, 1R27 ALARA Post Outage Review, 08/02/2016  
 Plant E.I. Hatch RP Daily Exposure Report, 02/13/2017 and 02/17/2017  
 Plant E.I. Hatch Unit 1 Recirculation System BWR Radiation Level Assessment and Control (BRAC) Trending, 1993 through 2016  
 Plant E.I. Hatch U2 Recirculation System BWR Radiation Level Assessment and Control (BRAC) Trending, 1993 through 2015  
 Southern Nuclear Operating Company Strategic Plan for Radiation Exposure Reduction 2017-2022 [includes Plant Hatch], Updated January 2017  
 ALARA Briefing 17-2205, Reactor Assembly/Disassembly on Refuel Floor  
 PARC Outage Preview 2R24, 01/20/2017  
 1R26 Outage Report  
 RP/OCC Turnover Meeting Agenda, 02/14/2017  
 ALARA Plan: 17-2205, 2R24 Vessel Assembly/Disassembly  
 ALARA Plan: 17-2605, 2R24 DW/FAC ISI and Support Activities  
 ALARA Plan: 17-2615, 2R24 CRD Replacement  
 ALARA Plan: 17-2617, 2R24 MSIVs/DCP  
 ALARA Review Package 16-1205, 1R26 Refuel Floor Vessel Disassembly/Reassembly, Cavity/Dryer Separator Work & Support  
 ALARA Review Package 16-1605, 1R26 DW/SC ISI and Support Activities  
 ALARA Review Package 16-1608, 1R26 Weld Overlay of N2C//N2E and 1E11F060A & Support  
 ALARA Review Package 16-1620, 1R26 Drywell/Steam Chase Install/Remove Shielding, Tents, Scaffolds and Support

CAP Documents

CR 10040217  
 CR 10226445  
 CR 0070296  
 CR 10048731  
 CR 10178796  
 CR 10183907  
 CR 10070258  
 CR 10337940

**2RS3: In-Plant Airborne Radioactivity Control and Mitigation**

Procedures, Guidance Documents, and Manuals

NMP-HP-301, Airborne Radioactivity Sampling and Evaluation, Version 3.7  
 NMP-HP-501, Radiological Respiratory Protection Program, Ver. 1.1  
 NMP-HP-501-001, Instruction for Selection and Use of Respiratory Protection Equipment for Radiological Protection, Ver. 1.3  
 NMP-HP-501-002, Control, Issuance, and Return of Radiological Protection Respiratory Protection Equipment, Ver. 2.0  
 NMP-HP-501-003, Inspection, Repair, and Storage of Non-SCBA Respiratory Protection Equipment, Ver. 1.1  
 NMP-HP-501-004, Inspection, Repair, and Storage of Self Contained Breathing Apparatus, Ver. 1.3  
 NMP-HP-509, Selection and Control of Portable Ventilation Units, Ver. 1.2

62HI-OCB-002-0, Portable HEPA Air Filtration Units and Vacuum Maintenance and Operation, Version 10.2  
 62HI-OCB-062-0, SCBA Charging System Operation, Ver. 4.2  
 62RP-RAD-061-0, Providing Ventilation to the Main Condensers, Ver. 1.0  
 62HI-OCB-092-0, AMS-4 OPERATION AND CALIBRATION, Ver. 3.0

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 62RP-RAD-003-0, Grade D Air Analysis Results for All Plant Compressors in Service, 11/24/16  
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 Vacuum Cleaner HEPA/Integrity Test for Vacuum #15688, 02/07/2017, Vacuum #10710135, 02/07/2017 and Vacuum #30503, 02/07/2017  
 NMP-HP-501-004, Inspection, Repair, and Storage of Self Contained Breathing Apparatus, Ver. 1.3 SCBA Monthly Inspection Reports, July 2016, August 2016 and September 2016

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 CR 10033022  
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 CR 10065056

#### **Section 2RS4: Occupational Dose Assessment**

##### Procedures, Guidance Documents, and Manuals

NMP-FLS-016-001, Control of Radiological Diving Operations, Ver. 1.1  
 NMP-GM-002, Corrective Action Program, Ver. 14.0  
 NMP-GM-002-001, Corrective Action Program Instructions, Ver. 35.2  
 NMP-HP-100, Bioassay Program, Ver. 1.2  
 NMP-HP-101, In-Vivo Bioassay and Internal Dose Assessment, Ver. 3.1  
 NMP-HP-102, In-Vitro Bioassay, Ver. 1.1  
 NMP-HP-103, Skin Dose Assessment, Ver. 1.2  
 NMP-HP-104, Use and Calibration of Whole Body Counters, Ver. 3.0  
 NMP-HP-104-002, Performance of Daily QC Checks, Daily Background Checks, and Environmental Background Checks, Ver. 1.0  
 NMP-HP-104-004, Reanalysis of Whole Body Count Results, Ver. 1.0  
 NMP-HP-104-006, Whole Body Counter Quality Controls, Ver. 1.0  
 NMP-HP-104-008, Resolving Unidentified Peaks and Assignment of Dose, Ver. 1.0  
 NMP-HP-105, Comparison of OSLD and ED Dosimetry Results, Ver. 1.3  
 NMP-HP-107, Individual Radiation Exposure Records and Reports, Ver. 3.5  
 NMP-HP-108, Issuance, Use, and Collection of Personnel Dosimetry, Ver. 2.6  
 NMP-HP-108-002, Use of EDE (Effective Dose Equivalent) Methodologies, Ver. 3.0  
 NMP-HP-109, Investigation, Evaluation and Management of Damaged, Lost, Malfunctioning or Alarming Dosimetry, Ver. 2.2  
 NMP-HP-110, HIS-20 Health Physics Information System Overview, Ver. 2.1

NMP-HP-201, Personnel Dosimetry Program, Ver. 2.1  
 NMP-HP-305, Alpha Radiation Monitoring, Ver. 5.5

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 Exposure records of five (5) Declared Pregnant Workers for various monitoring periods from February 2015 to February 2017  
 Hatch Plant Alpha Characterization Study, Rev 3, 7/5/2012  
 National Voluntary Laboratory Accreditation Program (NVLAP) Certificate of Accreditation, Effective Dates: 04/01/2016 through 03/31/2017  
 NMP-HP-102, Data Sheet 1, Diagnostic Excreta Sample Log, baseline and post dive tritium samples for three (3) divers, 2/4/2017 and 2/16/2017  
 NMP-HP-108, Data Sheet 1, Extremity/Multiple Dosimetry, for three (3) divers, 2/17/2017  
 NMP-HP-109, I Data Sheet 1, Investigation of Lost, Damaged or Malfunctioning Personnel Dosimetry, ID # 3963, 2/23/2017  
 Personnel Contamination Event Logs, 2/1/2015 through 2/17/2017  
 Report, HIS-20, Top Site Exposures, 02/14/2017  
 Report, HIS-20, Lost/Damaged TLD Data, 02/14/2015 thru 02/14/2017, 02/14/2017  
 Report, HIS-20, OSLD to ED Comparison 3/1/2015 – 3/2/2017, 3/2/2017  
 Canberra Report of Performance Testing Results of Canberra Industries GEM-5 Gamma Exit Monitors at E.I. Hatch for Passive Monitoring <1% ALI, 5/12/2012  
 Whole Body Counter (WBC) Nuclide Libraries, 3/1/2017  
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 2015 Area Monitoring Program Results, 2/26/2016  
 2016 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> Quarter Area Monitoring Program Results, 5/9/2016, 11/3/2016, and 2/16/2017  
 2017 Waste Stream Scaling Factor Determination, 12/6/2016

#### CAP Documents

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### **Section 2RS5: Radiation Monitoring Instrumentation**

#### Procedures, Guidance Documents, and Manuals

NMP-CH-021-004, Daily Quality Control of Gamma Spectroscopy System Using APEX, Ver. 1.0  
 NMP-EP-110-GL02, HNP EALs - ICs, Threshold Values and Basis, Ver 5.1  
 NMP-ES-005, Scoping and Importance Determination for Equipment Reliability, Ver. 16.0  
 NMP-ES-006, Preventive Maintenance Implementation and Continuing Equipment Reliability Improvement, Ver. 9.1  
 NMP-ES-006-001, PM Template Management and PM Optimization Guidance, Ver. 3.2  
 NMP-ES-006-002, Preventive Maintenance Change Requests, Ver. 5.0  
 NMP-GM-002, Corrective Action Program, Ver. 14.0  
 NMP-GM-002-001, Corrective Action Program Instructions, Ver. 35.2  
 NMP-HP-700, Radiation Protection Instrumentation Program, Ver. 1.1  
 NMP-HP-701, Daily Instrumentation Source Checks, Ver. 2.1  
 NMP-HP-703, RO-2, RO-2A and RO-20 Operation and Calibration, Ver. 2.1  
 NMP-HP-708, Operation and Calibration of the MGPI Telepole Instrument, Ver. 4.0  
 NMP-HP-709, Calibration of the Small Article Monitor (SAM-12), Ver. 2.2

NMP-HP-710, Operation and Calibration of Canberra iSolo Alpha/Beta Counting System, Ver. 5.0  
 NMP-HP-711, Operation and Calibration of HandECount Sample Counter, Ver. 3.1  
 NMP-HP-715, Operation and Calibration of the Ludlum Model 9-3 Ion Chamber, Ver. 2.1  
 NMP-HP-716, Operation and Calibration of the Ludlum Model 3 Count Rate Meter, Ver. 2.2  
 NMP-HP-717, Operation and Calibration of the AMP-100/200 Dose Rate Meter, Ver. 2.0  
 NMP-HP-718, Operation and Calibration of the Canberra GEM-5 Gamma Exit Monitor, Ver. 2.2  
 HNP System Health Report, U2, System D21, Area Radiation Monitoring System, 4<sup>th</sup> Quarter 2015, 2/2/2017  
 HNP System Health Report, Unit 2, System D11, Area Radiation Monitoring System, 1<sup>st</sup> Quarter 2016, 2/2/2017  
 NMP-HP-719, Operation and Calibration of the Canberra Argos-5AB Exit Monitor, Ver. 4.1  
 57CP-CAL-005-1, ARM System Calibration, Ver. 16.1  
 57CP-CAL-005-2, ARM System Calibration, Ver. 12.0  
 62HI-OCB-092-0, AMS-4 Operation and Calibration, Ver. 3.0  
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 Calibration Certificate and Documentation, GE Reuter-Stokes Portable Calibration Unit Model 846D959G002, S/N 6554071 with Cs-137 Source S/N B3-821 installed, 10/1/2003  
 Certificate of Calibration, Eckert & Ziegler Analytics Standard Radionuclide Source for the following Gamma Spectroscopy sources: Source # 103451, 103452, 103453, 103454, 103455, 103452A, 103457, 103458, 103459, and 103449A, reference date 4/1/2016; Source # 103450D, reference date 7/1/2016  
 Certificate of Calibration, Eckert & Ziegler Analytics Source for the following PCM and Portal monitor calibrations: Source # 86243-121, Source # 94710 reference date 12/23/2011; Source # 1559-67-2 (HNP source # CS-137-294), 1/1/2012  
 Certificate of Calibration, NE Technology for calibration source, S/N FD140 (HNP Source # AM-241-23), 4/21/1998  
 Certificate of Calibration, Victoreen Model 878-10 Calibrator, S/N 129 (HNP Source # CS-137-243), 5/7/1991 and 10/9/1997  
 Chemistry Counting Room Gamma Spectroscopy System, Detector #4, Efficiency Calibration Documents (multiple geometries), 9/9/2016 thru 10/7/2016  
 Chemistry Counting Room Liquid Scintillation Counter H-3 (Tritium) efficiency Calibration, 2/3/2017  
 Calibration Documents for the following portable radiation protection survey instruments: AMS-4 S/N 283, MPL# D21-N1754, 4/28/2016; AMS-4, S/N 1295, MPL# D21-1791, 5/7/2015 and 4/26/2016; Electra 1A/AP5BD S/N 3569 with Probe S/N 426, MPL# D21-N1633, 2/5/2015; Electra 1A/AP5BD S/N 3569 with Probe S/N 9019, MPL# D21-N1633, 4/14/2016; Ludlum 9-3 S/N 273817, MPL# D21-N1891, 5/5/2015; Ludlum 9-3 S/N 273826, MPL# D21-N1893, 5/5/2015; RADeCO H-809 V1, S/N 3128, MPL # D21-N516, 1/8/2015 and 6/30/2015; RADeCO H-809 V1, S/N 5945, MPL # D21-N1124, 1/7/2015, 7/2/2015, and 1/6/2016; RAS-1 S/N 626594, MPL # D21-N1361, 12/14/2015; RAS-1 S/N 731202, MPL # D21-N1577, 1/5/2016; RM-25 S/N 696, MPL# D21-N1510, 5/5/2016; RO-7 S/N 828, MPL# D21-N1064, 5/25/2015 and 3/4/2016; Telepole S/N 052, MPL# D21-N1827, 9/21/2015; RO-2A S/N 3439, MPL# D21-N825, 1/14/2016

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Maintenance Work Order (MWO) SNC-443101, Control Room Area Radiation Monitor 1D21-K600C Calibration, 9/19/2013

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MWO SNC-821144, Control Room Area Radiation Monitor 1D21-K600B Calibration, 2/15/2017

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Report, Southern Nuclear Operating Company Radiation Protection, Source Response Check Frequencies for Instruments Used for Contamination Monitoring at Radiologically Control Area and Restricted Area Exit Points, 7/15/2016

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2017 Waste Stream Scaling Factor Determination [10 CFR 61 characterization], 12/6/2016

64CI-OCB-011-0, Form Number PRO-0001, Source Calibrations of 1/2D11-K621 A and B [U2 Drywell Post Accident Radiation Monitor 2D11-621 A and B], 2/22/2013, 2/25/2015, and 2/27/2015

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CRs 10031126, 10056463, 10122975, and 10214156

#### **Section 40A1: Performance Indicator Verification**

##### Procedures

NMP-AD-029, "Preparation and Reporting of Regulatory Assessment PI Data," Ver. 1.0

NMP-AD-034, Key Performance Indicators, Ver. 3.0

##### Records and Data Reviewed

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Report, 2016 Dose Rate Alarms

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##### CAP Documents

CR 10022284

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CR 10172274

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

52SV-C11-002-2, "SDV Level FT&C (Thermal Sensors)," Ver. 11.0

Condition Reports

CR 10344772

Other

SED-3, "Safety Equipment Database Volume 3," Ver. 32.0

GL 81-18, "SDV Clarification of Diverse Instrumentation Requirement"

Drawings

H17789, H16065, H17783, H17787, H17791, S18452, A16473

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

CAR 266406, "Root Cause determination report for 2C EDG trip on low lube oil pressure"

52SV-R43-001-0, "Diesel, Alternator and Accessories Inspection," Ver. 28.1

Fairbanks Morse Owners' Group Maintenance Guidelines dated July 23, 2012

DOEJ-HXSNC266406-M001, "Evaluation of Backlash of Flexible Drive Mating Gear on the Cross Drive Shaft of the 2C Emergency Diesel Engine"

CR 10295889

CAR 267505

**Section 4OA5: Other Activities**Procedures

34AB-R22-002-1, "Loss of 4160V Emergency Bus," Ver. 2.0

34AB-R22-002-2, "Loss of 4160V Emergency Bus," Ver. 2.0

34SO-R22-001-1, "4160Vac System," Ver. 23.3

34SO-R22-001-2, "4160Vac System," Ver. 21.2

34SO-S22-001-1, "230KV Substation Switching," Ver. 8.4

34SO-S22-001-2, "500KV Substation Switching," Ver. 11.0

52PM-MON-003-0, "Infrared Thermography Program," Ver. 8.2

NMP-ES-074-004, "Fleet Thermography Instruction," Ver. 2.0

Maintenance Work Orders (MWOs)

SNC654775, SNC654779, SNC654780

Other

LC-COEF-PP-71142, 2014 Open Phase Lesson Plan

LC-COEF-PP-71171, 2017 Open Phase Lesson Plan

SOCT 14-2, System Operator Continued Training Completion

LOCT 14-2, Licensed Operator Continued Training Completion

Switchyard visual inspection report