



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

August 7, 2015

Mr. M.E. Reddemann
Chief Executive Officer
Energy Northwest
P.O. Box 968, Mail Drop 1023
Richland, WA 99352-0968

**SUBJECT: COLUMBIA GENERATING STATION – NRC INTEGRATED INSPECTION
REPORT 05000397/2015002**

Dear Mr. Reddemann:

On June 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. On June 29, 2015, the NRC inspectors discussed the results of this inspection with Mr. B. Schuetz, Plant General Manager, and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented three findings of very low safety significance (Green) in this report. Two of these findings involved violations of NRC requirements. Additionally, the NRC identified one traditional enforcement Severity Level IV violation with no associated finding. Further, three licensee-identified violations which were determined to be of very low safety significance are listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

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

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 IV; and the NRC resident inspector at the Columbia Generating Station.

M. Reddemann

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

Sincerely,

/RA R. Alexander for/

Thomas Hipschman, Acting Chief
Reactor Projects Branch A
Division of Reactor Projects

Docket Nos. 50-397
License Nos.: NPF-21

Enclosure: Inspection Report 05000397/2015002
w/ Attachment: Supplemental Information

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Thomas Hipschman, Acting Chief
Reactor Projects Branch A
Division of Reactor Projects

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Letter to M.E. Reddeman from T. Hipschman dated August 7, 2015

SUBJECT: COLUMBIA GENERATING STATION – NRC INTEGRATED INSPECTION
REPORT 05000397/2015002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000397

License: NPF-21

Report: 05000397/2015002

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: North Power Plant Loop
Richland, WA 99354

Dates: April 1, 2015 through June 30, 2015

Inspectors: D. Bradley, Resident Inspector
J. Drake, Senior Reactor Inspector
P. Elkmann, Senior Emergency Preparedness Inspector
N. Greene, PhD, Health Physicist
J. Groom, Senior Resident Inspector
J. O'Donnell, Health Physicist
C. Stott, Project Engineer

Approved By: Thomas Hipschman
Acting Chief, Project Branch A
Division of Reactor Projects

SUMMARY

IR 05000397/20150002; 04/01/2015 – 06/30/2015; Columbia Generating Station; Refueling and Other Outage Activities; Radiological Hazard Assessment and Exposure Controls; Occupational ALARA Planning and Controls; Event Follow-Up.

The inspection activities described in this report were performed between April 1 and June 30, 2015, by the resident inspectors at Columbia Generating Station and inspectors from the NRC's Region IV office. Three findings of very low safety significance (Green) are documented in this report. Two of these findings involved violations of NRC requirements. Additionally, NRC inspectors documented in this report one Severity Level IV violation with no associated finding. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Barrier Integrity

- Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to follow procedures associated with operation of the fuel pool cooling system. Specifically, on May 12, 2015, the licensee failed to follow operating procedures for the fuel pool cooling system resulting in a trip of the running fuel pool-cooling pump and subsequent lifting of a relief valve in the fuel pool cooling system. The standby fuel pool cooling pump automatically started to maintain fuel pool cooling. No significant change in refueling cavity level occurred since the plant was in the refueling mode of operation with the refueling cavity flooded approximately 23 feet above the reactor vessel flange. The licensee initiated Action Request 327593 to document the transient on the fuel pool cooling system and took immediate corrective action to disqualify the reactor operator pending remediation to address the human performance error.

The performance deficiency was more than minor, and therefore a finding, because it adversely affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," the inspectors determined the finding was of very low safety significance because (1) it did not adversely affect decay heat removal capabilities from the spent fuel pool causing the pool temperature to exceed the maximum analyzed temperature limit specified in the site-specific licensing basis, (2) it did not result from fuel handling errors, dropped fuel assembly, dropped storage cask, or crane operations over the spent fuel pool, (3) it did not result in a loss of spent fuel pool water inventory decreasing below the minimum analyzed level limit specified in the site-specific licensing basis, and (4) it did not involve spent fuel pool neutron absorber or a fuel bundle misplacement. This finding had a cross-cutting aspect in the area of human performance, avoid complacency, in that the reactor operator failed to consider potential undesired consequences of his actions before performing work and failed to implement appropriate error-reduction tools such as self and peer checking [H.12]. (Section 1R20)

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a non-cited violation of Technical Specification 5.7.1.a for the failure to barricade a high radiation area. Specifically, the high radiation area entry gate in the 572-foot "A" RHR Heat Exchanger Room was found in the open position and access to the area was unimpeded. The licensee took immediate corrective action to restore the boundary gate to the closed position, impeding access to the high radiation area. This issue was documented in the licensee's corrective action program as Action Request 328310.

The failure to barricade a high radiation area was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the violation was of very low safety significance (Green) because: (1) it was not an as low as reasonably achievable (ALARA) finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding had an avoid complacency cross-cutting aspect, in the area of human performance, because radiation workers failed to obtain radiation protection support to reposition the high radiation area boundary and/or restore the entry gate to the closed position when the area was exited [H.12]. (Section 2RS1)

- Green. The inspectors identified a finding associated with the licensee's failure to maintain doses as low as reasonably achievable (ALARA) while performing the Alternate Fuel Pool Cooling Modification job. Specifically, the licensee failed to effectively apply dose reduction methods, evaluate dose rates in a timely manner, prevent loitering and minimize workers in high dose fields, and implement in-field supervision as needed. As immediate corrective action, the licensee held site ALARA committee meetings and in-progress reviews to discuss the issues and developed lessons learned to incorporate into future job activities. The issue was documented into the licensee's corrective action program as Action Request 321415.

The failure to maintain doses ALARA while performing the Alternate Fuel Pool Modification job was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process attribute of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the finding was of very low safety significance because: (1) it was associated with ALARA planning and (2) the licensee's current three-year rolling average collective dose of 102 person-rem was less than the 240 person-rem threshold for boiling water reactors. The finding had a field presence cross-cutting aspect, in the human performance cross-cutting area, because the licensee failed to have both radiation protection and engineering leaders commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations [H.2]. (Section 2RS2)

Cornerstone: Miscellaneous

- Severity Level IV. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.72(b)(3)(xiii) for the licensee's failure to make a required event notification within eight hours for a major loss of assessment capability. Specifically, the licensee failed to make a report for an unplanned loss of rod position indication on April 29, 2015 that resulted in the inability to evaluate the position of all control rods for emergency action levels involving failures of the reactor protection system and anticipated transient without scram scenarios. As corrective actions to address a late 8-hour report, the licensee submitted Event Notification EN 51027 on April 30, 2015 and initiated Action Request AR 326719.

The inspectors determined that the failure to make a required event notification within the time limits specified in regulations was a violation 10 CFR 50.72. The violation was evaluated using Section 2.2.4 of the NRC Enforcement Policy, because the failure to submit a required licensee event report may impact the ability of the NRC to perform its regulatory oversight function. As a result, this violation was evaluated using traditional enforcement. In accordance with Section 6.9 of the NRC Enforcement Policy, this violation was determined to be a Severity Level IV, non-cited violation. The inspectors determined that a cross-cutting aspect was not applicable because the issue involving untimely reports to the NRC was strictly associated with a traditional enforcement violation. (Section 4OA3.2)

Licensee-Identified Violations

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

PLANT STATUS

The plant began the inspection period at 100 percent power. On May 9, 2015, the plant shutdown for refueling outage R-22. On June 25, 2015, the reactor was made critical following completion of refueling outage R-22. On June 28, 2015, operators synchronized the main generator with the grid and began power ascension. On June 30, 2015, the plant reached 65 percent power where it remained for the remainder of the inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Summer Readiness for Offsite and Alternate AC Power Systems

a. Inspection Scope

On June 15, 2015, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open action requests for these systems. The inspectors walked down the transformer yard to observe the material condition of equipment providing off-site power sources. The inspectors assessed corrective actions for identified degraded conditions and verified that the licensee had considered the degraded conditions in its risk evaluations and had established appropriate compensatory measures.

The inspectors verified that the licensee's procedures included appropriate measures to monitor and maintain availability and reliability of the off-site and alternate-ac power systems.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- May 5, 2015, reactor core isolation cooling system

- May 28, 2015, standby service water system train A
- June 29, 2015, condensate system including the condensate storage tanks

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

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

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On June 19-22, 2015, the inspectors performed a complete system walk-down inspection of the 480 Volt electrical distribution system. The inspectors reviewed the licensee's procedures and system design information to determine the correct system lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, in-process design changes, temporary modifications, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

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

- April 25, 2015, Fire Areas RC-2 and 3, cable spreading room and cable chase
- May 9, 2015, Fire Area RC-10, main control room
- May 11, 2015, Fire Area R-2, primary containment
- June 18, 2015, Fire Area DG-1, high pressure core spray diesel room

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors

evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

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

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

.1 Non-destructive Examination (NDE) Activities and Welding Activities

a. Inspection Scope

The inspectors directly observed two volumetric examinations and eight surface examinations. The inspectors verified that each examiner held current qualifications to perform each examination.

Examinations Observed

<u>System</u>	<u>Weld Description</u>	<u>Examination Type</u>
Reactor Pressure Vessel	Reactor Vessel Flange Threads	Ultrasonic Examination
Reactor Feed Water	Mockup of Leading Edge Flow Monitor weld	Phased Array Ultrasonic Examination
Reactor Pressure Vessel	Bushing at Stud 35A	Visual (VT-1)
Main Steam	MS-RV-1A Inlet Nuts (13)	Visual (VT-1)
Main Steam	MS-RV-4C Inlet Nuts (13)	Visual (VT-1)
Reactor Pressure Vessel	Sparger Bracket-55	Remote Visual (VT-3)
Reactor Pressure Vessel	Sparger Bracket-65	Remote Visual (VT-3)
Reactor Pressure Vessel	Riser to Riser Brace Weld RS-9	Remote Visual (VT-1)
Steam Dryer	FWS-End Bracket 65 Attachment Weld	Remote Visual (VT-3)
Steam Dryer	FWS-End Bracket 005 Attachment Weld	Remote Visual (VT-3)

The inspectors reviewed the licensee's G02-15-056 letter "Columbia Generating Station, Docket No. 50-397 Deviation From BWRVIP Flaw Evaluation Requirements For Jet Pump Riser Indication" dated April 14, 2015, and the supporting evaluation. The crack

on Riser 9 was originally identified in April 2011, during refueling outage 20. The licensee has inspected and evaluated the indication during each subsequent refueling outage and the size has remained consistent.

The inspectors reviewed the records for 11 nondestructive examinations. The inspectors verified that each examiner held current qualifications to perform each examination.

Examination Records Reviewed

<u>System</u>	<u>Weld Description</u>	<u>Examination Type</u>
Control Rod Drive	CRD-TK-SDIV 1B XI-66	Penetrant Test
Control Rod Drive	CRD-TK-SDIV 1A XI-66	Penetrant Test
Control Rod Drive	CRD-TK-SDIV 1B XI-68	Ultrasonic Test
Control Rod Drive	CRD-TK-SDIV 1B XI-69	Ultrasonic Test
Control Rod Drive	CRD-TK-SDIV 1A XI-68	Ultrasonic Test
Control Rod Drive	CRD-TK-SDIV 1A XI-66	Radiographic Test
Control Rod Drive	CRD-TK-SDIV 1B XI-66	Radiographic Test
Control Rod Drive	CRD-TK-SDIV 1B XI-68	Radiographic Test
Control Rod Drive	CRD-TK-SDIV 1B XI-69	Radiographic Test
Control Rod Drive	CRD-TK-SDIV 1A XI-68	Radiographic Test
Control Rod Drive	CRD-TK-SDIV 1A XI-69	Radiographic Test

No welding on reactor pressure boundary components was performed while the inspectors were on site. The inspectors observed the qualification welding for welders that would be working on the installation of the Leading Edge Flow Monitor, pressure boundary for a risk significant system. The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX, requirements. The inspectors also verified, through observation and record review, that essential variables for the welding process were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications. Specific documents reviewed during this inspection are listed in the attachment. These activities constitute completion of one inservice inspection sample, as defined in Inspection Procedure 71111.08.

b. Findings

No findings were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed 13 condition reports which dealt with inservice inspection activities and found that the corrective actions for these were appropriate. From this review the inspectors concluded that the licensee had an appropriate threshold for entering inservice inspection issues into the corrective action program and had procedures that direct a root cause evaluation when necessary. The licensee also had an effective program for applying industry inservice inspection operating experience.

b. Findings

No findings were identified.

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

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On June 9, 2015, the inspectors observed simulator training for an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the requalification activities.

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

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

On May 12-13, 2015, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened risk due to transferring of the shutdown cooling method to an alternate flow path in accordance with procedure SOP-FPC-ASSIST-ALT, "Alternate Fuel Pool Cooling Assist," Revision 9. The inspectors observed the operators' performance of the following activities:

- Monitoring of refueling cavity temperatures in accordance with procedure PPM 3.4.4, "Natural Circulation," Revision 5, including the pre-job brief
- Procedure SOP-RHR-SDC-BYPASS, "Bypassing RHR Shutdown Cooling Isolation Logic in Mode 4 and 5," Revision 15

In addition, the inspectors assessed the operators' adherence to plant procedures, including OI-9, "Operations Standards and Expectation," Revision 61, and other operations department policies.

These activities constitute completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed two instances of degraded performance or condition of safety-related structures, systems, and components (SSCs):

- May 4-7, 2015, uninterruptible power supplies including AR 282446 documenting an incorrectly installed relay in inverter E-IN-3B, and AR 308348 documenting an unexpected trouble alarm for inverters E-IN-3A and E-IN-3B
- June 16, 2015, floor drain and floor drain radioactive system review

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of two maintenance effectiveness samples, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- April 5, 2015, planned yellow risk during maintenance on residual heat removal system train A

- April 23, 2015, planned yellow risk during maintenance on diesel generator 2 including inspection of electrical circuit breaker E-CB-8/DG2
- May 11, 2015, planned yellow risk during filling of the refueling cavity and maintenance of division 1 systems for refueling outage R-22
- June 11, 2015, planned yellow risk during operations with potential to drain the reactor vessel including replacement of the mechanical seal for reactor recirculation pump RRC-P-1A

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

Additionally, on May 5, 2015, the inspectors observed the operators response to emergent work activities involving the startup transformer that had the potential to cause an initiating event. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected structures, systems, and components.

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

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

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

- April 27, 2015, AR 326266, operability determination for diesel generator 3 following discovery of wrong fuse type installed in fuel oil pump DO-P-6
- May 1, 2015, AR 326322, operability determination for residual heat removal heat exchanger RHR-HX-1B following discovery of low margin during thermal performance testing

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

These activities constitute completion of two operability and functionality review samples as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed three temporary plant modifications that affected risk-significant structures, systems, and components (SSCs):

- May 8, 2015, Engineering Change EC 13811 to remove a non-Class 1E load from electrical power panel E-PP-7AA
- May 21, 2015, Engineering Change EC 13550 to supply temporary power from motor control center E-MC-7F to transformer E-TR-8FD
- June 22, 2015, Engineering Change EC 13917 to close and disable the motor-operator for high pressure core spray valve HPCS-V-11 for Cycle 23

The inspectors verified that the licensee had installed and removed these temporary modifications in accordance with technically adequate design documents. The inspectors verified that these modifications did not adversely impact the operability or availability of affected SSCs. The inspectors reviewed design documentation and plant procedures affected by the modifications to verify the licensee maintained configuration control.

These activities constitute completion of three samples of temporary modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- May 22, 2015, post-maintenance test of division 1 components including integrated testing performed under procedure TSP-DG1/LOCA-B501, "Standby Diesel Generator DG1 LOCA Test," Revision 24
- May 26, 2015, post-maintenance test of residual heat removal valve RHR-V-8 following repair of valve seat under Work Order 01172820

- May 26 and June 29, 2015, post-maintenance test of control rod blades 06-35, 22-31 and 26-31 following replacement under Work Order 02041210
- June 8, 2015, post-maintenance test of service water pump SW-P-1B following overhaul under Work Order 02047965
- June 16-17, 2015, post-maintenance test of high pressure core spray system following completion of maintenance in refueling outage R-22
- June 19, 2015, post-maintenance test of reactor water cleanup system following piping repairs performed under Work Order 02073760 to address flow accelerated corrosion

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

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

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

During the station's refueling outage that concluded on June 28, 2015, the inspectors evaluated the licensee's outage activities. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan prior to the outage
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Observation and review of reduced-inventory activities
- Observation and review of fuel handling activities
- Monitoring of heat-up and startup activities

These activities constitute completion of one refueling outage sample as defined in Inspection Procedure 71111.20.

b. Findings

Introduction. The inspectors reviewed a self-revealing Green, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to follow

procedures associated with operation of the fuel pool cooling system. The failure to follow fuel pool cooling system operating procedures resulted in a trip of the running fuel pool-cooling pump and subsequent lifting of a relief valve in the fuel pool cooling system.

Description. On May 12, 2015, the licensee performed procedure PPM 10.3.26, "Assembly and Movement of the Cavity In-Vessel Service Platform," Revision 4 used to install a service platform in the refueling cavity to support reactor in-vessel inspections. Procedure PPM 10.3.26 directed operators to adjust skimmer surge tank volume in the spent fuel pool to less than or equal to 15 percent to account for the volume that is expected to be displaced when the cavity in-vessel service platform is lowered into the refueling cavity. The skimmer surge tank is the suction source for the fuel pool cooling pumps. To accomplish this adjustment, procedure PPM 10.3.26, Step 7.8.10.a directed operators to place condensate valve COND-V-42 in close to prevent automatic water makeup to the fuel pool skimmer surge tank. While performing procedure PPM 10.3.26, Step 7.8.10.a, a plant reactor operator inadvertently shut fuel pool cooling valve FPC-V-181A, the suction valve for the running fuel pool-cooling pump A. The control switches for COND-V-42 and FPC-V-181A are in very close proximity to each other on the spent fuel pool cooling control room panel. This action isolated the pump's suction source causing it to trip on low suction pressure. Fuel pool cooling pump B auto-started to maintain cooling to the fuel pool.

Following the loss of fuel pool cooling pump A, the operator re-opened FPC-V-181A and re-started the pump. Starting the second fuel pool-cooling pump caused relief valve FPC-RV-21A on the system demineralizer to lift sending approximately 1500 gallons of reactor cavity water to the equipment drain system. No significant change in refueling cavity level occurred since the plant was in the refueling mode of operation with the refueling cavity flooded approximately 23 feet above the reactor vessel flange. The starting of the fuel pool cooling pump A was done without implementing procedure SOP-FPC-OPS, "Fuel Pool Cooling and Cleanup Operations," Revision 7, Section 5.2 which provides steps for shifting to a two fuel pool cooling pump lineup and includes actions to help minimize pressure transients on the system demineralizer. Following the transient, the licensee shifted to a single fuel pool cooling pump alignment in accordance with procedure SOP-FPC-OPS.

The licensee initiated Action Request 327593 to document the transient on the fuel pool cooling system and took immediate corrective action to disqualify the reactor operator pending remediation to address the human performance error.

Analysis. The failure to implement procedure associated with operation of the fuel pool cooling system was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it adversely affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," the inspectors determined the finding was of very low safety significance because (1) it did not adversely affect decay heat removal capabilities from the spent fuel pool causing the pool temperature to exceed the maximum analyzed temperature limit specified in the site-specific licensing basis, (2) it did not result from fuel handling errors, dropped fuel assembly, dropped storage cask, or crane operations over the spent fuel pool, (3) it did not result in a loss of spent fuel pool water inventory decreasing below the minimum analyzed level limit

specified in the site-specific licensing basis, and (4) it did not involve spent fuel pool neutron absorber or a fuel bundle misplacement. This finding had a cross-cutting aspect in the area of human performance, avoid complacency, in that the reactor operator failed to consider potential undesired consequences of their actions before performing work and failed to implement appropriate error-reduction tools such as self and peer checking [H.12].

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Paragraph 4.k of Regulatory Guide 1.33, Appendix A, requires, in part, written instructions for changing modes of operation of the fuel pool cooling system. Procedure 10.3.26, "Assembly and Movement of the Cavity In-Vessel Service Platform," Revision 4 and SOP-FPC-OPS, "Fuel Pool Cooling and Cleanup Operations," Revision 7 are written instructions, required by Regulatory Guide 1.33, Revision 2, Appendix A, used for changing modes of operation of the fuel pool cooling system. Contrary to the above, on May 12, 2015, the licensee failed to implement written procedures as recommended in Regulatory Guide 1.33, Revision 2. Specifically, the licensee failed to follow Procedure 10.3.26, Step 7.8.10.a, to shut valve COND-V-42. Instead the operator shut valve FPC-V-181A resulting in a trip of the running fuel pool cooling pump. The licensee also failed to follow procedure SOP-FPC-OPS, Section 5.2 when initiating two fuel pool cooling pump operations resulting in a lifting of relief valve FPC-RV-21A and diversion of approximately 1500 gallons of reactor cavity water to the equipment drain system. Because this finding was of very low safety significance (Green) and entered into the licensee's corrective action program as AR 327593, this violation is being treated as a non-cited violation consistent with the Enforcement Policy: NCV 05000397/2015002-01, "Failure to Follow Procedures Associated with Operation of the Fuel Pool Cooling System."

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

In-service tests:

- May 9, 2015, procedure ISP-MS/IST-R101, "MSRV Setpoint Verification Using SPVD," Revision 7

Containment isolation valve surveillance tests:

- May 21, 2015, procedure TSP-TIP/X27F-R801, "LLRT of TIP-V-15 and Union, TIP-V-6," Revision 4

Other surveillance tests:

- April 15, 2015, procedure OSP-SW-Q101, "SW Spray Pond Average Sediment Depth Measurement," Revision 10
- April 28, 2015, procedure TSP-DG-E501, "Simultaneous Start of All Three Diesel Generators," Revision 6

- May 12, 2015, procedure 8.3.361, "ATWS-ARI Functional Test – Cold Shutdown," Revision 8
- May 30, 2015, procedure OSP-NSSE-W401, "Refuel Equipment Interlocks CFT," Revision 6

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

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

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector performed an in-office review of emergency plan implementing Procedure 13.2.1, "Emergency Exposure Levels/Protective Action Guides," Revision 22, transmitted April 2, 2015. This revision added the Security Communications Center and Security Alarm Station as locations where potassium iodide is stored, updated the dose and number of doses of potassium iodide to be taken, and made other administrative changes.

This revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revision adequately implemented the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspector verified that the revision did not decrease the effectiveness of the emergency plan. This review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

These activities constitute completion of one emergency action level and emergency plan changes sample as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

The inspectors assessed the licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities. The inspectors assessed the licensee's implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures. The inspectors walked down various portions of the plant and performed independent radiation dose rate measurements. The inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors reviewed licensee performance in the following areas:

- The hazard assessment program, including a review of the licensee's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels
- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions
- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiologically controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability
- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage and contamination controls, the use of electronic dosimeters in high noise areas, dosimetry placement, airborne radioactivity monitoring, controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools, and posting and physical controls for high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements
- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls since the last inspection

These activities constitute completion of one sample of radiological hazard assessment and exposure controls as defined in Inspection Procedure 71124.01.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of Technical Specification 5.7.1.a for the failure to barricade a high radiation area. Specifically, the

high radiation area entry gate in the 572-foot "A" RHR Heat Exchanger Room was found in the open position and access to the area was unimpeded.

Description. On May 18, 2015, during Radiological Controlled Area walkdowns of the reactor building, the inspectors entered the 572-foot "A" RHR Heat Exchanger Room and observed that the high radiation area entry gate was positioned such that it did not impede entry into the area. The licensee took immediate corrective action, restoring the boundary gate to the closed position and thereby impeding access to the high radiation area. This issue was entered into the licensee's corrective action program as Action Request 00328310.

On May 19, 2015, the licensee conducted a verification survey of the area to determine accessible dose rates within the "A" RHR Heat Exchanger Room. Survey 2263 confirmed that there were accessible dose rates in the area at or above the high radiation area threshold (100 millirem per hour). The licensee bounded the length of time that the high radiation area boundary gate was improperly positioned to be less than one day, following discussions with the radiation protection technicians involved.

On May 20, 2015, during the "R-22 Safety and Human Performance Stand Down," licensee management communicated key human performance information to radiation workers regarding procedural requirements for radiological boundaries. Specifically, the licensee reminded workers that except during ingress or egress (e.g., entry or exit through a swing gate), only Radiation Protection personnel were allowed to alter radiological boundaries.

Analysis. The failure to barricade a high radiation area was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, Licensee Management stated that failure to barricade a high radiation area could result in unplanned and uncontrolled exposures to radiation workers. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the violation was of very low safety significance (Green) because: (1) it was not as low as reasonably achievable (ALARA) finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding had an avoid complacency cross-cutting aspect, in the area of human performance, because radiation workers failed to implement appropriate error reduction tools. Specifically, the workers failed to verify the gate had been restored to the closed position when the area was exited [H.12].

Enforcement: Technical Specification Section 5.7.1.a requires, in part, that each entryway to a high radiation area shall be barricaded and conspicuously posted as a high radiation area. Contrary to the above, on May 18, 2015, the high radiation area in the "A" RHR Heat Exchange Room was not barricaded. Specifically, the inspectors found the high radiation area boundary gate in the open position. The immediate action of the licensee was to restore the boundary gate to prevent unimpeded access to the high radiation area. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as Action Request 00328310, this

violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy: NCV 05000397/2015002-02, "Failure to Barricade a High Radiation Area."

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). During the inspection, the inspectors interviewed licensee personnel and reviewed licensee performance in the following areas:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/post-job reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

These activities constitute completion of one sample of occupational ALARA planning and controls as defined in Inspection Procedure 71124.02.

b. Findings

Introduction. The inspectors identified a finding of very low safety significance (Green) associated with the licensee's failure to maintain doses as low as reasonably achievable (ALARA) due to inadequate planning and control of work activities related to the Alternate Fuel Pool Cooling Modification job.

Description. While reviewing the post-job review package for Radiological Work Permit (RWP) 30003576, "Alternate Fuel Pool Cooling Modification," from February 2015, the inspectors identified that the licensee's ALARA planning and control process failed to prevent unplanned and unintended collective doses. Specifically, the final dose estimate for RWP 30003576 was 11.149 person-rem, but the actual accumulated

collective dose was 17.755 person-rem, a dose overage of 6.606 person-rem or 53 percent.

NRC inspectors reviewed numerous documents and held discussions with the licensee to determine the failures and issues with this job that resulted in unintended dose. The post-job reviews and job timeline addressed several major issues that the inspectors determined were within the licensee's control and could have been prevented. Some of the key ALARA-related issues were as follows:

- Dose reduction methods were not always applied effectively, such as storing high-rad trash in work areas and delays installing shielding
- Elevated dose rates existed in some work areas
- Workers were loitering in high dose fields rather than using low dose waiting areas
- In-progress reviews not always were performed in a timely manner
- The number of workers in work areas was not minimized
- In-field supervisory oversight of welding was lacking

The primary issues with this work occurred because of welds that required rework, resulting in additional work hours and dose. In the post-job review, the licensee identified contributors to dose, such as the borescope inspection being performed incorrectly, the 10-inch pipe being tacked in upside down, and the welding of the "sweep-o-let" fitting being reworked three times because licensee oversight and in-field expertise was lacking. Once in-field supervision for the welding issues was effectively implemented, the welding work was completed without further error. These issues contributed approximately 4.5 additional person-rem of unplanned dose to the job

Licensee procedure, HPI-0.19, "Radiation Protection Standards and Expectations," Revision 014, defines numerous standards to be followed by staff. Section 3.2, "Standards," states that Radiation Protection Supervision will maintain awareness of plant radiological conditions, and Radiological Planning Staff will provide multiple barriers during ALARA work planning processes for work in radiologically significant areas to prevent unplanned exposures, and ensure sufficient planning is performed to minimize personal exposure ALARA. Procedure GEN-RPP-01, "ALARA Program Description," Revision 008, Section 3.12, states the Maintenance Manager's and Work Control Manager's responsibilities regarding the ALARA Program include ensuring that work activities in radiologically controlled areas are preplanned and performed according to approved ALARA work practices. The inspectors concluded these standards were not successfully implemented, resulting in unplanned, unintended dose for the Alternate Fuel Pool Cooling Modification job.

As immediate corrective actions, the licensee held site ALARA committee meetings and in-progress reviews to discuss the issues and developed lessons learned to incorporate into future job activities. The issue was documented in the licensee's corrective action program as Action Request 00321415.

Analysis. The failure to maintain doses ALARA while performing the Alternate Fuel Pool Cooling Modification job was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process attribute of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the finding was of very low safety significance (Green) because: (1) it was associated with ALARA planning and (2) the licensee's current three-year rolling average collective dose of 102 person-rem was less than the 240 person-rem threshold for boiling water reactors. The finding had a field presence cross-cutting aspect, in the human performance cross-cutting area, because the licensee failed to have radiation protection and engineering leaders commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations [H.2].

Enforcement. This finding does not involve enforcement action because no violation of regulatory requirements was identified. Because this finding does not involve a violation and is of very low safety significance, it is identified as FIN 05000397/2015002-03, "Failure to Maintain Doses ALARA for the Alternate Fuel Pool Cooling Modification Job."

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of April 1, 2014 through April 1, 2015, the inspectors reviewed licensee event reports (LERs), maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of the safety system functional failures performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors verified that there were no unplanned exposures or losses of radiological control over locked high radiation areas and very high radiation areas during the period of July 1, 2014 to March 31, 2015. The inspectors reviewed a sample of radiologically controlled area exit transactions showing exposures greater than 100 mrem. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the occupational exposure control effectiveness performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed corrective action program records for liquid or gaseous effluent releases that occurred between July 1, 2015 and March 31, 2015 and were reported to the NRC to verify the performance indicator data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the radiological effluent technical specifications (RETS)/offsite dose calculation manual (ODCM) radiological effluent occurrences performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the

significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Semiannual Trend Review

a. Inspection Scope

To verify that the licensee was taking corrective actions to address identified adverse trends that might indicate the existence of a more significant safety issue, the inspectors reviewed corrective action program documentation associated with the following licensee-identified trend:

- Multiple degraded components in the service water system (AR 322051)

Also, the inspectors identified the following trend that might indicate the existence of a more significant safety issue, and reviewed the licensee's response to it:

- A negative trend related to adherence to corrective action program procedures. This trend was related to multiple NRC identified findings involving problem identification and resolution.

The specific documents reviewed during this trend review are listed in the attachment.

These activities constitute completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

The inspectors' review of the trends identified above produced the following observations and assessments:

- For negative trend involving multiple degraded service water components, the licensee completed a condition evaluation under AR 322051 and an apparent cause evaluation under AR 322256 which concluded that an apparent increase in the system fouling factor was responsible for several low flow conditions and decreased thermal performance from the residual heat removal heat exchangers. As corrective actions, the licensee performed detailed visual inspections and cleaning of the residual heat removal heat exchangers. Additionally, under AR 331050, the licensee assigned an apparent cause evaluation to review the biocide and chemical treatments used in the service water system.

The inspectors considered that in response to this trend, the licensee had completed an appropriate evaluation and had developed appropriate corrective actions.

- For the negative trend involving the failure to adhere to corrective action program

procedures, the licensee assigned an action for a common cause evaluation under AR 324738. This evaluation focused on if any commonalities existed between a series of problem identification and resolution findings identified in 2013 and a series of similar finding identified in 2015. The evaluation was due to be complete by July 17, 2015.

The inspectors considered that in response to this trend, the licensee had assigned an appropriate evaluation to determine the cause of this negative trend. The inspectors will review the results of the evaluation in 3rd quarter 2015.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected the following issue for an in-depth follow-up:

- April 15, 2015, AR 325768 involving inadequate compensatory measures for disabled high-energy line break hazard barriers.

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

These activities constitute completion of one annual follow-up sample as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000397/2015-001-00, "Non-Conservative Compensatory Measure for Flooding Barriers," Revision 0

On December 18, 2014, the NRC identified a failure to maintain a low-pressure coolant injection system operable contrary to Technical Specification 3.5.1, "ECCS – Operating." The licensee removed a concrete floor plug on the 471' Reactor Building elevation, above the train B residual heat removal (RHR-B) system. This floor plug serves as a barrier between adjacent reactor building spaces for flooding. The licensee had credited an hourly flood tour as the compensatory measure to maintain RHR-B operable. Following a question by the NRC, the licensee discovered that the hourly flood tour was non-conservative to mitigate the impact of a postulated moderate energy line crack and that the potential for unmitigated flooding resulted in inoperability of the RHR-B system for a period from December 3, 2014 to December 18, 2014. Since this period was greater than allowed by the plant's technical specifications, the event was reportable

under 10 CFR 50.72. The inspectors reviewed the licensee event report associated with this event and determined that the report adequately documented the summary of the event including the cause of the event and potential safety consequences. The NRC previously identified non-cited violation 05000397/2015001-01, "Failure to Comply with ECCS Technical Specifications," documenting the violation of the plant's technical specifications. No additional performance deficiencies were identified. This licensee event report is closed.

.2 Loss of Control Rod Position Indication

a. Inspection Scope

The inspectors reviewed the licensee's response to a control rod position indication malfunction at 95 percent reactor power on April 29, 2015. This condition resulted in a loss of indication for 82 of 185 control rods. The inspectors reviewed the licensee's response to the event, including but not limited to:

- Status of plant equipment and backup assessment capabilities
- Non-emergency notifications made as required by 10 CFR 50.72 and
- Development and implementation of licensee repair plans.

b. Findings

Introduction: The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.72(b)(3)(xiii) for the licensee's failure to make a required event notification within eight hours for a major loss of assessment capability. Specifically, the licensee failed to make a report for an unplanned loss of rod position indication on April 29, 2015 that resulted in the inability to evaluate the position of all control rods for Emergency Action Levels (EALs) involving failures of the Reactor Protection System (RPS) and Anticipated Transient Without Scram (ATWS) scenarios.

Description: On April 29, 2015, at 6:11 p.m., the licensee experienced an unexpected loss of the rod position indication system (RPIS) for 82 of 185 control rods with the reactor in Mode 1 at 95% power. The RPIS system provides normal and emergency indication for control rod position for the licensed operators. The licensee entered abnormal procedure ABN-RPIS, "Loss of Control Rod Position Indication," Revision 6, and determined rod position using Attachment 7.3, "Alternate Rod Position Indication." This attachment involves a multi-meter continuity check of the position switches for each individual rod. This iterative method is both time and labor intensive but can be used to meet Surveillance Requirements for Technical Specification 3.1.3 "Control Rod Operability."

The inspectors reviewed the loss of RPIS against the licensee's EAL criteria contained in procedure PPM 13.1.1, "Classifying the Emergency," Revision 47 to determine the impact of lost rod position indications on the licensee's ability to assess an emergency condition. Procedure PPM 13.1.1, Attachment 7.2, Section 2.2, "Reactivity Controls," includes EAL criteria involving failures of control rods and/or control rod indications. Specifically, EALs 2.2.A.1, 2.2.S.1, 2.2.G.1 each contain an AND statement which

states, "Automatic RPS actuation failed to result in a control rod pattern which alone always assures reactor shutdown under all conditions."

The inspectors determined that the licensee could not assess the position of the 82 control rods without RPIS indication such that a timely assessment of EALs 2.2.A.1, 2.2.S.1, 2.2.G.1 could be accomplished. Specifically, following a reactor scram, control room operators could not assess the position of 82 control rods using the ABN-RPIS attachment 7.3 method within a 15-minute period in order to declare if there was an emergency. Instead, upon a reactor scram, the licensee may declare an Alert or higher emergency due to the inability to verify the shutdown control rod pattern. The inspectors concluded that the issue represented a reportable condition and that the licensee failed to make a 8 hour report required by 10 CFR 50.72(b)(3)(xiii).

As corrective actions to address a late 8-hour report, the licensee submitted Event Notification EN 51027 on April 30, 2015 and initiated Action Request AR 326719. The licensee determined the partial loss of RPIS was due to a failed power supply and, after component replacement and post-maintenance testing, RPIS was fully restored on May 1, 2015.

Analysis: The inspectors determined that the failure to make a required event notification within the time limits specified in regulations was a violation of 10 CFR 50.72. The violation was evaluated using Section 2.2.4 of the NRC Enforcement Policy, because the failure to submit a required licensee event report may impact the ability of the NRC to perform its regulatory oversight function. As a result, this violation was evaluated using traditional enforcement. In accordance with Section 6.9 of the NRC Enforcement Policy, this violation was determined to be a Severity Level IV, non-cited violation. The inspectors determined that a cross-cutting aspect was not applicable because the issue involving untimely reports to the NRC was strictly associated with a traditional enforcement violation.

Enforcement: Title 10 CFR Part 50.72(b)(3)(xiii), "Eight-hour reports," requires, in part, that "the licensee shall notify the NRC as soon as practical and in all cases within eight hours of the occurrence any event that results in a major loss of emergency assessment capability." Contrary to the above, on April 29, 2015, the licensee failed to notify the NRC within eight hours of a major loss of emergency assessment capability. Specifically, the licensee failed to report within 8 hours, a partial loss of RPIS that resulted in the inability to assess the position of 82 control rods as required by Procedure PPM 13.1.1, Attachment 7.2, Section 2.2, "Reactivity Controls," EALs 2.2.A.1, 2.2.S.1, 2.2.G.1. Because this violation was of very low safety significance and entered into the licensee's corrective action program as AR 326719, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC's Enforcement Policy: NCV 05000397/2015002-04, "Failure to Report a Major Loss of Emergency Assessment Capability."

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

40A6 Meetings, Including Exit

Exit Meeting Summary

On May 15, 2015, the inspectors presented the results of this inservice inspection to Mr. B. Sawatzke, Chief Operating Office and Chief Nuclear Officer, and other members of your staff. Licensee management acknowledged the inspection findings. The inspectors acknowledged review of proprietary material during the inspection which had been returned to the licensee.

On May 21, 2015, the inspectors presented the radiation safety inspection results to Mr. G. Hettel, Vice President of Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On June 18, 2015, the inspector conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan and emergency action levels to Mr. A. Fahnestock, Program Manager, Emergency Preparedness. The licensee acknowledged the issues presented.

On June 29, 2015, the inspectors presented the resident inspection results to Mr. B. Schuetz, Plant General Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as non-cited violations.

- Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Columbia Generating Station Final Safety Analysis Report, Section 8.3.1.4 established the design basis for the station's electrical distribution system and required, in part, that the physical independence of electrical systems comply with the requirements of IEEE 308-1974, "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations." IEEE 308-1974 required, in part, that non-Class 1E circuits may be supplied from Class 1E power systems, provided that the Class 1E systems are not degraded below an acceptable level. Contrary to the above, prior to April 29, 2015, the licensee failed to establish measures to assure that the design basis was correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to translate the design basis into specifications for Class 1E electrical power panel E-PP-7AA because Circuit 13 of this power panel supplied a non-Class 1E circuit without appropriate isolation devices such that the non-Class 1E circuit would degrade the Class 1E system below an acceptable level. The finding was of very low safety significance because the finding is a deficiency affecting the design or qualification of a mitigating system where the system maintained its functionality. This issue was entered into the licensee's corrective action program as AR 326573.

- Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures and Drawings,” requires, in part that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Licensee procedure PPM 1.3.57, “Barrier Impairment,” Revision 0-32 is a safety related procedure used to establish compensatory measures to maintain equipment operable following a high-energy line break when certain hazard barriers are removed. Contrary to the above, prior to April 15, 2015, the licensee failed to prescribe procedures of a type appropriate to the circumstances for activities affecting quality. Specifically, licensee procedure PPM 1.3.57, “Barrier Impairment,” Revision 0-32 failed to establish appropriate measures to maintain electrical instrument racks operable following a postulated high energy line break because the licensee incorrectly concluded that high energy line break events are slow developing events where there would be sufficient time to implement compensatory measure to restore disabled barriers. The finding was of very low safety significance because the finding did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee’s maintenance rule program for greater than 24 hours. This issue was entered into the licensee’s corrective action program as AR 325768.
- Title 10 CFR 50.54(q)(2) requires a licensee to follow and maintain in effect an emergency plan that meets the requirements of 10 CFR 50.47(b). Planning standard 10 CFR 50.47(b)(4) requires a licensee have a standard emergency action level scheme. Licensee procedure 13.1.1, “Classifying the Emergency,” Revision 47, implements the licensee’s standard emergency action level scheme. Emergency action levels 5.1.U.1 and 5.1.A.1 require classification of an emergency based, in part, on a valid reading exists which exceeds the Table 3 unusual event or alert effluent monitor thresholds for plant service water radiation indicting switch TSW-RIS-5. Contrary to the above, between April 3, 2015 and April 25, 2015, the licensee did not follow an emergency plan meeting the requirements of 10 CFR 50.47(b)(4). Specifically, the licensee ability to classify emergency action levels 5.1.U.1 and 5.1.A.1 was degraded because the “modify select” parameter was set incorrectly for TSW-RIS-5 resulting in an unintended attenuation factor of 15. This finding was identified by the licensee and entered in the licensee’s corrective action program as Action Request AR 326313. This finding was determined to be of very low safety significance because it did not involve Emergency Action Levels greater than Alert per Table 5.4-1 of Inspection Manual Chapter 0609 Appendix B, “Emergency Preparedness Significance Determination Process.”

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Abney, Assistant Manager, Operations
O. Brooks, Emergency Preparedness Coordinator
D. Brown, Manager, Planning, Scheduling and Outages
K. Dittmer, Manager, Technical Services
J. Dorwin, ASME Program Lead Engineer
A. Fahnstock, Program Manager, Emergency Preparedness
D. Gregoire, Manager, Regulatory Affairs
W. Guldemon, Recovery Manager
M. Hedges, Principal Licensing Engineer, Regulatory Affairs
G. Hettel, Vice President, Operations
G. Higgs, Manager, Maintenance
A. Javorik, Vice President, Engineering
B. Khayyat, Code Program Supervisor
N. LaBella, NDE Level III
M. Laudisio, Manager, Radiation Protection
M. McLain, Principal Health Physicist, Radiation Protection
C. Moore, NDE Supervisor
G. Pierce, Manager, Training
S. Richter, ISI Program Manager
B. Schuetz, Plant General Manager
G. Strong, Electrical Design Supervisor
D. Suarez, Regulatory Compliance Engineer
J. Trautvetter, Compliance Supervisor, Regulatory Affairs
L. Williams, Licensing Supervisor
D. Wolfgramm, Compliance Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000397/2015-002-01	NCV	Failure to Follow Procedures Associated with Operation of the Fuel Pool Cooling System (Section 1R20)
05000397/2015-002-02	NCV	Failure to Barricade a High Radiation Area (Section 2RS1)
05000397/2015-002-03	FIN	Failure to Maintain Doses ALARA for the Alternate Fuel Pool Cooling Modification Job (Section 2RS2)
05000397/2015-002-04	NCV	Failure to Report a Major Loss of Emergency Assessment Capability (Section 4OA3)

Closed

05000397/2015-001-00	LER	Non-Conservative Compensatory Measure for Flooding Barriers (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OI-53	Offsite Power	14

Action Requests (ARs)

287001	287929	294929	296621	297451
299038	299371	299969	302237	304944
306626	309244	314741	318368	318705
319659	325176	325349	329645	331008
331073	286506	288563	293750	298561
302001	308349	314266	315807	317496
318232	318878	322531	326919	

Section 1R04: Equipment Alignment

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SOP-CST-LU	Condensate Storage and Transfer System Valve and Breaker Lineup	0
SOP-ELEC-480V-OPS	480 Volt Electrical Power Distribution System Operation	4
SOP-HPCS-LU	HPCS Valve and Breaker Lineup	2
SOP-HVAC/CR-LU	Control, Cable, and Critical Switchgear Rooms HVAC Lineup	1
SOP-HVAC/DG-LU	Diesel Generator and Cable Cooling HVAC System Breaker Lineup	0
SOP-HVAC/RB-LU	Reactor Building Ventilation System Valve and Breaker Lineup	1
SOP-RCIC-LU	RCIC Valve and Breaker Lineup	2
SOP-RHR-LU	RHR System Valve and Breaker Lineup	
SOP-SGT-LU	Standby Gas Treatment System Lineup	0
SOP-SW-LU	Standby Service Water System Valve & Breaker Lineup	6
SOP-SW-LU	Standby Service Water System Valve and Breaker Lineup	6

Action Requests (ARs)

326350	317330	293284	287943	295445
296442	298171	302887	303227	309192
310109	323762	325641	324184	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
C91-0181	Component functional narrative RCIC-TK-1	1

Section 1R05: Fire ProtectionProcedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
15.2.16	Thermal Detector – Channel Function Test	6
	Columbia Generating Station Pre-Fire Plan	3
ABN-FIRE	Fire	34

Action Requests (ARs)

318956	326143	292884	301975	302927
314726	318956	326143		

Work Orders

02045008

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
FPSI 14-0163	Fire Protection System Impairment Permit	June 18,2015
FPF 2.10-30	HVAC & Smoke Removal System – Control Room Habitability Smoke Intrusion Analysis	1

Section 1R08: Inservice Inspection Activities

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AUT-UT-1	Inspection Practice For Automated Shear Wave Examination	2
PDI-UT-10	Generic Procedure For the Ultrasonic Examination Of Dissimilar Metal Welds	E
PDI-UT-2	Generic Procedure For the Ultrasonic Examination Of Austenitic Pipe Welds	F
GE-UT-300	Procedure For Manual Examination Of Reactor Vessel Assembly Welds In Accordance With PDI	11
GE-UT-717	Procedure For The Examination Of Reactor Pressure Vessel Welds From The Inside Surface With Microtomo In Accordance With Appendix VIII	0
NDE-RT-15	Radiographic Examination Procedure	4
RT-Gen	Radiography Examination	6
MMP-DO-E002	Pressure Test of Diesel Fuel Oil System	2
SPS-3-1	Liquid Penetrant Examination Instructions	1
SPS-7-1	Visual Examination	3
SPS-6-26	Examination Of Reactor Vessel Threads In Flange	1
PPM 10.2.17	Certified Consumable Material Control	11
PPM 10.1.13	Foreign Materials Controls For Systems And Components	26
MWP-6	ASME General Welding Standard Specification	15

Action Requests

AR 00284518	AR 00284956	AR 00287195	AR 00289707	AR 00296486
AR 00297941	AR 00321604	AR 00321446	AR 00322655	AR 00324029
AR 00327233	AR 00372367	AR 00037448		

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Various Welder Performance Qualification Records	
	Various NDE Technician Certification Records	
G02-14-118	Columbia Generating Station, Docket No. 50-397 Response To Request For Additional Information For Relief Request 31SI-14	August 27, 2014
GI2-15-021	Columbia Generating Station - Request For Alternative 31SI-14 To The Requirements Of The ASME Code	February 13, 2015

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision / Date</u>
	Energy Northwest Snapshot Self-Assessment Report	
G02-14-033	Columbia Generating Station, Docket No. 50-397; Inservice Inspection (ISI) Program Request 31SI-15	March 7, 2014
GI2-15-020	Columbia Generating Station - Request For Alternative 31SI-15 To The Requirements Of The ASME Code	February 13, 2015
G02-15-056	Columbia Generating Station, Docket No. 50-397; Deviation From BWRVIP Flaw Evaluation Requirements For Jet Pump Riser Indication	April 14, 2015
	Columbia Generating Station Final Safety Analysis Report	December 2009
	Columbia Generating Station Reactor Vessel Internals Inspection Guide and Pre-job Training	
	Review of GE Procedure GEH-UT-717 V2 for equivalency to GE-UT-717 V0	January 14, 2009
M512-1	Diesel Oil And Miscellaneous Systems	44
M512-4	Flow Diagram Diesel Oil And Miscellaneous Systems	11

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

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.1	Operating Policies, Programs and Practices	119
3.4.4	Natural Circulation	5
OI-09	Operations Standards and Expectations	62
OSP-MS/IST-Q701	MSIV Closure Test – Shutdown	16
SOP-RHR-SDC-BYPASS	Bypassing RHR Shutdown Cooling Isolation Logic in Mode 4 and 5	15
SWP-PRO-01	Procedure and Work Instruction Use and Adherence	26

Action Requests (ARs)

327651

Section 1R12: Maintenance Effectiveness

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.47	Fuse Replacement Control	11
10.25.1	Inspections and Cleaning Division 1, E-IN-3A and E-IN-3B, and Division 2, E-IN-2A and E-IN-2B, Inverters	27

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ME-02-02-23	Calculation for PFSS Flooding Analysis – Radwaste Building	0

Action Requests (ARs)

308348	300649	326573	289091	291144
291248	291283	292088	292889	294136
301949	308348	317513	317598	317659
326573	288761	315480	315824	317205
324397	329509	330920	212121	

Work Orders

01179141	01179142	01179143	01179144
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision / Date</u>
184003	Inverters/Transfer Switches`	2
MOT-BAT-2-2	Inverters	September 25, 2014
942-00, 15	Solidstate Controls, Inc. 15KV A Inverter/Static Switch 84VC0150-03 84W0020-06	5

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.83	Protected Equipment Program	19
3.4.1	Minimizing the Potential of Draining the Reactor Vessel	19
OI-45	Color Banding of Control Room Instrumentation	6
OI-9	Operations Standards and Expectation	62
OSP-HPCS/IST-R701	HPCS Check Valve Operability Refueling Shutdown	6
SOP-CAVITY-FILL	Reactor Cavity and Dryer Separator Pit Fill	16
SOP-HPCS-CST/SP	HPCS CST and Suppression Pool Operations	12
SOP-HPCS-FILL	HPCS Fill and Vent	11

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ME-02-14-18	Upper Containment Pool Draindown Times During Various RFO Maintenance Conditions	0
5.19.11	Calculation for HPCS Pressure Drop	5

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M200 SH 100	High Pressure Core Spray Pump Section	12

Engineering Changes (ECs)

13856	13855	13858
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Work Orders

02047682

Action Requests (ARs)

328046	327477
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
1606	Night Order	February 13, 2015

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-SW	Service Water Trouble	15
OSP-INST-H101	Shift and Daily Instrument Checks	83

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ME-02-92-41	Calculation for Ultimate Heat Sink Analysis	6

Action Requests (ARs)

327866	326322	331050	322256	325218
325219	325262			

Section 1R18: Plant Modifications

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.9	Temporary Modifications	51
ENG-DES-02	Columbia Generating Station Design Change Process	17

Action Requests (ARs)

326573

Engineering Changes (ECs)

13550	13811	13917
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Section 1R19: Post-Maintenance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
6.5.12	Control Blade Shuffle or Replacement	14
10.2.224	RHR-V-8 & RHR-V-9 Overhaul Procedure (20"/900# Velan Pressure Seal Gate Valve)	1
10.25.132	Thrust Adjustment and Diagnostic Analysis of Motor Operated Valves	30
10.25.56	Installation of Strain Gages on Valves	11
10.25.4	Lubrication and Inspection of Limitorque MOV(s)	27
10.2.54	Pump Testing	8
18.1.8	SW-P-1B Pre-Service Test	5
OSP-HPCS-A701	High Pressure Core Spray Keep Fill Integrity Test	9
OSP-HPCS/IST-Q701	HPCS System Operability Test	48
OSP-SW/IST-Q702	Standby Service Water Loop B Operability	29
SWP-TST-01	Post Maintenance Testing Program	16
TSP-DG1/LOCA-B501	Standby Diesel Generator DG 1 LOCA Test	24

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E/I-02-91-03	Standby Diesel Generator (DG-2) Load Calculation	17
NE-02-99-12	Study Calculation for Secondary Containment Liquid Bypass Leakage	0
NE-02-04-05	Offsite and Control Room LOCA Dose Using AST Source Term	0

Engineering Changes (ECs)

9861	8229
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Action Requests (ARs)

052791	040836	330384	330495	330461
330459	330453	330452	328736	328737
328500	328305	327944	328856	328838
328831	328947	329009	329004	328893
330716	330644			

Work Orders

02002251	01172820	02002256	02063954
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Problem Evaluation Requests

298-0928

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision / Date</u>
	IST Program Plan 4 th 10-Year Interval Columbia Generating Station	0
41A-00, 76	Velan Engineering Companies	6
CGS-FTS-0168	Columbia Generating Station Alternative Source Term	2
Information Notice No. 91-56	Potential Radioactive Leakage to Tank Vented to Atmosphere	September 19, 1991

Section 1R20: Refueling and Other Outage ActivitiesProcedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.64	Plant Clearance Order	35
1.3.81	Maintaining Plant Status Control	10
10.3.26	Assembly and Movement of the Cavity In-Vessel Service Platform	4
3.1.2	Reactor Plant Startup	80
3.2.1	Normal Plant Shutdown	80
3.3.1	Reactor Scram	61
3.4.4	Natural Circulation	5

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-ELEC-125VDC	Plant BOP, DIV, 1, 2 & 3 125 VDC Distribution System Failures	13
OSP-MS-M701	Bypass Valves Test	10
SOP-FPC-OPS	Fuel Pool Cooling and Cleanup Operations	7
SOP-RHR-SDC	RHR Shutdown Cooling	25
SWP-FFD-04	Work Hour Controls	8
SWP-PUR-04	Material, Equipment, Parts and Supplies Procurement	14

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M529	Flow Diagram Nuclear Boiler – Main Steam System Reactor Building	106
M620-524-1	Control Logic Diagram – Standby Service Water System	14
884-00	Jet Pump	1

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision / Date</u>
R-22	Outage Shutdown Safety Plan	0
980049-0	Safety Evaluation	May 27, 1998

Action Requests (ARs)

329491	041694	327593	327762	240219
327593	327928	331081	330728	331972
331561	321499	325841	327236	327953
328989	329076	329985	321979	320866
321982	325866	326662	327085	327727

Problem Evaluation Requests

298-0499

Section 1R22: Surveillance Testing

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.5.1	Surveillance Testing Program	31
8.3.361	ATWS-ARI Functional Test – Cold Shutdown	8
MSP-MS/IST-R101	MSRV Accessories Operability – In-Situ	4
OSP-NSSE-W401	Refuel Equipment Interlocks CFT	6
OSP-SW-Q101	SW Spray Pond Average Sediment Depth Measurement	10
TSP-DG-E501	Simultaneous Start of All Three Diesel Generators	6
TSP-TIP/X27F-R801	LLRT of TIP-V-15 and Union, TIP-V-6	4

Action Requests (ARs)

327233 326587

Work Orders

02044890

Engineering Changes (ECs)

13820

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
11.2.7.1	Area Posting	040
11.2.7.3	High Radiation area, Locked High Radiation Area, and Very High Radiation Area Controls	041
GBP-CAP-01	Non-Regulatory Action Program	002
HPI-0.19	Radiation Protection Standards and Expectations	014
HSP-SSC-O801	Sealed Source and Device Surveillance Testing	005
SWP-RPP-01	Radiation Protection Program	012

Self-Assessments and Audits

<u>Number</u>	<u>Title</u>	<u>Date</u>
AR-SA 316770	Snapshot Self-Assessment Report RP Readiness for NRC Inspection	March 16, 2015

Action Request Reports (ARs)

313927	314487	314678	314702	315071
315618	316604	317510	317936	320171
321147	321665	323497	323527	323985
324104	324384	328037	328300	328582
328584	328592			

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision</u>
30003362	R22 RX 548/572 RHR HX Room "A" **HR**	0
30003420	2014 TG Inspect/Repair in Heater Bays LTE 75% Power **LHRA**	1
30003510	2015 TG Inspect/Repair in Heater Bays LTE 75% Power **LHRA**	2
30003520	2015 RW NUPAC Cage Processing**LHRA*High Risk*STK**	0
30003553	R22 ST MSIV Maintenance and Refurb Tasks **HRA** **High Risk	2
30003624	R22 DW DCA/VR RHR-V-8 – Repair Seat Leakage	2

Radiation Survey Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
393	Quarterly Routine Survey Warehouse 5 (Building 80)	May 11, 2015
921	Monthly Routine Survey Radwaste 437'	March 29, 2015
1522	Initial Survey – Drywell 535'	May 9, 2015
1783	Post Draindown of RHR Side Investigational Survey Reactor Building 572' A RHR HX Room	May 13, 2015
2093	Initial Breach of RHR-V-8 Reactor Building 501' Southwest Valve Room	May 17, 2015

2155	Breach of RHR-V-8 and Decon Reactor Building 501' Southwest Valve Room	May 18, 2015
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Radiation Survey Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
2252	Update Radiological Survey Radwaste 437' NUPAC Cage	May 19, 2015
2257	Open SAC Door N2F, Remove Insulation N2G, N2H, N2F – Drywell 535', 210-270 AZ	May 19, 2015
2260	Decon of tools and Equipment Rx 606 Decon Sink	May 19, 2015
2263	Radiation Dose Verification Reactor Building 572' A RHR HX Room	May 19, 2015
2296	Rx 606' CISP Routine Survey	May 19, 2015
2300	Carousel Dose Rates After SubPile Draindown Rx 501' Drywell Under Vessel	May 19, 2015
2302	Opening SAC Doors of N1A Drywell 535'	May 20, 2015

Air Sample Survey Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
2156	Rx 606' South Side of Rx Cavity – LPRM Removal	May 18, 2015
2186	Rx 606' South Side - Shiftily Routine	May 18, 2015
2267	DW 501' Under Vessel Sub Pile Cleanout	May 19, 2015
2292	Drywell Under Vessel – EDR HX Set up	May 20, 2015

Source Control Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Radioactive Source Inventory	April 21, 2015
	Sources >1 Ci in TES Source Tracking System	May 6, 2015
F153	Ludlum Model 177 Alarm Ratemeter Calibration with GM Probe	February 4, 2015
1500	HSP-SSC-O801 Sealed Source Leak Check for LPRM's and IRM	May 7, 2015
WO 02066835	HSP-SSC-O801 Sealed Source Check	April 27, 2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	R-22 Safety and Human Performance Stand Down	May 20, 2015
	Shiftly Key Inventory Sheet	May 20, 2015
26985	Spent Fuel Pool Material Inventory	November 11, 2013
ALARA Task 020729560101	TEDE ALARA Evaluation Relocate and Replace EDR HX-1/RCC-V-89	

Section 2RS2: Occupational ALARA Planning and Controls

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
GEN-RPP-01	ALARA Program Description	008
GEN-RPP-02	ALARA Planning and Radiation Work Permits	032
GEN-RPP-13	ALARA Committee	011
HPI-0.19	Radiation Protection Standards and Expectations	014
HPI-12.97	Remote Radiological Work Monitoring	004
SWP-RPP-01	Radiation Protection Program	012

Action Request Reports (ARs)

00309449	00310864	00312474	00313925	00314594
00314628	00314702	00318681	00320603	00320729
00321399	00321415	00321686	00322084	00322334
00324314				

Radiation Work Permits

<u>Number</u>	<u>Title</u>	<u>Revision</u>
30003397	2014 Maintenance Activities <100 Mrem in Non-High Rad Areas	01
30003409	2014 Rx 548' FPC HX Room and Associated FPC Areas	01
30003531	2015 Rx 422'/441' RHR A/B, HPCS, CRD Pump Room Miscellaneous Work	02
30003576	2014/2015 Alternate FPC Modification	04
30003577	2015 Alternate FPC Modification Radiography	00
30003594	2015 Rx 548' FPC-V-141 Repair	01

Radiation Surveys

<u>Number</u>	<u>Title</u>	<u>Date</u>
2594114	Pre-Job Survey for EDR/DSP Drain Line Pipe Flush – RX 548'	August 25, 2014
2596214	Update Survey for EDR/DSP Drain Line Pipe Flush – RX 548'	August 29, 2014
2604714	Pre & Post Chem Decon Recovery	September 5, 2014
2695014	Monthly Survey – Rx 471'	December 10, 2014
2702214	Monthly Routine Survey – Reactor Building 441'/442' South Side	December 18, 2014
2124	RCIC-V-64 Inspection – RX Building 548', RWCU HX Room	May 17, 2015
2321	Insulation Removal Rad Update – RWCU HX Room	May 20, 2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
AR-SA #00316789	Energy Northwest Snapshot Self-Assessment Report: Occupational ALARA Planning and Controls	March 19, 2014
	Columbia Generating Station CRE/Source Term Reduction 10 Year Plan	May 16, 2014
Project 25476501	ALARA Post-Job Review: Alternate FPC Modification	May 5, 2015
	Refueling Outage 22 Radiological Dose Status	May 18-21, 2015

Section 40A1: Performance Indicator Verification

Miscellaneous Documents

<u>NUMBER</u>	<u>TITLE</u>	<u>Revision</u>
NEI 99-02	Regulatory Assessment Performance Indicator Guidelines	6

Section 40A2: Problem Identification and Resolution

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
13.1.1	Classifying the Emergency	46-47
13.1.1A	Classifying The Emergency – Technical Bases	30
16.6.3	TSW Radiation Monitor – CFT	12

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SWP-CAP-01	Corrective Action Program	30

Action Requests (ARs)

330508	327611	327143	328882	326567
326511	326068	326313	327537	329509
329595	325768	326065	326195	326302
326511	327127	328392	331045	

Work Orders

02072050

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

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-RPIS	Loss of Control Rod Position Indication	6
SWP-CAP-01	Corrective Action Program	31
13.1.1A	Classifying The Emergency – Technical Bases	30

Action Requests (ARs)

326584	326719
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
EN 51027	Event Notification – Rod Position Indicator System (RPIS) Unplanned Outage	April 30,2015

INSERVICE INSPECTION DOCUMENT REQUEST

Inspection Dates: May 11, 2015 through May 15, 2015

Inspection Procedures: IP 71111.08 "Inservice Inspection (ISI) Activities"

Inspectors: Jim Drake

A. Information Requested for the In-Office Preparation Week

The following information should be sent to the Region IV office in hard copy or electronic format (ims.certrec.com preferred), in care of James Drake, by April 6, 2014, to facilitate the selection of specific items that will be reviewed during the onsite inspection week. The inspectors will select specific items from the information requested below and then request from your staff additional documents needed during the onsite inspection week (Section B of this enclosure). We ask that the specific items selected from the lists be available and ready for review on the first day of inspection. Please provide requested documentation electronically if possible. If requested documents are large and only hard copy formats are available, please inform the inspector(s), and provide subject documentation during the first day of the onsite inspection.

If you have any questions regarding this information request, please call the inspectors as soon as possible.

A.1 ISI/Welding Programs and Schedule Information

a) A detailed schedule (including preliminary dates) of:

- i) Nondestructive examinations (NDEs) planned for ASME Code Class systems and containment, performed as part of your ASME Section XI risk informed (if applicable), and augmented ISI programs during the upcoming outage.

Provide a status summary of the NDE inspection activities vs. the required inspection period percentages for this Interval by category per ASME Section XI IW-2400 (Do not provide separately if other documentation requested contains this information).

- ii) Welding activities that are scheduled to be completed during the upcoming outage (ASME Code Class structures, systems, or components)
- iii) Examinations associated with the BWRVIP program, i.e. In-Vessel Visual Inspections.

- b) A copy of ASME Section XI Code Relief Requests and associated NRC Safety Evaluations applicable to the examinations identified above.
- c) A list of NDE reports (ultrasonic, radiography, magnetic particle, dye penetrate, Visual VT-1, VT-2, and VT-3), which have identified relevant conditions on ASME Code Class systems since the beginning of the last refueling outage. This should include the previous Section XI pressure test(s) conducted during start up and any evaluations associated with the results of the pressure tests. The list of NDE reports should include a brief description of the SSC where the relevant condition was identified.
- d) A list with a brief description (e.g., system, material, pipe size, weld number, and NDE performed) of the welds in ASME Code Class systems which have been fabricated due to component repair/replacement activities since the beginning of the last refueling outage, or are planned to be fabricated this refueling outage.
- e) If reactor vessel weld examinations required by the ASME Code are scheduled to occur during the upcoming outage, provide a detailed description of the welds to be examined and the extent of the planned examination. Please also provide reference numbers for applicable procedures that will be used to conduct these examinations.
- f) A copy of any 10 CFR Part 21 reports applicable to your SSCs within the scope of Section XI of the ASME Code that have been identified since the beginning of the last refueling outage.
- g) A list of any temporary non-code repairs in service (e.g., pinhole leaks).
- h) Copies of the most recent self-assessments for the ISI, Welding, and Alloy 600 programs.

A.2 Additional Information Related to All Inservice Inspection Activities

- a) A list with a brief description of ISI inspection related issues (e.g., condition reports) entered into your corrective action program since the beginning of the last refueling outage (for the applicable unit). For example, a list based upon data base searches using key words related to piping such as: ISI, ASME Code, Section XI, NDE, cracks, wear, thinning, leakage, rust, corrosion or errors in piping/NDE examinations.
- b) Provide names and phone numbers for the following program
 - leads: ISI contacts (Examination, planning)
 - Containment Exams
 - Snubbers and Supports
 - Repair and Replacement Program Manager

Licensing Contact

Site Welding Engineer

- B. Information to be provided onsite to the Inspector(s) at the Entrance Meeting (May 11, 2015):

B.1 ISI / Welding Programs and Schedule Information

- a) Updated schedules for ISI/NDE activities, planned welding activities, and schedule showing contingency repair plans, if available.
- b) For ASME Code Class welds selected by the inspectors from the lists provided from section A of this enclosure, please provide copies of the following documentation for each subject weld:
 - i) Weld data sheet (traveler)
 - ii) Weld configuration and system location
 - iii) Applicable Code Edition and Addenda for weldment
 - iv) Applicable Code Edition and Addenda for welding procedures
 - v) Applicable weld procedures (WPS) used to fabricate the welds
 - vi) Copies of procedure qualification records (PQRs) supporting the WPS from B.1.b.v
 - vii) Copies of mechanical test reports identified in the PQRs above
 - viii) Copies of the nonconformance reports for the selected welds (If applicable)
 - ix) Radiographs of the selected welds and access to equipment to allow viewing radiographs (If RT was performed)
 - x) Copies of the pre-service examination records for the selected welds
 - xi) Copies of welder performance qualifications records applicable to the selected welds, including documentation that welder maintained proficiency in the applicable welding processes specified in the WPS (at least six months prior to the date of subject work)
 - xii) Copies of NDE personnel qualifications (VT, PT, UT, RT), as applicable
- c) For the ISI related corrective action issues selected by the inspector(s) from

section A of this enclosure, provide a copy of the corrective actions and supporting documentation.

- d) For the NDE reports with relevant conditions on ASME Code Class systems selected by the inspectors from section A above, provide a copy of the examination records, examiner qualification records, and associated corrective action documents.
- e) A copy of (or ready access to) most current revision of the ISI Program Manual and Plan for the current Interval.
- f) For the NDEs selected by the inspectors from section A of this enclosure, provide copy of the NDE procedures used to perform the examinations (including calibration and flaw characterization/sizing procedures). For ultrasonic examination procedures qualified in accordance with ASME Code, Section XI, Appendix VIII, provide documentation supporting the procedure qualification (e.g., the EPRI performance demonstration qualification summary sheets). Also, include qualification documentation of the specific equipment to be used (e.g., ultrasonic unit, cables, and transducers including serial numbers) and NDE personnel qualification records.

B.2 Codes and Standards

- a) Ready access to (i.e., copies provided to the inspector(s) for use during the inspection at the onsite inspection location, or room number and location where available):
 - i) Applicable Editions of the ASME Code (Sections V, IX and XI) for the inservice inspection program and the repair/replacement program.
 - ii) Any other applicable EPRI and industry standards referenced in the plant procedures for welding and NDE activities

**The following items are requested for the
Occupational Radiation Safety Inspection
at Columbia Generating Station
(May 18 – 22, 2015)
Integrated Report 2015002**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **May 1, 2015**.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1- A," applicable organization charts in file/folder "1- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact the lead inspector, Natasha Greene, at (817)200-1154 or Natasha.Greene@nrc.gov.

Currently, the other inspector will be John O'Donnell [(817)200-1441 or John.ODonnell@nrc.gov].

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

- 1. Radiological Hazard Assessment and Exposure Controls (71124.01)**
Date of Last Inspection: August 11, 2014
- A. List of contacts (with official title) and telephone numbers for the Radiation Protection Organization Staff and Technicians
- B. Applicable organization charts

- C. Audits, self-assessments, and LERs written since date of last inspection, related to this inspection area
- D. Procedure indexes for the radiation protection procedures
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspectors reviews the procedure indexes.
 - 1. Radiation Protection Program Description
 - 2. Radiation Protection Conduct of Operations
 - 3. Personnel Dosimetry Program
 - 4. Posting of Radiological Areas
 - 5. High Radiation Area Controls
 - 6. RCA Access Controls and Radworker Instructions
 - 7. Conduct of Radiological Surveys
 - 8. Radioactive Source Inventory and Control
 - 9. Declared Pregnant Worker Program
- F. List of corrective action documents (including corporate and subtiered systems) since date of last inspection
 - a. Initiated by the radiation protection organization
 - b. Assigned to the radiation protection organization
 - c. Identify any CRs that are potentially related to a performance indicator event

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide documents which are “searchable” so that the inspectors can perform word searches.

If not covered above, a summary of corrective action documents since date of last inspection involving unmonitored releases, unplanned releases, or releases in which any dose limit or administrative dose limit was exceeded (for Public Radiation Safety Performance Indicator verification in accordance with IP 71151)

- G. List of radiologically significant work activities scheduled to be conducted during the inspection period (If the inspection is scheduled during an outage, please also include a list of work activities greater than 1 rem, scheduled during the outage with the dose estimate for the work activity.)
- H. List of active radiation work permits
- I. Radioactive source inventory list

2. **Occupational ALARA Planning and Controls (71124.02)**

Date of Last Inspection: June 16, 2014

- A. List of contacts (with official title) and telephone numbers for ALARA program personnel
- B. Applicable organization charts
- C. Copies of audits, self-assessments, and LERs, written since date of last inspection, focusing on ALARA
- D. Procedure index for ALARA Program

- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspectors reviews the procedure indexes.
1. ALARA Program
 2. ALARA Committee
 3. Radiation Work Permit Preparation
- F. A summary list of corrective action documents (including corporate and subtiered systems) written since date of last inspection, related to the ALARA program. In addition to ALARA, the summary should also address Radiation Work Permit violations, Electronic Dosimeter Alarms, and RWP Dose Estimates.

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide documents which are “searchable.”

- G. List of work activities greater than 1 rem, since date of last inspection. Include original dose estimate and actual dose.
- H. Site dose totals and 3-year rolling averages for the past 3 years (based on dose of record)
- I. Outline of source term reduction strategy