



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
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ARLINGTON, TX 76011-4511

May 7, 2014

Mr. Mark 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 05000397/2014002

Dear Mr. Reddemann:

On March 23, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Columbia Generating Station. On March 27, 2014, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

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

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

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/**

Nicholas H. Taylor, Branch Chief  
Reactor Projects Branch D  
Division of Reactor Projects

Docket No.: 50-397  
License No: NPF-21

Enclosure: Inspection Report 05000397/2014002  
w/Attachments:  
1. Supplemental Information  
2. TI 2515-182 Phase 2  
Inspection Document Request

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DOCUMENT NAME: R:\\_REACTORS\COL\CGS\_2014002-RP\_JRG.docx

ADAMS ACCESSION NUMBER: ML14127A419

SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	NHT
Publicly Avail.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	NHT
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000397

License: NPF-21

Report: 05000397/2014002

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: North Power Plant Loop  
Richland, WA 99354

Dates: January 1 through March 23, 2014

Inspectors: J. Groom, Senior Resident Inspector  
D. Bradley, Resident Inspector  
P. Elkmann, Senior Emergency Preparedness Inspector  
I. Anchondo, Reactor Inspector

Approved By: Nick Taylor  
Chief, Project Branch D  
Division of Reactor Projects

## SUMMARY

IR 05000397/2014002; 01/01/2014 – 03/23/2014; Columbia Generating Station; Adverse Weather Protection, Operability Determinations and Functionality Assessments.

The inspection activities described in this report were performed between January 1, 2014, and March 23, 2014, by the resident inspectors at Columbia Generating Station and inspectors from the NRC's Region IV office. Two findings of very low safety significance (Green) are documented in this report. All of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using IMC 0609, "Significance Determination Process." Their cross-cutting aspects are determined using IMC 0310, "Components Within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC's 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: Mitigating Systems

- Green. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program," for the licensee's failure to apply the applicable quality assurance requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to the diesel generator air intake pre-filters. The licensee entered this issue into their corrective action program as Action Request 301711.

The performance deficiency was more than minor because it affected the design control attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using NRC IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," and IMC 0609, Appendix A, Exhibit 2 – Mitigating Systems Screening Questions, the inspectors determined that the finding was of very low safety significance (Green) because it did not involve a loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect because the performance deficiency occurred during system design using a different process than currently exists and was therefore not reflective of current performance. (Section 1R01)

### Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure of the licensee to perform a detailed examination of a degraded condition associated with the reactor core isolation cooling system in accordance with the station operability determination Procedure PPM 1.3.66, "Operability and Functionality Determinations," Revision 29. For an immediate corrective action, the licensee reassessed the condition for operability.

The licensee entered this issue into their corrective action program as Action Request 303216.

The performance deficiency was more than minor because it affected the equipment performance attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors performed an initial screening of the finding in accordance with NRC Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using NRC Manual Chapter 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," the inspectors determined this finding is of very low safety significance (Green) because the finding represents only a degradation of the radiological barrier function provided for by the standby gas treatment system. This finding has a cross-cutting aspect in the area of human performance because the licensee rationalized the unexpected plant response when performing reactor core isolation cooling system surveillance testing and relied on previous, unrelated evaluations as justification of system operability instead of challenging the unknown [H.11]. (Section 1R15)

#### **Licensee-Identified Violations**

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

## PLANT STATUS

The plant began the inspection period at 100 percent power. On February 5, 2014, the licensee reduced power to approximately 49 percent following an unplanned loss of reactor recirculation pump 1A due to a trip of electrical bus SH-5. The licensee returned the plant to 100 percent power on February 6, 2014. On February 15, 2014, the licensee reduced power to approximately 75 percent for planned control rod maintenance and testing. The licensee returned the plant to 100 percent power on February 16, 2014. The plant remained at nearly full power 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 Readiness for Impending Adverse Weather Conditions

###### a. Inspection Scope

On January 13, 2014, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features, the licensee's procedures to respond to tornadoes and high winds, and the licensee's planned implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

These activities constituted one sample of readiness for impending adverse weather conditions, as defined in Inspection Procedure 71111.01.

###### b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion II, "Quality Assurance Program," for the licensee's failure to apply the applicable quality assurance requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to the diesel generator air intake pre-filters.

Description. On January 13, 2014, the inspectors reviewed the intake air system for the division-one and division-two emergency diesel generators. Each system is composed of an outside air intake louver, pre-filter, combustion air filters, and a room HVAC filter. Each division of the air intake system supports the operability of the respective emergency diesel generator by providing filtered air for use in room cooling and engine combustion. The inspectors reviewed calculation ME-02-87-95, "Filter Loading for DG HVAC and Combustion Air," Revision 2, and noted that the licensee credits the intake air pre-filters as components used to reduce the amount of contaminants reaching the

combustion filters and room HVAC filters during design-basis dust storms or volcanic ashfall events. These events are discussed in section 3.1.2.1.2 of the Final Safety Analysis Report (FSAR) by reference FSAR Section 2.3, "Meteorology" and FSAR Section 2.5, "Geology, Seismology and Geotechnical Engineering." The inspectors also noted that licensee procedure ABN-ASH, "Ash Fall," Revision 19, directs how the licensee staff will replace and monitor pre-filters to ensure that the emergency diesel generators are operable during the design-basis ashfall event. The decision-basis ashfall is a 20-hour event which includes two hours when offsite power is lost. During those two hours, the emergency diesel generators are required to provide electrical power for safety-related systems. Calculation ME-02-87-95, FSAR sections 2.3 and 2.5, and procedure ABN-ASH thus all indicate that the diesel generator air intake pre-filters are components used to ensure diesel generator operability during dust storms or volcanic ashfall events.

Title 10 CFR 50.2 states that safety-related structures, systems and components means those structures, systems and components that are relied upon to remain functional during and following design basis events to assure, in part, the capability to mitigate the consequences of certain accidents.

The inspectors determined that the pre-filters are safety-related components as defined in 10 CFR 50.2, and that they perform the safety-related function of eliminating foreign objects which could restrict the supply of air to the emergency diesel generators during a design-basis ashfall event. As described in FSAR, Section 15.2.6, "Loss of Alternating Current Power," loss of all grid connections can result from storms, wind, etc. The pre-filters are required to mitigate the consequences of an ashfall-induced loss of all grid connections and are credited components to reach and maintain a safe shutdown condition following a loss of all grid connections during a design-basis ashfall event.

Title 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," states, in part, that structures, systems, and components that prevent or mitigate the consequences of postulated accidents are subject to the controls of the quality assurance program. However, although the diesel generator air intake pre-filters help mitigate the consequences of certain postulated events, the inspectors found that the licensee did not subject the diesel generator air intake pre-filters to the controls of the quality assurance program, in that the licensee had purchased replacement filters from a commercial supplier, and had not dedicated the replacement filters for safety-related use. Also, the inspectors noted that the licensee had not incorporated into calculation ME-02-87-95 several changes in the vendor's filter efficiency testing standard, which resulted in a non-conservative error in the calculated efficiency of the filters. Furthermore, prior to identification of this issue, the licensee had stored the pre-filters in a cargo container that failed to provide a weather-tight, well-ventilated, and temperature-controlled storage environment to prevent condensation and corrosion. As a corrective action, the licensee moved the filters to a warehouse with appropriate environmental controls after discarding approximately 10% of the filters due to moisture damage.



To restore compliance, the licensee initiated AR 301711 for the safety classification of the pre-filters. The licensee also initiated AR 301802 to correct references to the pre-filters in FSAR, AR 301803 to correct the procurement process of managing pre-filters including vendor data and testing standards, and AR 301804 to correct the non-conservative error in calculation ME-02-87-95.

Analysis. The licensee's failure to identify the emergency diesel generator pre-filters as components subject to the controls of the quality assurance program is a performance deficiency. The performance deficiency is more than minor and is therefore a finding because it affected the design control attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors screened the finding in accordance with NRC Manual Chapter IMC 0609, Appendix A, "The Significance Determination Process for (SDP) for Findings At-Power." Using IMC 0609 Appendix A, Exhibit 2 – Mitigating Systems Screening Questions, the inspectors determined that the finding was of very low safety significance (Green) because it did not involve a loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event. The finding did not have a cross-cutting aspect because the performance deficiency occurred more than ten years ago using a process that is different from the process that currently exists, and is therefore not reflective of current performance.

Enforcement. 10 CFR 50 Appendix B, Criterion II, "Quality Assurance Program," requires, in part, that the applicant shall identify the structures, systems, and components to be covered by the quality assurance program and the major organizations participating in the program, together with the designated functions of these organizations. Contrary to the above, prior to January 13, 2014, the licensee did not identify the division-one and division-two emergency diesel generator air intake pre-filters as components to be covered by the quality assurance program. To restore compliance, the licensee initiated AR 301711 for the safety classification of the pre-filters. Because this violation was of very low safety significance (Green) and was entered into the licensee's corrective action program, this violation is being treated as a non-cited violation, consistent with the Enforcement Policy: NCV 05000397/2014002-01, "Failure to Subject Diesel Generator Intake Air Pre-Filters to the Controls of the Quality Assurance Program."

## **1R04 Equipment Alignment (71111.04)**

### **.1 Partial Walkdown**

#### **a. Inspection Scope**

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

- January 21, 2014, diesel generator mechanical governors and air start systems
- January 31, 2014, remote shutdown panel
- February 11, 2014, tower makeup system

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 were correctly aligned for the existing plant configuration.

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

b. Findings

Introduction. The inspectors identified an unresolved item associated with the licensee's control of the licensing basis of the tower makeup system. Specifically, the inspectors identified an issue of concern related to the adequacy of several changes the licensee made to the Columbia Generating Station Final Safety Analysis Report (FSAR) that redefined the role of the tower makeup system as the ultimate heat sink following a design-basis tornado and changed the system description from safety-related to non-safety-related.

Description. During a review of the Columbia Generating Station FSAR, Section 9.2.5, "Ultimate Heat Sink", the inspectors noted that the tower makeup system is credited with providing feed-and-bleed cooling when both service water spray ring headers are lost due to tornado missiles.

The inspectors reviewed prior amendments to the FSAR and NUREG-0892, "Safety Evaluation Report related to the operation of WPPSS Nuclear Project No. 2," dated December 1983. From those documents, the inspectors determined that the original licensing basis for the tower makeup system was to act as the ultimate heat sink following a design-basis tornado such that Columbia Generating Station could achieve and maintain safe shutdown. However, the inspectors found that the current FSAR does not explicitly define the tower makeup system as the ultimate heat sink following a design-basis tornado. Furthermore, within the documents reviewed, the inspectors identified several conflicting statements with regard to the safety classification of the tower makeup system. The inspectors also found that since 1983, the licensee had completed 10 CFR 50.59 evaluations to justify changes to the FSAR that redefined the role of the tower makeup system as the ultimate heat sink following a design-basis tornado and changed the system's description from safety-related to non-safety-related.

Therefore, the inspectors identified an issue of concern related to the adequacy of those changes. Additional inspection is required to determine whether the licensee made the subject changes in full compliance with 10 CFR 50.59. This unresolved issue is identified as URI 05000397/2014002-02, "Unresolved Discrepancies in the Licensing Basis of the Tower Makeup System."

## **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 five plant areas important to safety:

- January 16, 2014, Fire Area R-1, reactor building 522' elevation
- February 10, 2014, Fire Area RC-10, main control room
- February 20, 2014, Fire Areas RC-11, RC-12 and RC-1, radioactive waste building 525' elevation
- February 21, 2014, Fire Areas SW-1 and SW-2, standby service water pump houses
- March 15, 2014, Fire Area R-8, low pressure core spray pump 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 five quarterly inspection samples, as defined in Inspection Procedure 71111.05.

#### **b. Findings**

No findings were identified.

## **1R06 Flood Protection Measures (71111.06)**

#### **a. Inspection Scope**

The inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose two plant areas containing risk-significant structures, systems, and components (SSCs) that were susceptible to flooding:

- January 21, 2014, reactor building 501' elevation
- January 28, 2014, standby service water pump houses

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

These activities constitute completion of two flood protection measures samples as defined in Inspection Procedure 71111.06.

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 February 19, 2014, 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 training 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 February 5-6, 2014, 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 activity and risk following an unplanned loss of electrical bus SH-5 and restoration of single loop operations. The inspectors observed the operators' performance of the following activities:

- Procedure ABN-CORE, Unplanned Core Operating Conditions, Revision 14
- Procedure ABN-RRC-LOSS, Loss of Reactor Recirculation Flow, Revision 10
- Restoration from single loop operations and power ascension

In addition, the inspectors assessed the operators' adherence to plant procedures, including procedure OI-9, "Operations Standards and Expectations," 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 degraded performance or condition of the follow safety-related SSCs:

- February 25, 2014, low pressure core spray and residual heat removal systems including large pump preventative maintenance program
- March 7, 2014, standby gas treatment system

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

- January 9, 2014, planned yellow risk during replacement of digital electrical hydraulic pump 1B

- January 21, 2014, planned orange risk during maintenance on the high pressure core spray system
- February 5, 2014, risk associated with replacement of high voltage electrical breaker E-CB-S5

The inspectors verified that these risk assessment 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 January 24, 2014, the inspectors observed emergent work activities that had the potential to affect the functional capability of mitigating systems. The emergent work was associated with the unplanned loss of pump house outside air fan POA-FN-1A.

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected SSCs.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed four operability determinations that the licensee performed for degraded or nonconforming SSCs:

- January 14, 2014, AR 300881 and 301073, operability determination associated with a failure of control rod 10-43 to scram
- February 4, 2014, Work Order 02046412, operations review of reactor core isolation cooling system during planned starter coil replacement for 480V disconnect RRA-42-8B4C
- February 10, 2014, AR 302072, operability determination associated with unexpected trip of valve RCIC-V-1 during surveillance testing

- February 24, 2014, AR 303254, operability determination associated with a failure of diesel generator 3 to start during air start motor 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 four operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the licensee's failure to perform a detailed examination of a degraded condition associated with the reactor core isolation cooling (RCIC) system in accordance with the station operability determination Procedure PPM 1.3.66, "Operability and Functionality Determinations," Revision 29.

Description. On February 3, 2014, during performance of Procedure OSP-RCIC/IST-Q702, "RCIC Valve Operability Test," Revision 37, the reactor core isolation cooling system turbine trip and throttle valve (RCIC-V-1) unexpectedly closed when operators opened the condensate storage tank test return valve (RCIC-V-22). The unexpected closure of RCIC-V-1 was caused by a low pressure sensed in the discharge header for the reactor core isolation cooling pump. The licensee initiated AR 302072 to document the unexpected closure of RCIC-V-1. Operations reviewed AR 302072 and determined that the reactor core isolation cooling system was operable because a similar condition had occurred in 2005, 2011, and 2012, and because in each of the previous occurrences, allowable seat leakage past discharge check valve RCIC-V-90 had resulted in a pressure drop in the discharge header and the unexpected closure of RCIC-V-1.

The inspectors reviewed AR 302072 and determined that seat leakage across RCIC-V-90 could not reasonably explain the unexpected closure of RCIC-V-1 that occurred on February 3, 2014. The inspectors reviewed the previous unexpected closures of RCIC-V-1, which the licensee used as a basis for operability, and found that RCIC-V-1 unexpectedly closed during testing of the reactor core isolation cooling pump minimum flow valve RCIC-V-19. For each of the events, the inspectors concluded that although allowable seat leakage past RCIC-V-90 reasonably explained the unexpected closure of RCIC-V-1, allowable seat leakage past RCIC-V-90 did not explain the most recent issue documented in Action Request AR 302072. The inspectors reviewed system diagrams and concluded that seat leakage past valve RCIC-V-59, the other condensate storage tank test return valve in series with RCIC-V-22, was the likely cause of the unexpected closure of RCIC-V-1.

Procedure PPM 1.3.66, "Operability and Functionality Evaluation," Revision 29, Step 4.1.5, requires the licensee to immediately determine operability from a detailed examination of the deficiency. However, because the licensee had not identified leakage past RCIC-V-59 as the cause of the unexpected closure of RCIC-V-1 on February 3, 2014, the inspectors concluded that the licensee had not performed an adequate operability review of AR 302072 in accordance with procedure PPM 1.3.66.

In response to this conclusion, operations and engineering re-evaluated their conclusions in AR 302072, and confirmed that seat leakage past RCIC-V-90 was not the cause of the closure of RCIC-V-1 that had occurred on February 3, 2014. The licensee also agreed that seat leakage past RCIC-V-59 was the likely cause of that closure. Because the licensee had not previously evaluated seat leakage past this valve, the licensee initiated AR 302389 documenting the degraded condition on RCIC-V-59. The licensee's prompt-operability determination for AR 302389 concluded that the reactor core isolation system was operable, and that the seat leakage past RCIC-V-59 represents a secondary containment bypass leak path that could exceed the leakage that is assumed in station calculations. The licensee's prompt operability determination placed an operating restriction on the reactor core isolation cooling system in the form of a caution tag that required plant operators to maintain RCIC-V-22 closed to preserve the analytical assumptions associated with bypass leak paths from secondary containment. The licensee also initiated AR 303216 documenting the inadequacies with the operations' review of AR 302072.

Analysis. The failure to perform an adequate immediate operability determination for a degraded condition on the reactor core isolation cooling system in accordance with Procedure PPM 1.3.66 was a performance deficiency. This performance deficiency was more than minor because it affected the equipment performance 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. Specifically, the inadequate operations review resulted in the licensee not recognizing and therefore not addressing a degraded condition of RCIC-V-59 that impacted the barrier function provided by the secondary containment. The inspectors performed an initial screening of the finding in accordance with NRC IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using IMC 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," the inspectors determined this finding is of very low safety significance (Green) because the finding represents only a degradation of the radiological barrier function provided for by the standby gas treatment system. This finding has a cross-cutting aspect in the area of human performance because the licensee rationalized the unexpected plant response when performing reactor core isolation cooling system surveillance testing and relied on previous, unrelated evaluations as justification of system operability instead of challenging the unknown [H.11].

Enforcement. 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. Contrary to the above, on February 3, 2014, the licensee failed to accomplish activities affecting quality in accordance with prescribed procedures. Specifically, the licensee failed to perform an adequate operability evaluation for AR 302072 in accordance with Procedure PPM 1.3.66, "Operability and Functionality Evaluation", Revision 29, Step 4.1.5, which requires the licensee to immediately determine operability from a detailed examination of the deficiency. The NRC subsequently identified on February 6, 2014, that the licensee did not perform a detailed examination of the deficiency involving the unexpected closure of RCIC-V-1, which resulted in the licensee not recognizing an unevaluated, degraded condition of RCIC-V-59. The licensee restored compliance by initiating AR 302389 to evaluate operability and correct the degraded condition on RCIC-V-59. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as AR 303216, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the Enforcement Policy: NCV 05000397/2014002-03, "Inadequate Operability Evaluation of Degraded Reactor Core Isolation Cooling Valve."

#### **1R18 Plant Modifications (71111.18)**

##### **a. Inspection Scope**

On February 21, 2014, the inspectors reviewed a permanent modification to the division 3 diesel lube oil system piping performed under Engineering Change 9857. The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the operability of the SSC as modified.

These activities constitute completion of one sample of permanent modifications, as defined in Inspection Procedure 71111.18.

##### **b. Findings**

No findings were identified.

#### **1R19 Post-Maintenance Testing (71111.19)**

##### **a. Inspection Scope**

The inspectors reviewed four post-maintenance testing activities that affected risk-significant SSCs:

- January 7, 2014, post-maintenance test of standby gas treatment valve SGT-V-4A1 following seat replacement under Work Order 02032271

- January 23, 2014, post-maintenance test of high pressure core spray pump circuit breaker HPCS-CB-P/1 following maintenance under Work Orders 02054399, 02054412 and 02054417
- February 15, 2014, post-maintenance test of control rods 14-43, 30-39, 30-43, 34-31, and 38-55 following inspection of scram solenoid pilot valves
- March 11, 2014, post-maintenance test of reactor exhaust air fan 1A following lubrication of blade pitch controller under Work Order 02047251

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 four post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

**1R22 Surveillance Testing (71111.22)**

a. Inspection Scope

The inspectors observed five risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service tests:

- February 7, 2014, Procedure OSP-RCIC/IST-Q702, "RCIC Operability Test," Revision 52

Reactor coolant system leak detection tests:

- February 18, 2014, Procedure OSP-INST-H101, "Shift and Daily Instrument Checks (Modes 1, 2 and 3)," Revision 80, which includes a calculation of reactor coolant system identified and unidentified leakage

Other surveillance tests:

- January 29, 2014, Procedure MSP-WMA-B103, "Control Room Div A Filtration System – Carbon Absorber Test," Revision 11

- January 30, 2014, Procedure OSP-ELEC-M702, "Diesel Generator 2 – Monthly Operability Test," Revision 59
- February 5, 2014, Procedure TSP-THERM-C101, "Power Thermal Limits," Revision 17

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 five 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 the following:

- Procedure 13.1.1, "Classifying the Emergency," Revision 43-01
- Procedure 13.1.1A, "Classifying the Emergency – Technical Bases," Revision 27

These revisions,

- Incorporated the procedures into the emergency plan by reference
- Added Procedure PPM 5.3.1, "Secondary Containment Control," as a reference for emergency action levels 4.1.S.1, "Loss or potential loss of any two fission product barriers," and 4.1.G.1, "A loss of any two fission product barriers and loss or potential loss of the third"
- Corrected Procedure references

These revisions were compared to their previous revisions, 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, to Nuclear Energy Institute Report 99-01, "Emergency Action Level Methodology," Revision 2, 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 revisions did not reduce 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, these revisions are subject to future inspection.

These activities constitute completion of two emergency action level and emergency plan change samples as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

## **1EP6 Drill Evaluation (71114.06)**

### Emergency Preparedness Drill Observation

#### a. Inspection Scope

The inspectors observed an emergency preparedness drill on January 14, 2014, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the simulator and the emergency operations facility, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constitute completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06-05.

#### b. Findings

No findings were identified.

## **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 Unplanned Scrams per 7000 Critical Hours (IE01)**

##### a. Inspection Scope

The inspectors reviewed licensee event reports (LERs) for the period of January 1, 2013, through December 31, 2013 to determine the number of scrams that occurred. The inspectors compared the number of scrams reported in these LERs to the number reported for the performance indicator. Additionally, the inspectors sampled monthly operating logs to verify the number of critical hours during the period. 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 data reported.

These activities constituted verification of the Unplanned Scrams per 7000 Critical Hours performance indicator, as defined in Inspection Procedure 71151.

##### b. Findings

No findings were identified.

.2 Unplanned Power Changes per 7000 Critical Hours (IE03)

a. Inspection Scope

The inspectors reviewed operating logs, corrective action program records, and monthly operating reports for the period of January 1, 2013, through December 31, 2013 to determine the number of unplanned power changes that occurred. The inspectors compared the number of unplanned power changes documented to the number reported for the performance indicator. Additionally, the inspectors sampled monthly operating logs to verify the number of critical hours during the period. 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 data reported.

These activities constituted verification of the Unplanned Power Outages per 7000 Critical Hours performance indicator, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Unplanned Scrams with Complications (IE04)

a. Inspection Scope

The inspectors reviewed the licensee's basis for including or excluding in this performance indicator each scram that occurred between January 1, 2013, through December 31, 2013. 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 data reported.

These activities constituted verification of the unplanned scrams with complications 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 Annual Follow-up of Selected Issues

a. Inspection Scope

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

- AR 298186 documenting roof leaks in the Technical Support Center.

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)**

(Closed) Licensee Event Report 05000397/2013-013-00, "Operation Prohibited by Technical Specifications due to Valve Leakage."

On June 3, 2013, during a planned refueling outage with the reactor cavity flooded, the licensee identified leakage past a closed isolation valve associated with one hydraulic control unit. The leakage originated from the reactor vessel and was estimated to be less than 10 gallons per hour. When first identified, the licensee did not recognize the leakage as an operation with potential to drain the reactor vessel (OPDRV). Subsequent review by the licensee determined that the leakage did constitute an OPDRV per the plain language definition guidance provided in Enforcement Guidance Memorandum (EGM) 11-003, "Enforcement Guidance Memorandum on Dispositioning Boiling Water Reactor Licensee Noncompliance with Technical Specification Requirements during Operations with a Potential for Draining the Reactor Vessel," dated October 4, 2011. Since this leakage persisted for 16 hours during which time the secondary containment was inoperable, the leakage constituted a violation of the plant's Technical

Specifications. The inspectors reviewed the licensee event report associated with this event and determined that the reports adequately documented the summary of the event, including the potential safety consequences. The inspectors reviewed a licensee-identified non-cited violation of Technical Specification 3.6.4.1, "Secondary Containment." The enforcement aspects of this violation are discussed in Section 4OA7 of this report. This licensee event report is closed.

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

#### **4OA5 Other Activities**

##### Temporary Instruction 2515/182 (Closed) - Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks

###### a. Inspection Scope

Leakage from buried and underground pipes has resulted in groundwater contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, NEI 09-14, "Guideline for the Management of Buried Piping Integrity," (ADAMS Accession No. ML1030901420) to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122) with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued Temporary Instruction 2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks," to gather information related to the industry's implementation of this initiative.

###### b. Observations

The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraph 03.02.a of the Temporary Instruction and it was confirmed that activities which correspond to completion dates specified in the program which have passed since the Phase 1 inspection have been completed or scheduled to be completed prior to December 31, 2014. Additionally, the licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraph 03.02.b of the Temporary Instruction and responses to specific questions found in <http://www.nrc.gov/reactors/operating/ops-experience/buried-pipe-ti-phase-2-insp-req-2011-11-16.pdf> were submitted to the NRC headquarters staff. Based upon the scope of the review described above, TI-2515/182 was completed and will be closed.

###### c. Findings

No findings were identified.



## **4OA6 Meetings, Including Exit**

### Exit Meeting Summary

On March 3, 2014, the regional inspectors conducted a telephonic exit to present the results of the in-office inspection of Phase 2 of TI-182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks," to Mr. B. MacKissock, 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.

On March 20, 2014, a regional 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. S. Clizbe, Acting Manager, Emergency Preparedness, and other members of the licensee staff. The licensee acknowledged the issues presented.

On March 27, 2014, the resident inspectors presented the inspection results to Mr. M. Reddemann, Chief Executive Officer, 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 May 7, 2014, the resident inspectors presented the inspection results to Mr. J. Trautvetter, Manager, Regulatory Affairs. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

## **4OA7 Licensee-Identified Violations**

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

- .1 Technical Specification 3.6.4.1, "Secondary Containment," requires, in part, that the secondary containment shall be operable in Modes 1, 2, and 3 and during operations with potential to drain the reactor vessel (OPDRVs). Technical Specification 3.6.4.1, Required Action C.1, requires that when secondary containment is inoperable during OPDRVs, action is immediately taken to suspend OPDRVs. Contrary to the above, June 3, 2013, secondary containment was inoperable during OPDRVs and action was not taken to immediately suspend OPDRVs. This finding was identified by the licensee and entered in the licensee's corrective action program as AR 286676. This finding was determined to be of very low safety significance because the finding did not increase the likelihood of a loss of reactor coolant system inventory, the finding did not degrade the licensee's ability to terminate a leak path or add reactor coolant system inventory when needed and the finding did not degrade the licensee's ability to recover decay heat removal systems if lost.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

S. Abney, Assistant Operations Manager  
P. Allen, System Engineer, System Engineering  
S. Clizbe, Acting Manager, Emergency Preparedness  
J. Darling, NSSS Supervisor, System Engineering  
R. Fahnestock, Program Manager, Emergency Preparedness  
C. Forrester, Emergency Planner  
R. Garcia, Licensing Engineer  
D. Gregoire, Regulatory Affairs Manager  
B. Guldemon, Manager, Recovery  
M. Hedges, Principle Licensing Engineer, Regulatory Affairs  
M. Holle, System Engineer, System Engineering  
G. Hettel, Vice President, Operations  
A. Javorik, Vice President, Engineering  
D. King, Emergency Planner  
R. Prewett, Manager, Operations  
B. MacKissock, Plant General Manager  
B. Sawatzke, Vice President Nuclear Generation and Chief Nuclear Officer  
D. Suarez, Licensing Engineer, Regulatory Affairs  
R. Treadway, Assistant Operations Manager  
L. Williams, Licensing Supervisor  
D. Wolfgramm, Licensing Engineer, Regulatory Affairs

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened**

05000397/2014002-02	URI	Unresolved Discrepancies in the Licensing Basis of the Tower Makeup System (Section 1R04)
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#### **Opened and Closed**

05000397/2014002-01	NCV	Failure to Subject Diesel Generator Intake Air Pre-Filters to the Controls of the Quality Assurance Program (Section 1R01)
05000397/2014002-03	NCV	Inadequate Operability Evaluation of Degraded Reactor Core Isolation Cooling Valve (Section 1R15)

Closed

2515/182                      TI      Review of Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks (Section 40A5)

**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-ASH	Ash Fall	19
ABN-WIND	Tornado/High Winds	25
DES-5-3	Safety Classification Determination	3

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ME-02-87-95	Filter Loading for DG HVAC and Combustion Air	2
ME-02-88-03	Installation of Ashfall Prefilters as Permanent Filters and Pressure Loss Thru Air Intake System for Ashfall Event	2

Action Requests (ARs)

236015	301100	301368	301711	301802
301803	301804			

**Section 1R04: Equipment Alignment**

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-CR-EVAC	Control Room Evacuation and Remote Cooldown	32
ABN-TMU	Tower Makeup Water System Failure	7
OPS-RCIC/IST-Q701	RCIC Operability Test	52
SOP-TMU-LU	Tower Makeup Water Valve and Breaker Lineup	2

### Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NE-02-85-19	Post Fire Safe Shutdown	7

### Action Requests (ARs)

287857	294746	296820
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### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
ANSI/ANS 52.1	Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants	1983
CCER C92-0651	RHR Pumps 2A, 2B, and 2C	0
CCER C97-0107	RCIC-RLY-80X/V45	1
CVI 53-00,68,1-1	Generator Set and Parts List	6
Regulatory Guide 1.27	Ultimate Heat Sink for Nuclear Power Plants	1
Regulatory Guide 1.117	Tornado Design Classification	1
SPC 310	Design Basis Document – Standby Power Systems	8
TM-2050	RCIC Design Basis	3

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.10C	Control of Transient Combustibles	16
1.3.57	Barrier Impairment	29
15.3.6	Control Room Halon Pressure Check, Weight Check, Flow Test, and PGCC Barrier Inspection	8
ABN-FIRE	Control Room Fire	5
CIVES-6	Design Requirements for Non-safety-Related Items in Seismic Category I Areas	6

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CE-02-07-10	Qualification for the Mounting of Halon Bottles in the Control Room	0
FP-02-85-03	Fire Loading Calculation	9

Action Requests (ARs)

299092	300943	302278	303188	303230
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Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Columbia Generating Station Pre-Fire Plan	2
TM-2007	Reactor Building Instrument Rack Fire Hazards Analysis	0
TM-2043	Augmented Quality Requirements	7

**Section 1R06: Flood Protection Measures**Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M507-1	Flow Diagram Circulating Water System Turbine Generator Bldg. and Yard	160
CVI 02-215-00 Sh. 1223	TMU Piping Inside Standby S.W. Pump House 1A	7
CVI 02-215-00 Sh. 1224	TMU Piping Inside Pump House 1A	7
CVI 02-215-00 Sh. 1225	TMU Piping Inside Pump House 1A	8
CVI 02-215-00 Sh. 1282	TMU Piping Inside Pump House 1B	8
CVI 02-215-08 Sh. 14796	TMU-901N SH 1	1
CVI 02-215-08 Sh. 14796	TMU-901N SH 2	1
CVI 40-00 Sh. 37	Butterfly Valve	0

### Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
5.5.54	Spraying and Wetting Calculation	0
8.42.037	Status As Built Verification of Piping Calculation	1
8.42.038	Status As Built Verification of Piping Calculation	1
8.42.235	Status As Built Verification of Piping Calculation	2
8.42.8110	TMU Status As Built Verification of Piping Calculation	0
ME-02-02-02	Calculation for Reactor Building Flooding Analysis	2
ME-02-02-44	Standby Service Water Pumphouses 1A and 1B – Flooding Analysis	0

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-FLOODING	Flooding	16
MES-3	Piping Design Guide	2, 4

### Action Requests (ARs)

302803	302172	301783	301586
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### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/ Date</u>
CCER C93-0369	RHR A/B Pressure Indicators, Switches, Transmitters	0
CCER C93-0370	RHR C Pressure Indicators, Switches, Transmitters	1
Regulatory Guide 1.29	Seismic Design Classification	3
Regulatory Guide 1.48	Design Limits and Loading Combinations for Seismic Category I Fluid System Components	May 1973

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ABN-CORE	Unplanned Core Operating Conditions	14
ABN-ELEC-SH5	SH-5 Distribution System Failures	0
ABN-POWER	Unplanned Reactor Power Change	13
ABN-RRC-LOSS	Loss of Reactor Recirculation Flow	10

### Action Requests (ARs)

302435

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CVI ISO 215-00-120	Piping Isometric Loop A Return Zone R-21 R-31 R-41 R-51	12
LR001687	Simulator Training: Core Damage, Loss of Pressure Control	3

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SYS-4-22	Maintenance Rule Program	6

### Action Requests (ARs)

275204	275338	275490	275513	275521
276805	277923	280135	283773	284127
284134	284198	285827	286044	287015
287767	287816	290406	291582	297982
298034	301887	302361	302392	

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.57	Barrier Impairment	29
1.3.76	Integrated Risk Management	39
1.3.83	Protected Equipment Program	16
SOP-ELEC- BKR-OPS	AC Electrical Breaker Racking	10

### Action Requests (ARs)

301530	301597
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### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Safety Evaluation of the Washington Public Power Supply System (WPPSS) Nuclear Project Number 2 Station Blackout Analysis (TAC No. M68626)	December 30, 1991

## **Section 1R15: Operability Determinations and Functionality Assessments**

### Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ME-02-01-30	Determination of RCIC Availability without Standby Service Water	0
CMR 1455	Determination of RCIC Availability without Standby Service Water	0
CMR 6893	Determination of RCIC Availability without Standby Service Water	0

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.66	Operability and Functionality Evaluation	29
10.5.9	CRD/Hydraulic Control Unit Refurbishment	16
10.20.18	Division 3 Diesel Generator Engine 2/4/6/12 Year Preventative Maintenance	5



### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
10.20.22	Division 3 Diesel Generator Engine 2/6 Year Preventative Maintenance	2
OI-41	Operations Work Control Expectations	51, 52
TSP-DSA-B703	DG3 Air Start Motor Test	9

### Action Requests (ARs)

202843	300881	301073	302072	303244
303254				

### Work Orders (WOs)

02006052	02006053	02018981
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### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
CVI 02E22-07,54,1	HPCS Diesel Generator	July 9, 2013

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
DES-2-1	Plant Design Changes	49

### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M512-1	Flow Diagram Diesel Oil and Miscellaneous Systems Diesel Generator Building	44

### Engineering Changes (ECs)

9857

### Action Requests (ARs)

187238	292356	298067	301589
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## **Section 1R19: Post-Maintenance Testing**

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
10.2.13	Approved Lubricants	63
OSP-HPCS/IST-Q701	HPCS System Operability Test	44
SWP-TST-01	Post Maintenance Testing Program	15
TSP-CRD-C101	CRD Scram Timing With Auto Scram Timer System	23

### Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EWD-7E-001	Electrical Wiring Diagram High Pressure Core Spray System HPCS Diesel Generator 4160V Feeder Breaker E-CB-4/DG3	21
EWD-7E-026	Electrical Wiring Diagram High Pressure Core Spray System HPCS Bus Potential and Undervoltage	17

### Action Requests (ARs)

300530	301511	302868
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### Work Orders (WOs)

02044719	02047251	02054897	02053911	02053992
02053993	02054024	02054025	02054026	02054399
02054412	02054417			

### Miscellaneous Documents

#### Title

Operating Experience Smart Sample (OpESS) FY 2009-01  
Inspection of Electrical Connections for (Motor Control  
Center, Circuit Breakers, and Interfaces)

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MSP-WMA-B103	Control Room Div A Filtration System – Carbon Absorber Test	11
OSP-ELEC-M702	Diesel Generator 2 – Monthly Operability Test	59
OSP-RCIC/IST-Q701	RCIC Operability Test	52
TSP-THERM-C101	Power Thermal Limits	17

### Action Requests (ARs)

283255	291061	292651	301984	301959
303413				

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

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
13.1.1	Classifying the Emergency	43
3.3.1	Reactor Scram	58
5.1.1	RPV Control	19
5.3.1	Secondary Containment Control	18

### Action Requests (ARs)

300971	301006	301020
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### Miscellaneous Documents

#### Title

After Action Report / Improvement Plan Columbia  
Generating Station 2014 ERO Team B Drill  
January 14, 2014

## **Section 4OA1: Performance Indicator Verification**

### Action Requests (ARs)

290335

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NEI 99-02	Regulatory Assessment Performance Indicator Guidelines	6

## **Section 4OA2: Problem Identification and Resolution**

### Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1.3.57	Barrier Impairment	29
SWP-CAP-01	Corrective Action Program	28, 29

### Action Requests (ARs)

280320	281399	281847	287423	289718
289719	289722	291951	292562	292766
293310	300494	300937	301226	302380
200542	298186	288022	261309	25487
223384	303765	303767	303787	

### Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	Emergency Plan Columbia Generating Station	59
CGS-FTS-0168	Alternative Source Term	2
QID 277016 Volume 1	Environmental Capabilities Stack Monitor	3
QID 277016 Volume 2	Environmental Requirements Stack Monitor	3

**Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
E/I-02-95-1402	Calculation for Setting Range Determination for Instrument Loops REA Differential Pressure Transmitter 1A1 1A2 1A3 and 1A4	0

Action Requests (ARs)

2-06-01173	2-07-02186	193000	235880	254113
254121	254727	258297	269420	270980
292638	292230	293230	297126	300999
303856				

Work Orders (WOs)

01178794	01178836	02011098
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Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CGS-FTS-0168	Columbia Generating Station Alternative Source Term	2

**Section 40A5: Other Activities**Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
PWTP-02	Pipe Wall Thinning Monitoring – Underground Piping and Tanks Integrity Program	4
ENG-SPS-07	Underground Piping and Tanks Integrity Program	2
ENG-PRG-02	Program Health Reporting	0
SWP-CHE-01	Groundwater Protection Program	3
SPS-6-1	Ultrasonic Examination – Thickness Measurements	0

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
1101102.401	GWT Assessment at Columbia Generating Station	0
188681	Buried Piping Integrity Program	0
	Cathodic Protection (Requirement) Survey: Site Soil Corrosivity Assessment	February 2007
5-05-86-1	Ultrasonic Thickness Measurement Data Sheet (Diesel Fuel Oil Tank)	May 23, 2005
5-05-17-3	Ultrasonic Thickness Measurement Data Sheet (Diesel Fuel Oil Tank)	May 14, 2005
5-05-56-1	Ultrasonic Thickness Measurement Data Sheet (Diesel Fuel Oil Tank)	May 21, 2005

Action Requests (ARs)

213223	254643	213223	2039943	233624
284916	188681	212041	282021	250272
257544	257547	274778		

Work Orders (WOs)

1661201	1661202	2111104	2035647	1190219
2036353	1190863	2034822	1189365	2039943

**Section 4OA7: Licensee-Identified Violations**Action Requests (ARs)

286676

December 18, 2013

We have discussed the schedule for these inspection activities and understand that you will be our regulatory contact for this inspection. If there are any questions about this inspection or the material requested, please contact Peter Jayroe at 817-200-1174, email [Peter.Jayroe@nrc.gov](mailto:Peter.Jayroe@nrc.gov).

This email 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. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

## TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

**Inspection Dates:** To Be Determined

**Inspection Procedures:** TI 2515-182, "Review of Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks"

**Inspector:** Peter Jayroe (817) 200-1174, [Peter.Jayroe@nrc.gov](mailto:Peter.Jayroe@nrc.gov)

The following information should be sent to the Region IV office in hard copy or electronic format (ims.certrec.com preferred), in care of Peter Jayroe, by January 31, 2014, to facilitate the preparation for the 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 inspector as soon as possible.

1. Organization list of site individuals responsible for the site's underground piping and tanks program.
2. Copy of Site Underground Piping and Tanks program.
3. Please review the attached "Questions" list and provide the response and/or document requests.
4. Schedule for the completion of the following NEI 09-14 Rev.1 attributes: Buried Piping
  - Procedures and Oversight
  - Risk Ranking
  - Inspection Plan
  - Plan Implementation
  - Asset Management Plan

### Underground Piping and Tanks

- Procedures and Oversight
  - Prioritization
  - Condition Assessment Plan
  - Plan Implementation
  - Asset Management Plan
5. Location maps of buried & underground piping and tanks as requested by the inspector.
  6. Self- or third party assessments of the Underground Piping and Tanks Program (if any have been performed).



## TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

7. For any of the NEI 09-14 Rev.1 attributes identified below which have been completed prior to the NRC's onsite inspection, provide written records that demonstrate that the program attribute is complete.

### Buried Piping

- Procedures and Oversight
- Risk Ranking
- Inspection Plan
- Plan Implementation
- Asset Management Plan

### Underground Piping and Tanks

- Procedures and Oversight
- Prioritization
- Condition Assessment Plan
- Plan Implementation
- Asset Management Plan

TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

Questions	Response
<b>Initiative Consistency</b>	
Has the licensee taken any deviations to either of the initiatives?	Yes / No
If so, what deviations have been taken and what is (are) the basis for these deviations?	<b>Provide documentation of deviations and any associated corrective action reports.</b>
Does the licensee have an onsite buried piping program manager (owner) and, potentially, a staff?	Yes / No
How many buried piping program owners have there been since January 1, 2010?	<b>Provide documentation identifying individuals responsible for the site buried piping program since January 1, 2010.</b>
How many other site programs are assigned to the buried piping program owner?	<b>List all site programs that are under the direct responsibility of the site's buried piping program owner.</b>
Does the licensee have requirements to capture program performance, such as system health reports and performance indicators?	Yes / No  <b>Provide copies of most recent systems health reports if applicable</b>
Are these requirements periodic or event driven?	Periodic / Event Driven / None
Are there examples where these requirements have been successfully used to upgrade piping systems or to avert piping or tank leaks?	Yes / No  <b>Provide documentation related to examples if applicable</b>
Does the licensee have a program or procedure to confirm the as-built location of buried and underground piping and tanks at the plant?	Yes / No
Has the licensee used this program?	Yes / No

TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

Was the program effective in identifying the location of buried pipe?	Yes/No
For a sample of buried pipe and underground piping and tanks (sample size at least 1 high and 1 low risk/priority pipe or tank), did the risk ranking and/or prioritization process utilized by the licensee produce results in accordance with the initiative guidelines, i.e., which emphasize the importance of components which have a high likelihood and consequence of failure and deemphasize the importance of components which have a low likelihood and consequence of failure?	Yes / No      Sample size examined _____  <b>Provide copy of site's risk ranking documents including documents pertaining to the actual risk rankings and methodology used.</b>  <b>Provide documents/drawings and/or list which identifies the risk ranking for each pipe segment or tank in each system within the scope of these programs.</b>  <b>Provide the documents which record/describe how the risk methodology was applied to determine the risk of pipe segments or tanks as selected by the inspector during the preparation week.</b>
As part of its risk ranking process did the licensee estimate/determine the total length of buried/ underground piping included in the initiatives?	Yes / No
As part of its risk ranking process did the licensee estimate/determine the total length of high risk buried/underground piping included in the initiatives?	Yes / No
<b>Preventive Actions / System Maintenance</b>	
For buried steel, copper, or aluminum piping or tanks which are not cathodically protected, has the licensee developed a technical basis for concluding that structural (e.g. ASME Code minimum wall, if applicable) and leaktight integrity of buried piping can be maintained?	Yes / No / Not Applicable (no buried steel, copper, or aluminum piping which is not cathodically protected)

TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

Is the technical basis provided as justification by the licensee consistent with the initiative (including its reference documents) or industry standards (e.g. NACE SP0169)	Yes / No  <b>Provide documented technical basis including referencing documents.</b>
For uncoated steel piping, has the licensee developed a technical basis for concluding that structural (e.g. ASME Code minimum wall, if applicable) and leaktight integrity of buried piping can be maintained?	Yes / No / Not Applicable (no uncoated buried steel pipe)
Is the technical basis provided as justification by the licensee consistent with the initiative (including its reference documents) or industry standards (e.g. NACE SP0169)?	Yes / No  <b>Provide documented technical basis including referencing documents.</b>
For licensees with cathodic protection systems, does the licensee have procedures for the maintenance, monitoring and surveys of this equipment?	Yes / No / Not Applicable (no cathodic protection systems)
Are the licensee procedures consistent with the initiative (including its reference documents) or industry standards (e.g. NACE SP0169)?	Yes / No  <b>Provide copy of procedures if applicable.</b>
Is the cathodic protection system, including the evaluation of test data, being operated and maintained by personnel knowledgeable of, or trained in, such activities?	Yes / No  <b>Provide documentation of training or qualification records of personnel.</b>
Is there a program to ensure chase and vault areas which contain piping or tanks subject to the underground piping and tanks initiative are monitored for, or protected against, accumulation of leakage from these pipes or tanks?	Yes / No / N/A (No piping in chases or vaults)  <b>Provide copy of program.</b>
<b>Inspection Activities / Corrective Actions</b>	
Has the licensee prepared an inspection plan for its buried piping and underground piping and tanks?	Yes / No

TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

Does the plan specify dates and locations where inspections are planned?	Yes / No  <b>Provide copy of inspection plan and associated implementation procedures.</b>
Have inspections, for which the planned dates have passed, occurred as scheduled or have a substantial number of inspections been deferred?	Occurred as scheduled / Deferred
Has the licensee experienced leaks and/or significant degradation in safety related piping or piping carrying licensed material since January 1, 2009?	Leaks Yes / No                      Degradation Yes / No
If leakage or significant degradation did occur, did the licensee determine the cause of the leakage or degradation?	Yes / No

Based on a review of a sample of root cause analyses for leaks from buried piping or underground piping and tanks which are safety related or contain licensed material, did the licensee's corrective action taken as a result of the incident include addressing the cause of the degradation?	Yes / No / N/A (no leaks)  <b>Provide root cause analyses of identified leaks if applicable.</b>
Did the corrective action include an evaluation of extent of condition of the piping or tanks and possible expansion of scope of inspections? (Preference should be given to high risk piping and "significant" leaks where more information is likely to be available).	Yes / No / N/A (no leaks)  <b>Provide corrective action documents concerning leaks if applicable.</b>
Based on a review of a sample of NDE activities which were either directly observed or for which records were reviewed, were the inspections conducted using a predetermined set of licensee/contractor procedures?	Yes / No  <b>Provide list of scheduled NDE activities scheduled during onsite week and list of NDE activities that have already been conducted.</b>

TI 2515-182 PHASE 2 INSPECTION DOCUMENT REQUEST

Were these procedures sufficiently described and recorded such that the inspection could be reproduced at a later date?	Yes / No  <b>Provide copies of NDE procedures for the various NDE activities that have occurred or are scheduled to occur.</b>
Were the procedures appropriate to detect the targeted degradation mechanism?	Yes / No
For quantitative inspections, were the procedures used adequate to collect quantitative information?	Yes / No
Did the licensee disposition direct or indirect NDE results in accordance with their procedural requirements?	Yes / No  <b>Provide sample of direct and/or indirect NDE results and the subsequent evaluations of these NDE results.</b>
Based on a sample of piping segments, is there evidence that licensees are substantially meeting the pressure testing requirements of ASME Section XI IWA-5244?	Yes / No  <b>Provide the completed records for the last two required Section XI periodic pressure/flow test on safety-related buried pipe segments</b>