



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

July 24, 2012

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 05000397/2012003

Dear Mr. Reddemann:

On June 22, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. The enclosed inspection report documents the inspection results which were discussed on July 2, 2012, with Mr. W. Hettel, Vice President, Operations and other members of your staff.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Three NRC identified findings of very low safety significance (Green) were identified during this inspection. All of these findings were determined to involve violations of NRC requirements. Further, two 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 of the Enforcement Policy.

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

M.E. Reddemann

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Sincerely,

/RA/

Wayne Walker, Chief
Project Branch A
Division of Reactor Projects

Docket No: 05000397

License No: NPF-21

Enclosure: NRC Inspection Report 05000397/2012003
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000397
License: NPF-21
Report: 05000397/2012003
Licensee: Energy Northwest
Facility: Columbia Generating Station
Location: Richland, WA
Dates: March 24, 2012 through June 22, 2012
Inspectors: J. Groom, Senior Resident Inspector
M. Hayes, Resident Inspector
W. Schaup, Resident Inspector
J. Dykert, Project Engineer
L. Carson II, Senior Health Physicist
C. Alldredge, Health Physicist
W. Sifre, Senior Reactor Inspector
Approved By: W. Walker, Chief
Project Branch A
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000397/2012003; 03/24/2012 – 06/22/2012; Columbia Generating Station, Integrated Resident and Regional Report; Operability Evaluations and Functionality Assessments; Post-Maintenance Testing; Surveillance Testing.

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region-based inspectors. Three Green non-cited violations of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- 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 required operability determination for a degraded condition associated with residual heat removal pump B. On March 25, 2012, the licensee performed Procedure OSP-RHR/IST-Q703, "RHR Loop B Operability Test," Revision 34, and recorded a pump discharge pressure that exceeded the acceptance criteria by 0.03 psig. The operating crew determined that no immediate operability determination was required by Procedure PPM 1.3.66, "Operability and Functionality Evaluation," Revision 20, since pump performance was stable and satisfactory. Subsequent review by the inspectors revealed that the assumption that pump performance was stable and satisfactory was not correct and an operability determination was required. Specifically, pump discharge pressure dropped below the technical specification surveillance requirement acceptance criteria at several points after the licensee had recorded their data and the pump had exhibited a declining trend in performance since its last surveillance. This issue was entered into the licensee's corrective action program as Action Request AR 266371.

This performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk

significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to use conservative assumptions when evaluating Action Request AR 260478 that documented low margin for residual heat removal pump B. Specifically, the shift manager failed to challenge the non-conservative assumption that pump flow was stable and satisfactory [H.1(b)]. (Section 1R15).

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure of the licensee to perform a required postmaintenance test of the division 3 safety-related batteries prior to system restoration. On May 22, 2012, the licensee replaced the division 3 safety-related battery HPCS-B1-DG3 under Work Order 02000618. The resident inspectors reviewed the work orders associated with the replacement of battery HPCS-B1-DG3 and identified that the licensee failed to incorporate either a modified performance discharge test or a battery service test into their postmaintenance testing for battery HPCS-B1-DG3 and restored the equipment to operable without meeting Technical Specification Surveillance Requirement 3.8.4.3. Following identification, the licensee performed a battery service test and determined that the division 3 battery capacity was adequate to meet all operability requirements. The licensee initiated corrective action documents Action Requests AR 264204 and AR 264214 to address the failure to include all technical specification requirements into postmaintenance testing for battery HPCS-B1-DG3.

This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because the finding was a qualification deficiency confirmed not to result in loss of operability. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to obtain an interdisciplinary review on the postmaintenance testing planned for battery HPCS-B1-DG3. Specifically, the shift manager failed to request input from system engineering and licensing on the decision to not perform a battery service test [H.1(a)]. (Section 1R19).

- 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 control impairment of high energy line break barriers in accordance with Procedure PPM 1.3.57, "Barrier Impairment," Revision 28. On May 6, 2012, the licensee performed Surveillance Procedure ISP-CIA-Q901, "ADS Accumulator Backup Low Pressure Alarm Division 1 CFT/CC," Revision 7. A high energy line break barrier associated with instrument rack E-IR-67 was breached and left unattended during the surveillance. The licensee failed to meet requirements specified in Procedure PPM 1.3.57, "Barrier Impairment," Revision 28, which required a barrier impairment permit

for the high energy line break barrier that was breached. Additionally, the inspectors determined that the licensee failed to declare inoperable and unavailable, all equipment impacted by the breached high energy line break barrier on instrument rack E-IR-67. As interim corrective action, the licensee initiated Night Order 1379 directing a more complete review of Procedure PPM 1.3.57 prior to work authorization on components that serve as hazard barriers. This issue was entered into the licensee's corrective action program as Action Request AR 263274.

This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the availability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to update surveillance procedures associated with high energy line break barriers such that individuals responsible for maintaining those barriers were knowledgeable of the requirements in Procedure PPM 1.3.57 [H.2(c)]. (Section 1R22).

B. 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.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period at 100 percent power. Periodically between March 30, 2012 and May 19, 2012, the station reduced power to 85 percent at the request of the local grid operator for economic dispatch. On May 19, 2012, the station shut down for a planned maintenance outage. On May 29, 2012 the station exited the maintenance outage and reached 100% power on May 31, 2012. The facility operated at 100 percent power, with the exception of scheduled reductions in power to support minor maintenance and testing, and requested economic dispatch for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Summer Readiness for Offsite and Alternate-ac Power

a. Inspection Scope

The inspectors performed a review of preparations for summer weather for selected systems, including conditions that could lead to loss-of-offsite power and conditions that could result from high temperatures. The inspectors reviewed the procedures affecting these areas and the communications protocols between the transmission system operator and the plant to verify that the appropriate information was being exchanged when issues arose that could affect the offsite power system. Examples of aspects considered in the inspectors' review included:

- The coordination between the transmission system operator and the plant's operations personnel during off-normal or emergency events
- The explanations for the events
- The estimates of when the offsite power system would be returned to a normal state
- The notifications from the transmission system operator to the plant when the offsite power system was returned to normal

During the inspection, the inspectors focused on plant-specific design features and the procedures used by plant personnel to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the FSAR and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed

corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- Plant Switchyard (Ashe Substation) and Transformer Yard
- Onsite emergency diesel generators

These activities constitute completion of one readiness for summer weather affect on offsite and alternate-ac power sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

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

- April 5, 2012, reactor core isolation cooling system following quarterly surveillance testing
- April 9, 2012, residual heat removal train A and low pressure core spray system while residual heat removal train B was out-of-service
- May 24, 2012, control rod drive system in preparation for reactor startup following maintenance outage
- June 18, 2012, divisions 1, 2, and 3; 125 Vdc and 250 Vdc electrical systems

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, FSAR, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The

inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On May 1, 2012, the inspectors performed a complete system alignment inspection of the containment instrument air system including the safety-related nitrogen supply to the automatic depressurization system to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review mechanical and electrical equipment lineups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- April 11, 2012, Fire Areas SW-1 and SW-2, service water pump houses A and B
- April 17, 2012, Fire Area R-1, reactor building 606' elevation
- April 23, 2012, fire areas associated with barrier impairments issued for extended allowed outage time for diesel generator 2 being out of service
- June 8, 2012, Main Control Room

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the FSAR, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- April 3, 2012, manholes 8 and 9

These activities constitute completion of one bunker/manhole sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for the residual heat removal 1A heat exchanger. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method outlined in EPRI Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines"; the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one heat sink inspection sample as defined in Inspection Procedure 71111.07-05.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Program

a. Inspection Scope

On May 30, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations
- The modeling and performance of the control room simulator
- The quality of post-scenario critiques
- Follow-up actions taken by the licensee for identified discrepancies

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 Quarterly Observation of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the operators' performance of the following activities:

- April 25, 2012, replacement of a failed digital electro-hydraulic power supply that had the potential to create a plant transient if performed incorrectly.
- April 30, 2012, reduction of reactor power to 85 percent at the request of the local grid operator.
- May 28, 2012, plant startup activities in the main control room following completion of Maintenance Outage 12-01.

In addition, the inspectors assessed the operators' adherence to plant procedures, including 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 evaluated degraded performance issues involving the following risk significant systems:

- April 24, 2012, diesel generator 4; alternate AC diesel generator
- June 21, 2012, division 1, 2, and 3; 125 Vdc and 250 Vdc distribution system

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or -(a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate

significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- April 9, 2012, performing division 1 scheduled work during emergent entry into division 2 residual heat removal technical specification action statement
- April 16, 2012, unplanned Yellow risk due to emergent issue with fuel pool cooling pump 1A
- May 22, 2012, planned Yellow risk during work on backup transformer TR-B
- May 31, 2012, planned Yellow risk during standby liquid control train B maintenance outage and unexpected loss of reactor protection system bus B

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following assessments:

- April 5, 2012, Action Request AR 260478 documenting low margin to the operability limit of residual heat removal pump B
- May 3, 2012, Action Request AR 262845 documenting abnormally warm fuse clips on standby gas treatment system train B
- May 3, 2012, Action Request AR 262795 documenting a potential concern with diesel generator 2 consuming more fuel while operating
- May 23, 2012, Action Request AR 263887 documenting containment vacuum breaker CVB-V-1JK rear disc found open

The inspectors selected these operability and functionality assessments based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure technical specification operability was properly justified and to verify the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and FSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

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 required operability determination for a degraded condition associated with residual heat removal pump B.

Description. On March 25, 2012, the licensee performed Procedure OSP-RHR/IST-Q703, "RHR Loop B Operability Test," Revision 34. Step 7.2.68 of the

procedure was used to demonstrate the residual heat removal pump's ability to provide greater than 7,450 gallons per minute with a differential pressure of greater than or equal to 26 psid between the reactor vessel and the pump's suction source. This procedural step was provided to satisfy the requirements of Technical Specification Surveillance Requirement 3.5.1.4. Due to the design of the system, the surveillance was performed by establishing a pump flow to the suppression pool that exceeded the surveillance requirement limit then measured pump discharge pressure as a means of demonstrating that the system was capable of overcoming the required differential pressure and system losses. During performance of Step 7.2.68, the licensee recorded a pump discharge pressure that exceeded the acceptance criteria by 0.03 psig. The operating crew reviewed the results of the surveillance and noted the low margin to the technical specification requirement but declared the surveillance met and the equipment operable based on the 0.03 psig of margin. No formal evaluation of the low margin was performed.

On March 28, 2012, the inservice testing engineer initiated Action Request AR 00260478 to document the residual heat removal pump's low margin to Technical Specification Surveillance Requirement 3.5.1.4. The action request initiator noted that pump performance was stable and satisfactory. The shift manager who performed the operations review of Action Request AR 00260478 determined that no operability determination was required by Procedure PPM 1.3.66, "Operability and Functionality Evaluation," Revision 20 because the pump had passed its most recent surveillance. When determining the need for an operability determination, the shift manager did not consider the required mission time for residual heat removal pump B or if pump performance was degrading such that the reasonable expectation of operability would be lost prior to the next scheduled performance of Procedure OSP-RHR/IST-Q703.

On April 5, 2012, the inspectors reviewed Action Request AR 260478 and the March 25, 2012, performance of Procedure OSP-RHR/IST-Q703. Plant computer data revealed that the residual heat removal pump did meet the procedure acceptance criteria at the moment the data was recorded; however, pump discharge pressure dropped below the technical specification surveillance requirement acceptance criteria at several points after the licensee had recorded their data. Additionally, comparison of previous performance of Procedure OSP-RHR/IST-Q703 revealed a declining trend in pump discharge pressure. Specifically, pump discharge pressure dropped from 1.75 psig above the technical specification acceptance criteria on January 2, 2012, to only 0.03 psig on March 25, 2012. This data suggested that the licensee's conclusion that performance was stable and satisfactory, as documented in Action Request AR 260478, was incorrect. A significant drop in pump discharge pressure, such that the reasonable expectation of operability would be lost prior to the next scheduled performance of the surveillance, was a degraded condition. Procedure PPM 1.3.66, Step 4.1.6, requires the licensee to immediately determine operability from a detailed examination of the deficiency. The inspectors determined that the licensee failed to evaluate for operability Action Request AR 260478. Because the licensee failed to perform an immediate operability determination, they also failed to recognize that the residual heat removal pump B was inoperable following the March 25, 2012, performance of Procedure OSP-RHR/IST-Q703.

Upon notification of the degraded condition, the shift manager requested assistance from engineering who confirmed that the residual heat removal pump B failed to meet Technical Specification Surveillance Requirement 3.5.1.4 during the performance of Procedure OSP-RHR/IST-Q703 on March 25, 2012. The pump was declared inoperable and Technical Specification Limiting Condition for Operation 3.5.1 Condition A was entered which required the equipment to be restored within 7 days. On April 6-9, 2012, the licensee performed additional testing of residual heat removal pump B which confirmed that the pump was unable to meet Technical Specification Surveillance Requirement 3.5.1.4. As interim corrective actions, the licensee re-modeled the flow path used in the residual heat removal system to include both the heat exchanger and heat exchanger bypass lines. By adding this additional flow path, the licensee removed conservatism incorporated into the surveillance requirement acceptance criteria by reducing the pressure drop across the system. This allowed the licensee to reduce the required pump discharge pressure specified in Procedure OSP-RHR/IST-Q703 and exit Technical Specification Limiting Condition for Operation 3.5.1 Condition A. Long term corrective actions are planned by the licensee to request a technical specifications amendment to reduce the required residual heat removal pump flow such that the flows more closely align with the assumptions of the accident analysis.

Analysis. The failure to perform an immediate determination of operability for a degraded condition 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 Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to use conservative assumptions when evaluating Action Request AR 260478 that documented low margin for residual heat removal pump B. Specifically, the shift manager failed to challenge the non-conservative assumption that pump flow was stable and satisfactory [H.1(b)].

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. Licensee Procedure PPM 1.3.66, "Operability and Functionality Evaluation," Revision 20, Step 4.1.6, required the licensee to immediately determine operability from a detailed examination of the deficiency. Operability should be determined immediately upon discovery that structures, systems and components subject to technical specifications are in a degraded or nonconforming condition.

Contrary to the above, on March 28, 2012, the licensee failed to evaluate for operability Action Request AR 260478 which documented a significant drop in residual heat removal pump B performance and low margin to Technical Specification Surveillance Requirement 3.5.1.4. Consequently, the licensee failed to recognize that the residual heat removal pump B was inoperable following the March 25, 2012, performance of Procedure OSP-RHR/IST-Q703. The licensee implemented corrective actions to modify the testing procedure by removing conservatisms associated with the assumed residual heat removal flow path. Because this violation was of very low safety significance (Green) and it was entered into the licensee's corrective action program as Action Request AR 266371, this violation is being treated as a non-cited violation, consistent with the Enforcement Policy: NCV 05000397/2012003-01, "Failure to Evaluate Operability Associated with Residual Heat Removal Pump B."

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- April 25, 2012, postmaintenance testing of diesel generator 2 upon completion of planned maintenance activities
- May 27, 2012, postmaintenance testing of division 3 safety-related batteries following planned replacement
- May 28, 2012, postmaintenance testing of high pressure core spray service water system following replacement of small bore piping to room cooler
- June 1, 2012, postmaintenance testing of reactor recirculation pump 1A following planned replacement of upper seal package

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following:

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the FSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed

corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four post-maintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure of the licensee to perform a required postmaintenance test of the division 3 safety-related batteries prior to system restoration.

Description. On May 22, 2012, during a planned maintenance outage, the licensee replaced the division 3 safety-related battery HPCS-B1-DG3 under Work Order 02000618. Prior to installation, the licensee performed acceptance testing in accordance with Procedure ESP-BSPARE-A101, "12 Month Spare Battery Cell Inspection," Revision 2. This procedure provided two options for testing; either a performance discharge test or a modified performance discharge test. For the work performed under Work Order 02000618, the licensee elected to perform the performance discharge test. On May 24, 2012, operations logged that battery HPCS-B1-DG3 was operable following completion of replacement activities under Work Order 02000618.

On May 25, 2012, the resident inspectors reviewed the work orders associated with the replacement of battery HPCS-B1-DG3. Operability testing requirements of safety-related battery are specified in Limiting Condition for Operation (LCO) 3.8.4, "DC Sources - Operating" and LCO 3.8.6, "Battery Parameters". Technical Specification Surveillance Requirement 3.8.4.3 requires a battery service test to verify battery capacity is adequate to supply the required emergency loads for the design duty cycle. Surveillance Requirement 3.8.4.3 is modified by a note that allows the licensee to perform the modified performance discharge test in Surveillance Requirement 3.8.6.6 in lieu of the service test in Surveillance Requirement 3.8.4.3. The modified performance discharge is different from the performance discharge test in that it verifies the ability of the battery to provide a high rate, short duration load to meet the critical period of the load duty cycle. Since no battery service test was performed and the licensee elected to perform a performance discharge test instead of a modified performance discharge test, the inspectors concluded that the licensee restored battery HPCS-B1-DG3 to operable without meeting Technical Specification Surveillance Requirement 3.8.4.3.

Following identification that not all technical specification requirements were incorporated into the postmaintenance testing for battery HPCS-B1-DG3, the licensee initiated Work Order 02026256 to perform battery service testing under Procedure ESP-B1DG3-B101, "24 Month Battery Testing of 125 VDC HPCS-B1-DG3", Revision 17. Testing was performed on May 25, 2012, and determined that the division 3 battery

capacity was adequate to meet all operability requirements. The licensee initiated corrective action documents Action Requests AR 264204 and AR 264214 to address the failure to include all technical specification requirements into postmaintenance testing for battery HPCS-B1-DG3.

The inspectors determined that Work Order 02000618 was originally planned to incorporate a battery service test as specified in Procedure ESP-B1DG3-B101 but was later changed to credit the acceptance testing performed in ESP-BSPARE-A101 in lieu of a battery service test. Neither system engineering or licensing was contacted by operations staff for determination of technical specification impacts of not performing Procedure ESP-B1DG3-B101.

Analysis. The failure to perform adequate postmaintenance testing of the division 3 electrical batteries was a performance deficiency. This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the reliability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because the finding was a qualification deficiency confirmed not to result in loss of operability. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the decision making component because the licensee failed to obtain an interdisciplinary review on the postmaintenance testing planned for battery HPCS-B1-DG3. Specifically, the shift manager failed to request input from system engineering and licensing on the decision to not perform a battery service test [H.1(a)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures. The test program shall include, as appropriate, preoperational tests, and operational tests. Contrary to the above, on May 24, 2012, the licensee restored safety-related battery HPCS-B1-DG3 to service without performing an adequate preoperational test to demonstrate that the battery would perform satisfactorily in service. Specifically, the licensee failed to include either a modified performance discharge test or a battery service test into their postmaintenance testing for battery HPCS-B1-DG3. Because this violation was of very low safety significance (Green) and it was entered into the licensee's corrective action program as Action Requests AR 264204 and AR 264214, this violation is being treated as a non-cited violation, consistent with the Enforcement Policy: NCV 05000397/2012003-02, "Failure to Establish Adequate Postmaintenance Tests for Replacement of Division 3 Safety Related Batteries."

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for Maintenance Outage 12-01, conducted May 23-29, 2012, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense in depth. During the maintenance outage, the inspectors monitored licensee controls over the outage activities listed below:

- Configuration management, including maintenance of defense in depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities
- Monitoring of decay heat removal processes, systems, and components
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss
- Controls over various activities that could affect reactivity
- Maintenance of secondary containment as required by the technical specifications
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing
- Licensee identification and resolution of problems related to refueling outage activities

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the FSAR, procedure requirements, and technical specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Test data
- Testing frequency and method demonstrated technical specification operability
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- April 8, 2012, OSP-RHR/IST-Q703, "RHR Loop B Operability Test," Revision 34
- April 12, 2012, OSP-ELEC-M701, "Diesel Generator 1 – Monthly Operability Test," Revision 49
- April 19, 2012, OSP-ELEC-S703, "HPCS Diesel Generator Semi-Annual Operability Test," Revision 51
- May 9, 2012, ISP-CIA-Q901, "ADS Accumulator Backup Low Pressure Alarm Division 1 CFT/CC", Revision 7
- May 20, 2012, OSP-RCS-C102, "RPV Non-Critical Cooldown Surveillance," Revision 8 (Determination of cooldown rate to meet SR 3.4.11.1)

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

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 control impairment of high energy line break barriers in accordance with Procedure PPM 1.3.57, "Barrier Impairment," Revision 28.

Description. On May 6, 2012, the licensee performed Surveillance Procedure ISP-CIA-Q901, "ADS Accumulator Backup Low Pressure Alarm Division 1 CFT/CC," Revision 7, to test the alarm and safety-related isolation function of the instrument air supply to the automatic depressurization system. As part of the surveillance, the licensee opened a large junction box on instrument rack E-IR-67 to allow for calibrations and channel functional tests of pressure switches CIA-PS-21A, CIA-PS-22A and CIA-PS-39A. The inspectors observed portions of Procedure ISP-CIA-Q901 and identified that the junction box breached on instrument rack E-IR-67 served as a high energy line break barrier and was left unattended during the surveillance. The inspectors questioned if the environmental qualification and therefore the operability of the components located within instrument rack E-IR-67 were affected by the breached barrier. The inspectors also noted that instrument rack E-IR-67 contained additional components beyond those within the scope of Procedure ISP-CIA-Q901. The shift manager initiated Action Request AR 263187 to document the concerns involving the unattended barrier and requested engineering determine the impact of Procedure ISP-CIA-Q901 on all components located in instrument rack E-IR-67. Engineering evaluated Action Request AR 263187 and confirmed that the junction box opened on instrument rack E-IR-67 was a required high energy line break barrier. Environmentally qualified components within instrument rack E-IR-67 that were impacted by the unattended

barrier included the pressure switches tested in Procedure ISP-CIA-Q901 and several safety-related pressure transmitters associated with the containment monitoring system. For each of the components impacted, the licensee did not consider the effect of the unattended barrier on equipment operability or availability. During the May 6, 2012, performance of Procedure ISP-CIA-Q901, the licensee failed to meet requirements specified in Procedure PPM 1.3.57, "Barrier Impairment," Revision 28. Step 4.1.7 of this procedure required the licensee to initiate a barrier impairment permit for high energy line break barriers that was breached on instrument rack E-IR-67 since the barrier was not continually manned such that it could be rapidly returned to an operable status upon observing a steam leak. Additionally, Step 4.13 of Procedure PPM 1.3.57 provided direction that high energy line break barriers are required to be operable in Modes 1, 2 and 3 and directed operations staff to initiate a barrier impairment permit and consider technical specification equipment inoperable for high energy line break barrier breaches. For the May 6, 2012 surveillance, the licensee failed to declare inoperable and unavailable, all equipment impacted by the breached high energy line break barrier on instrument rack E-IR-67.

Following identification of this issue, the licensee determined the cause of the uncontrolled barrier to be a lack of alignment between the procedural requirements in Procedure PPM 1.3.57 and the individual work documents used to implement surveillance testing on equipment protected by hazard barriers. As an interim corrective action, the licensee initiated Night Order 1379 directing a more complete review of Procedure PPM 1.3.57 prior to work authorization on components that serve as hazard barriers. At the close of the inspection period, the licensee was evaluating more robust and long term corrective actions.

Analysis. The failure to maintain control of required high energy line break barriers in accordance with Procedure PPM 1.3.57 was a performance deficiency. This performance deficiency was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone objective of ensuring the availability of systems that respond to initiating events. The inspectors performed an initial screening of the finding in accordance with IMC 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined this finding to be of very low safety significance (Green) because it did not result in the loss of a system safety function, did not represent the loss of safety function of a single train for greater than its allowed outage time, did not result in the loss of safety function of any non-technical specification equipment, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to update surveillance procedures associated with high energy line break barriers such that individuals responsible for maintaining those barriers were knowledgeable of the requirements in Procedure PPM 1.3.57 [H.2(c)].

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. Licensee Procedure PPM 1.3.57, "Barrier Impairment," Revision 28, Step 4.1.7, requires, in part, initiation of a barrier impairment permit for unattended breached high energy line break barriers or if the barrier cannot be rapidly returned to an operable status upon observing a steam leak or in the event an evacuation is required. Contrary to the above, on May 9, 2012, the licensee impaired the high energy line break barrier associated with instrument rack E-IR-67 without a barrier impairment permit and without meeting the requirement of Procedure PPM 1.3.57, "Barrier Impairment," Revision 28, Step 4.1.7. Specifically, during performance of Surveillance Procedure ISP-CIA-Q901, "ADS Accumulator Backup Low Pressure Alarm Division 1 CFT/CC," Revision 7, the high energy line break barrier associated with instrument rack E-IR-67 was left unattended and could not be rapidly restored to an operable status in the event of a steam leak. Because this violation was of very low safety significance (Green) and it was entered into the licensee's corrective action program as Action Request AR 263187, this violation is being treated as a non-cited violation, consistent with the Enforcement Policy: NCV 05000397/2012003-03, "Failure to Properly Control High Energy Line Break Barriers."

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on May 8, 2012, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the postevolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

This area was inspected to: (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures, (2) verify the licensee is properly identifying and reporting Occupational Radiation Safety Cornerstone performance indicators, and (3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the Occupational Radiation Safety Cornerstone
- 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

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one required sample as defined in Inspection Procedure 71124.01-05.

b. Findings

No findings were identified.

2RS03 In-plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

This area was inspected to verify in-plant airborne concentrations are being controlled consistent with ALARA principles, and the use of respiratory protection devices onsite do not pose an undue risk to the wearer. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- The licensee's use, when applicable, of ventilation systems as part of its engineering controls
- The licensee's respiratory protection program for use, storage, maintenance, and quality assurance of NIOSH certified equipment, qualification and training of personnel, and user performance
- The licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, status of SCBA staged and ready for use in the plant and associated surveillance records, and personnel qualification and training
- Audits, self-assessments, and corrective action documents related to in-plant airborne radioactivity control and mitigation since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71124.03-05.

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 Physical Protection

4OA1 **Performance Indicator Verification (71151)**

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the performance indicator data submitted by the licensee for the first quarter 2012 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings were identified.

.2 Safety System Functional Failures (MS05)

a. Inspection Scope

The inspectors sampled licensee submittals for the safety system functional failures performance indicator for the period from the first quarter 2011 through the first quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73." The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports, and NRC integrated inspection reports for the period of January 2011 through March 2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one safety system functional failures sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Reactor Coolant System Specific Activity (BI01)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity performance indicator for the period from the first quarter 2011 through the first quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's reactor coolant system chemistry samples, technical specification requirements, issue reports, event reports, and NRC integrated inspection reports for the period of January 2011 through March 2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system specific activity sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Reactor Coolant System Leakage (BI02)

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system leakage performance indicator for the period from the first quarter 2011 through the first quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator logs, reactor coolant system leakage tracking data, issue reports, event reports, and NRC integrated inspection reports for the period of January 2011 through March 2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one reactor coolant system leakage sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the second quarter 2011 through the first quarter 2012. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation area (greater than 1 rem/hr) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 mrem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hr) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of one occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the second quarter 2011 through the first quarter 2012. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as

unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of one radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of January 2012 through June 2012, although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of one single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

The inspectors noted a trend in the reliability of emergency core cooling system keep fill pumps. Specifically, the following Action Requests were initiated within the assessment period documenting unexpected or emergent issues with emergency core cooling system keep fill pumps:

- Action Request AR 256075, "RHR-P-3 Vibration data shows pump bearing degradation"
- Action Request AR 257404, "HPCS-P-3 Vibration Data shows pump bearings are degrading"
- Action Request AR 257708, "HPCS-P-3 vibration degradation has increased"
- Action Request AR 258632, "LPCS-P-2 making a cycling noise"

- Action Request AR 260533, “High Vibration on RHR-P-3”
- Action Request AR 261113, “Last RHR-P-3 Power Frame only lasted three months”
- Action Request AR 261816, “LPCS-P-2 noise has increased”

Cause evaluation performed by the licensee under Action Request AR 261113 determined that tolerances within all of the emergency core cooling system keep fill pump frames have increased due to re-use and in-service time. Additionally, the improper sizing of the pump was identified as a contributor to premature bearing failure. Corrective actions identified under Action Request AR 261113 include procurement of new, properly sized power frame units.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee’s corrective action program, the inspectors recognized a corrective action item (Action Request AR 260848) documenting procedure errors in Emergency Operating Procedure PPM 5.2.1, “Primary Containment Control,” Revision 19, and Severe Accident Guidelines Procedure SAG 2, “Containment and Radioactivity Release Control,” Revision 6. The procedure errors resulted in incorrect thresholds for venting primary containment when addressing possible hydrogen production within the plant’s primary containment.

These activities constitute completion of one in-depth problem identification and resolution sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.5 In-depth Review of Operator Workarounds

a. Inspection Scope

On April 30, 2012, the inspectors reviewed the operations department burden list, control room deficiencies, and operator work around list to determine if any operator work arounds, either individually or collectively, could unnecessarily challenge mitigating system performance or operators during event response. The inspectors verified that Energy Northwest was identifying and documenting operator work around problems at an appropriate threshold. Documents reviewed are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

40A3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 2011-004-00, Secondary Containment Low Differential Pressure Due to Ice Buildup

On December 10, 2011, the control room received a secondary containment high differential pressure alarm. The alarm was due to a sudden in-rush of air into the reactor building. Action by the licensee to cut the reactor building outside air roll filters to address ice buildup caused the sudden in-rush of air. During this event, pressure in secondary containment briefly exceeded 0.0 inch water gauge. The secondary containment structure is normally maintained at negative 0.6 inch of water gauge during plant operations to ensure that any fission products are drawn into the structure, contained, and diluted before being released through the elevated plant stack. Limiting Condition for Operation 3.6.4.1, "Secondary Containment," requires that secondary containment be operable during Modes 1, 2, and 3. Technical Specification Surveillance Requirement 3.6.4.1.1 requires the licensee verify secondary containment is less than negative 0.25 inch of water gauge every 24 hours. Based on the failure to meet the surveillance requirement, plant operators declared secondary containment inoperable and entered the applicable actions of Limiting Condition for Operation 3.6.4.1. Since secondary containment is a system required to control the release of radioactive material and mitigate the consequences of an accident and because the licensee failed to meet technical specification surveillance requirement due to secondary containment pressure being greater than negative 0.25 inch water gauge, secondary containment was inoperable and the event is reportable under 10 CFR 50.72(b)(3)(v)(C) and (D). 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 potential safety consequences and corrective actions required to address potential occurrences of icing in the future. No performance deficiencies were identified. This licensee event report is closed.

.2 (Closed) Licensee Event Report 2012-002-00, Technical Specification Non-Compliance Due to Inadequate Procedure Guidance

This licensee event report documents a technical specification action statement which was not entered and its associated required action was not completed. Specifically, the division 1 control room emergency filtration system was declared inoperable and Technical Specification Action Statement 3.7.3.B was entered. One of its required actions is to verify control room occupants will not be exposed to radiological hazards that will exceed the regulatory limits. Due to an inadequate procedure, the verification was not sufficient and Technical Specification Action Statement 3.7.3.C should have been entered. Technical Specification Action Statement 3.7.3.C Required Actions would have initiated a plant shutdown within 12 hours, which did not occur. See Section 1R19 of NRC Inspection Report 05000397/2012002 for a discussion of an NRC identified finding associated with this issue. The inspectors completed a review of the licensee event report and did not identify any other violations of regulatory requirements or findings associated with this event. This licensee event report is closed.

40A5 Other Activities

.1 (Closed) NRC Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope

The inspectors evaluated whether the licensee maintained documents, installed system hardware, and implemented actions that were consistent with the information provided in their response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." Specifically, the inspectors verified that the licensee had implemented, or was in the process of implementing, the commitments, modifications, and programmatically controlled actions described in their response to Generic Letter 2008-01. The inspectors conducted their review in accordance with Temporary Instruction 2515/177 and considered the site-specific supplemental information provided by the Office of Nuclear Reactor Regulation to the inspectors.

b. Inspection Documentation

The inspectors reviewed the licensing basis, design, testing, and corrective actions as specified in the temporary instruction. The specific items reviewed and any resulting observations are documented below.

Licensing Basis: The inspectors reviewed selected portions of licensing basis documents to verify that they were consistent with the NRR assessment report, and that the licensee properly processed any required changes. The inspectors reviewed selected portions of technical specifications, technical specification bases, and the updated final safety analysis report. The inspectors also verified that applicable

documents that described the plant and plant operation, such as calculations, piping and instrumentation diagrams, procedures, and corrective action program documents addressed the areas of concern and were changed, if needed, following plant changes. The inspectors confirmed that the licensee performed surveillance tests at the frequency required by the technical specifications. The inspectors verified that the licensee tracked their commitment to evaluate and implement any changes that would be contained in the technical specification task force traveler.

Design: The inspectors reviewed selected design documents, performed system walkdowns, and interviewed plant personnel to verify that the licensee addressed design and operating characteristics. Specifically:

- The inspectors verified that the licensee had identified the applicable gas intrusion mechanisms for their plant.
- The inspectors verified that the licensee had established void acceptance criteria consistent with the void acceptance criteria identified by the Office of Nuclear Reactor Regulation. The inspectors also confirmed that the range of flow conditions evaluated by the licensee was consistent with the full range of design basis and expected flow rates for various break sizes and locations.
- The inspectors selectively reviewed applicable documents, including calculations, and engineering evaluations with respect to gas accumulation in the high pressure core spray, low pressure core spray, residual heat removal, and drywell/wetwell spray systems. Specifically, the inspectors verified that these documents addressed venting requirements, aspects where pipes were normally voided, void control during maintenance activities, and the potential for vortex effects that could ingest gas into the systems during design basis events.
- The inspectors conducted a walkdown of selected regions of the drywell/wetwell spray systems in sufficient detail to assess the licensee's walk downs. The inspectors also verified that the information obtained during the licensee's walkdown was consistent with the items identified during the inspectors' independent walkdown.
- The inspectors verified that piping and instrumentation diagrams and isometric drawings describe up-to-date configurations of the emergency core cooling systems and decay heat removal systems. The review of the selected portions of isometric drawings considered the following:
 1. High point vents were identified.
 2. High points without vents were recognizable.
 3. Other areas where gas could accumulate and potentially impact operability, such as at orifices in horizontal pipes, isolated branch lines,

heat exchangers, improperly sloped piping, and under closed valves, were described in the drawings or in referenced documentation.

4. Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceeded specified criteria were identified.
 5. All pipes and fittings were clearly shown.
 6. The drawings were up-to-date with respect to recent hardware changes, and that any discrepancies between as-built configurations and the drawings were documented and entered into the corrective action program for resolution.
- The inspectors verified that the licensee had completed their walkdowns and selectively verified that the licensee-identified discrepant conditions in their corrective action program and appropriately modified affected procedures and training documents. The licensee identified to the inspector one portion of high pressure core spray that had not been walked down. The inspectors reviewed the evaluation for the portion of piping and determined that the region was bounded by the licensee's analysis. The licensee informed the inspectors that the walk down would be performed at the next refueling outage.

Testing: The inspectors reviewed selected surveillances, post-modification tests, and post-maintenance test procedures and results, conducted during power and shutdown operations, to verify that the licensee was using procedures that appropriately addressed gas accumulation and/or intrusion into the subject systems. This review included the verification of procedures used for conducting surveillances and for the determination of void volumes to ensure that void criteria were satisfied and would continue to be satisfied until the next scheduled void surveillances. Also, the inspectors reviewed procedures used for filling and venting the following conditions that could introduce voids into the subject systems to verify that the procedures adequately tested for such voids and provided adequate instructions for their reduction or elimination.

Corrective Actions: The inspectors reviewed selected corrective action program documents to assess how effectively the licensee addressed the issues associated with Generic Letter 2008-01 in their corrective action program. In addition, the inspectors verified that the licensee implemented appropriate corrective actions for issues identified in the nine-month and supplemental responses. The inspectors determined that the licensee had effectively implemented the actions required by Generic Letter 2008-01.

Based on this review, the inspectors concluded that there is reasonable assurance that the licensee will complete all outstanding items and incorporate this information into the design basis and operational practices. This temporary instruction is closed for Columbia Generating Station.

c. Findings

No findings were identified.

40A6 Meetings, Including Exit

Exit Meeting Summary

On May 10, 2012, the inspectors presented the inspection results for Temporary Instruction 2515/177 to Mr. M. Reddemann, Chief Executive Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

On May 25, 2012, the inspectors presented the results of the radiation safety inspections to Mr. C. King, Assistant Plant General Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On July 2, 2012, the inspectors presented the inspection results to Mr. W. Hettel, Vice President, Operations, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

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.

- .1 Title 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure that the design basis for structures, systems, and components are correctly translated into specifications, procedures, and instructions. Contrary to the above, prior to April 10, 2012, the licensee failed to translate the correct flow coefficient for residual heat removal heat exchanger bypass valves RHR-V-48A and RHR-V-48B into Calculation 5.17.19 resulting in a calculated non-conservative pressure drop for the system. This non-conservative pressure drop was then translated into non-conservative acceptance criteria for Procedures OSP-RHR/IST-Q702, "RHR Loop A Operability," Revision 0-33 and OSP-RHR/IST-Q703, "RHR Loop B Operability Test," Revision 0-33. This finding was entered into the corrective action program as Action Request AR 261930. This finding was determined to be of very low safety significance because it represented a design or qualification deficiency confirmed not to result in a loss of operability.
- .2 Technical Specification 5.4.1.a, "Procedures," 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 6 of Regulatory

Guide 1.33, Appendix A, requires specific procedures for combating emergencies or other significant events. Contrary to the above, prior to April 6, 2012, licensee Procedure PPM 5.2.1, "Primary Containment Control," Revisions 0-19 were inadequate because Table 27 of the procedure provided direction to vent primary containment based on values that were not consistent with the Offsite Dose Calculation Manual offsite radioactivity release limits. This finding was entered into the corrective action program as Action Request AR 260848. This finding was determined to be of very low safety significance because the procedure, as written, created a degraded condition that had potentially important implication for the integrity of containment, but would not have an impact on large early release frequency.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

V. Bhardwaj, Manager, System Engineering
J. Brower, Supervisor, Design Engineering
E. Butler, Technician, Radiation Protection
B. Cook, Manager, Technical Training
M. Davis, Manager, Radiological Services
Z. Dunham, Supervisor, Licensing
G. Egert, Advisor, Health Physics Staff
D. Gregoire, Manager, Regulatory Affairs
T. Hancock, Supervisor, NSSS
P. Harness, Project Manager
M. Hedges, Licensing, Principal Engineer
W. Hettel, Vice President, Operations
A. Javorik, Vice President, Engineering
M. Kinmark, Advisor, Health Physics Staff
C. King, Assistant Plant General Manager,
D. Mand, Manager, Design Engineering
M. Reddemann, Chief Executive Officer
C. Sonoda, Engineer, Licensing
R. Shepherd, Operations Supervisor, Radiation Protection
K. Webb, Technician, Radiation Protection
S. Wellsfry, Gas Accumulation Program Owner

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened and Closed

- | | | |
|---------------------|-----|---|
| 05000397-2012003-01 | NCV | Failure to Evaluate Operability Associated with Residual Heat Removal Pump B (Section 1R15) |
| 05000397-2012003-02 | NCV | Failure to Establish Adequate Postmaintenance Tests for Replacement of Division 3 Safety Related Batteries (Section 1R19) |
| 05000397-2012003-03 | NCV | Failure to Properly Control High Energy Line Break Barriers (Section 1R22) |

Closed

- | | | |
|----------------------|-----|---|
| 05000397-2011-004-00 | LER | Secondary Containment Low Differential Pressure Due to Ice Buildup |
| 05000397-2012-002-00 | LER | Technical Specification Non-Compliance Due to Inadequate Procedure Guidance |

Discussed

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ABN-ELEC-GRID	Degraded Offsite Power Grid	4
OI 53	Offsite Power	12
SOP-DG1-LU	Emergency Diesel Generator Div 1 Valve and Power Supply Lineup	3
SOP-DG2-LU	Emergency Diesel Generator Div 2 Valve and Power Supply Lineup	3
SOP-DG3-LU	High Pressure Core Spray Diesel Generator Valve and Power Supply Lineup	3

ACTION REQUESTS

00254194	00256241	00256322	00258318	00261015
00262262	00262495	00263963	00264826	

Section 1R04: Equipment Alignment

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SOP-CIA-LU	Containment Instrument Air System Valve and Breaker Lineup	2
SOP-RCIC-STBY	Placing RCIC in Standby Status	6
SOP-LPCS-LU	LPCS Valve and Breaker Lineup	1
SOP-RHR-LU	RHR System Valve and Breaker Lineup	2
TSP-MSRV/IST-R701	Safety/Relief Valve and ADS Operability	
SOP-CRD-C702	Control Rod Drive System Lineup	0
3.1.1	Master Startup Checklist	52
SOP-ELEC-250V-OPS	250 Vdc System Operations	2

SOP-ELEC-24V-OPS	24 Vdc System Operations	2
SOP-ELEC-125V-OPS	125 Vdc System Operations	2

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
M556	Flow Diagram Containment Instrument Air System	50

ACTION REQUESTS

229807	235246	256230	264071	258689
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WORK ORDER

01179421

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CMR-92-0192	Calculation Modification Record 92-0192	March 11, 1992
CMR-94-1154	Calculation Modification Record 94-1154	November 15, 1994
CMR-97-0012	Calculation Modification Record 97-0012	August 15, 1997
CMR-99-0150	Calculation Modification Record 99-0150	July 28, 1999
EC 5858	Revisions to ME-02-95-11 Rev 000 for Change in Actuator Dimensions Resolves PERA 206-0625-01	April 2, 2007
EC 6569	ME-02-95-11 Rev 000 Correct Typographical Errors and Location of Accum. Statement	November 14, 2007
Calculation ME-02-95-11	Calculation for 42 Gallon Accumulator Capacity to Perform the ADS Function with a Loss of the Safety Related CIA Supply	0
Calculation 5.46.05	Calculation for CIA Operating Limits	4
TM-2133	Review of Main Steam Safety Relief Valves	May 16, 2002

Section 1R05: Fire Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
FSAR	Columbia Generating Station Final Safety Analysis Report, Appendix F	60
PFP-RB-606	Reactor 606	5
PFP-MN-XFMR-YD-MISC	MN XFMR YD MISC BLDGS	4
PPM 1.3.76	Integrated Risk Management	30

FIRE PROTECTION SYSTEM IMPAIRMENTS

262166	12-0111	12-0112	12-0113	12-0114
12-0115	12-0116	12-0117	12-0118	12-0119
12-0120	12-0121	12-0122	12-0123	12-0124
12-0125	12-0126	12-0127	12-0128	12-0129
12-0130	12-0131	12-0132	12-0133	12-0135
12-0136				

MISCELLANEOUS DOCUMENT

<u>TITLE</u>	<u>REVISION / DATE</u>
Fire Tour Log	April 23, 2012

ACTION REQUEST

262166

Section 1R06: Flood Protection Measures

ACTION REQUESTS

00249178	00260113	00260476	00260470	00260558
00260631				

Section 1R07: Heat Sink Performance

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
8.4.42	Thermal Performance Monitoring of RHR-HX-1A and RHR-HX-1B	11

WORK ORDER

02013728

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

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
LR002097	Cycle 12-3 Simulator Scenario	0

Section 1R12: Maintenance Effectiveness

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SYS 4-22	Maintenance Rule Program	3
1.3.76	Integrated Risk Management	30
10.25.5D	60 Month Battery Inspection and Testing	1
10.25.5C	12 Month Battery Inspection and Testing	14
10.25.5B	Quarterly Battery Testing	8
10.25.5A	Monthly Battery Testing	12

ACTION REQUESTS

183032 182826 183709 185195

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
1.3.76	Integrated Risk Management	30
1.5.14	Risk Assessment and Management for Maintenance/Surveillance Activities	23

Section 1R15: Operability Evaluations

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
1.3.66	Operability and Functionality Evaluation	20
OSP-RHR/IST- Q703	RHR Loop B Operability Test	34
OSP-RHR/IST- Q703	RHR Loop B Operability Test	35

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
M200 Sh. 107	Residual Heat Removal System	9
N-901458-1	MK 52 Orifice Plates	B
P2-2767-N-2	12" and 14" Bolted Cover Swing Check Valve	2
RHR-898-9.14	RHR Loop B	11

ACTION REQUESTS

00192631	00192510	00022087	00260478	00261152
00261930	00262845			

WORK ORDERS

02010019	02008595
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MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
CMR-93-0588	Calculation Modification Record CMR-93-0588	February 10, 1994
EC 10916	Revise 5.17.19 Analysis for Required Pressure During TS Surveillance	April 6, 2012
EC 10921	Evaluate the Current Condition of Residual Heat Removal Pump 2B (RHR-P-2B)	April 11, 2012
EC 10922	Add RHR Flow Path to Analysis	April 10, 2012
Calculation 5.17.19	Calculation for RHR Pressure Drop Calculation Modes A.1, A.2, B, C.1, C.2, C.3, C.4, D, E, F, G, & S	3
Calculation 5.17.21	Calculation for Pressure Drop RHR System in Dedicated Flow Path	0
Drawing Number N-901458-1	MK 52 Orifice Plates	B
ME-02-92-234	Calculation for On Site Diesel Fuel Storage for the Emergency Diesel Generators DG-1, DG-2, and DG-3	1

Section 1R19: Post-Maintenance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ESP-B1DG3- A101	12 Month Battery Inspection of 125 VDC HPCS-B1-DG3	8
ESP-B1DG3- B101	24 Month Battery Testing of 125 VDC HPCS-B1-DG3	17
ESP-B1DG3- F101	60 Month Battery Testing of 125 VDC HPCS-B1-DG3	10
ESP-B1DG3- M101	Monthly Battery Testing 125 VDC HPCS-B1-DG3	4
ESP-B1DG3- Q101	Quarterly Battery Testing 125 VDC HPCS-B1-DG3	12
OSP-ELEC- M702	Diesel Generator 2 – Monthly Operability Test	54
OSP-SW-M103	HPCS Service Water Valve Position Verification	17

OSP-SW/IST-Q703	HPCS Service Water Operability	18
TSP-DSA-B702	DG2 Air Start Motor Test	8
SOP-DG2-START	Emergency Diesel Generator (DIV 2) Start	22
SWP-TST-01	Post Maintenance Testing Program	14

ACTION REQUESTS

00246333 00247984

WORK ORDERS

02000618 02013555 02016254 02026256

Section 1R20: Refueling and Other Outage Activities

PROCEDURE

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
3.1.1	Master Startup Checklist	52
3.2.1	Normal Plant Shutdown	69
3.3.1	Reactor Scram	56
SOP-ENTRY-DW	Personnel Entry Into Drywell	23
SOP-RHR-SDC	RHR Shutdown Cooling	20

ACTION REQUESTS

00263878 00263887 00263889 00263988 00264177
00264175 00264178 00264181 00264182

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
1.3.57	Barrier Impairment	28

ISP-CIA-Q901	ADS Accumulator Backup Low Pressure Alarm Division 1 CFT/CC	7
OSP-HPCS/IST- Q701	HPCS System Operability Test	39
OSP-ELEC- M701	Diesel Generator 1 – Monthly Operability Test	49
OSP-ELEC-S703	HPCS Diesel Generator Semi-Annual Operability Test	51
OSP-RHR/IST- Q703	RHR Loop B Operability Test	32
SWP-PRO-01	Procedure Use and Adherence	19

ACTION REQUESTS

00263187

Section 1EP6: Drill Evaluation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
PPM 13.1.1	Classifying the Emergency	41
PPM 5.1.1	RPV Control	19
PPM 5.2.1	Primary Containment Control	19
PPM 5.3.1	Secondary Containment Control	18
PPM 5.4.1	Radioactivity Release Control	16

ACTION REQUESTS

00263104 00263700 00263703 00264649

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SWP-RPP-01	Radiation Protection Program	10

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
GEN-RPP-04	Entry Into, Conduct In, and Exit From Radiologically Controlled Areas	27
HPI-0.19	Radiation Protection Standards and Expectations	12
1.11.15	Control of Radioactive Material	7
1.11.23	Radioactive Material Container Control	4
11.2.7.1	Area Posting	37
11.2.7.3	High Radiation Area, Locked High Radiation Area, and Very High Radiation Area Controls	37
11.2.13.1	Radiation and Contamination Surveys	31
11.2.14.4	Procurement, Receipt, Control and Leak Testing of Radioactive Sealed Sources and Devices	22
11.2.14.9	Control and Labeling of Radioactive Material	15
11.2.15.7	Release of Material from Radiologically Controlled Areas	19

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
AU-RP/RW-11	Radiation Protection/ Process Control Programs Audit	November 10, 2011
AR 231624-02	2010 Annual Review Of Radiation Protection Program Per 10CFR20.1101.C	January 31, 2012

ACTION REQUESTS

AR00245164	AR00239328	AR00259037	AR00251993	AR00250016
AR00244759	AR00243270	AR00242939	AR00241855	AR00128865
AR00239868	AR00239739	AR00239728	AR00239646	AR00239584
AR00239475	AR00239473	AR00239055	AR00238498	AR00238259
AR00237780	AR00239965	AR00264082	AR00264083	AR00264085

RADIATION WORK PERMITS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
30002686 02	R20 RF RX Reassembly Cavity Work Pre and During Decon *LHR*	January 1, 2012
30001386 01	MO12-01 DW RRC-P-1A Mech Seal R/R *LHR*	May 17, 2012
30002482 00	MO12-01 ST Inspections and Repairs *LHR*	April 16, 2012
30002594 03	MO12-01 NRC & INPO Tour and Inspections in Drywell	May 21, 2012

SURVEYS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
1364111	Reactor Building 501' Steam Tunnel	September 12, 2011
1612012	DW 501 RRC Pump A Shroud	May 12, 2012
1610212	Drywell 501'	May 20, 2012
1610612	DW 501 RRC Pump A Shroud	May 21, 2012
1610512	Drywell 501'	May 21, 2012
1610112	Drywell 512'	May 20, 2012
1610312	Drywell 501 and 512	May 21, 2012
115908	Drywell 512'	May 20, 2012
313909	Reactor Building 606' Reactor Cavity	June 8, 2009
313809	Reactor Building 606' Reactor Cavity	June 8, 2009
313609	606' Reactor Cavity	June 7, 2009
313509	Reactor Building 606' Reactor Cavity	June 7, 2009

Section 2RS03: In-Plant Airborne Radioactivity Control and Mitigation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
GEN-RPP-05	Respiratory Protection Program Description	12
GEN-RPP-10	Use of Respiratory Protection Equipment	10
ISPM-17	Respiratory Protection	6
PPM 10.2.82	HEPA Filter In-Place Testing	7
PPM 10.2.83	Carbon Filter In-Place Testing	7
PPM 11.2.11.3	Issuance of Respiratory Protection Equipment	16
PPM 11.2.15.11	Use and Certification of Air Handling Units	10
PPM 10.2.62	Breathing Air Compressor Operation	10
PPM 11.2.13.8	Airborne Radioactivity Surveys	12
PPM 12.5.36	Service Air Sampling	5
HPI 15.1	Inspection and Storage of Respirators and Attachments	8

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
PPM 11.2.9.41	AMS-4 Continuous Air Monitor	0
PPM 11.2.9.15	Eberline Model AMS-3 CAM	17

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
QSI-2	Quality Oversight Activities for Continuous Monitoring	March 31, 2011
208560	Respiratory Protection Self-Assessment Report	December 6, 2010

ACTION REQUESTS

AR00264158	AR00264077	AR00264075	AR00263622	AR00245090
AR00242939	AR00242855	AR00239475	AR00238055	AR00238498
AR00238476	AR00238359	AR00238498	AR00238256	AR00233338
AR00239868				

MISCELLANEOUS DOCUMENT

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
07-07-0022	Mandatory and Voluntary Respirator Usage Plan	April 19, 2011

Section 40A1: Performance Indicator Verification

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
HPI 0.14	Accessing and Reporting NRC Occupational Exposure Control Effectiveness Performance Indicator Data	5
	Energy Northwest and NRC Performance Indicator Data for January 2011 through March 2012	
	Energy Northwest Operator Logs for January 2011 through March 2012	
CSP-I131-W101	Reactor Coolant Isotopic Analysis for I-131 Dose Equivalent	7
CI-10.17	Iodine	8

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
AR00245164	Apparent Cause Evaluation Unanticipated LHRA in Reactor Cavity	August 26, 2011
NEI 99-02	Regulatory Assessment Performance Indicator Guidelines	6
02017788-01	Work Order Package CSP-I131-W101 RX Coolant Dose Equivalent	June 19, 2012

Section 40A2: Identification and Resolution of Problems

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
10.25.105	Motor Control Center and Switchgear Maintenance	
PPM 5.2.1	Primary Containment Control	19

ACTION REQUESTS

0048532	00189426	00214109	00255440	00217166
00255283	00255400	00256075	00257404	00257708
00258484	00258632	00260533	00260551	00260848
00261113	00261816	00262063		

Section 40A3: Event Follow-Up

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ABN-HVAC	HVAC Trouble	9
SOP- Coldweather- Ops	Cold Weather Operations	20-22

ACTION REQUESTS

00254121	00256960	00257188
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Section 4OA5: Other Activities

4OA5.1 Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)"

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ME-02-08-15	Determination of allowable volumes of air/gas in the ECCS Discharge Piping	0
E/I-02-91-1011	Setting range determination for the instrument loops HPCS-LS-1A and HPCS-LS-1B	1
NE-02-03-06	EOP/SAG CALCULATIONS	1

ACTION REQUEST/CONDITION REPORTS

00213439	00249204	00249208	00252630	00176497
00253105	00185277	00186138	00186666	00219212
00221188	00240826	00240870	00240929	00240930
00241652	00241843			

WORK ORDERS

WO-01156818	WO-01156819	WO-01156820	WO-01156821
WO-02006425	WO-02006483	WO-02006484	WO-02006485
WO-02018818-16	WO-01156822	WO-02006850	WO-02018818-24
WO-02011103-15			

ENGINEERING CHANGE DOCUMENTS

0003827	0005571	0010272	0009867	0009809	0008845
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DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
HPCS-201-1	HPCS Pump Suppression Pool Suction Line	3
HPCS-202-2	HPCS Pump-1 Discharge	4
HPCS-202-5	HPCS Pump -1 Discharge	3

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
LPCS-201-1	LPCS Suppression Pool Suction Line	3
LPCS-202-2	LPCS Minimum Flow Line to Suppression Pool	3
LPCS-202-3	LPCS Pump-1 Discharge and Test Lines	3
LPCS-202-4	LPCS Pump-1 Discharge	3
LPCS-202-5	LPCS Pump-1 Discharge	4
RHR-201-7	RHR Loop A Supply from RHR-HX-1A	4
RHR-201-9	RHR Loop A/LPCI Return	4
RHR-201-11	RHR Loop A Shutdown Cooling Return and Suppression Pool Spray Supply	6
RHR-203-1	RHR Loop A Test Line	3
RHR-205-3	RHR Loop A Shutdown Cooling Suction	6
RHR-209-1	RHR Loop B Suppression Pool Suction	4
RHR-211-1	RHR Loop C Suppression Pool Suction and Crosstie	3
	HPCS Hybrid Isometric	April 14, 2008
	LPCS Hybrid Isometric	April 16, 2008
	RHR A Hybrid Isometric	May 5, 2008
	RHR B Hybrid Isometric	April 14, 2008
	RHR C Hybrid Isometric	April 16, 2008
M520	Flow Diagram, HPCS and LPCS Systems, Reactor Building	99
M521-1	Flow Diagram, Residual Heat Removal System, Loop A	108
M521-2	Flow Diagram, Residual Heat Removal System, Loop B	111
M521-3	Flow Diagram, Residual Heat Removal System, Loop C	8
M521-4	Flow Diagram, Residual Heat Removal System, Deactivated Steam Condensing Mode	3

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
DES-2-1	Plant Design Changes	43
DES-2-7	Minor Plant Design Changes	17
DES-2-10	Minor Alteration	18
DES-3-1	Design Verification Instruction	9

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OI-12	Clearance Order Instruction	29
SWP-TST-01	Post Maintenance Testing Program	14
OSP-HPCS-A701	High Pressure Core Spray Keep Fill Integrity Test	7
OSP-HPCS-M101	HPCS Fill Verification	6
OSP-LPCS-A702	Low Pressure Core Spray Keep Fill Integrity Test	4
OSP-LPCS-M101	LPCS Fill Verification	6
OSP-RHR-A701	RHR Loop A Keep Fill Integrity Test	7
OSP-RHR-M101	RHR A Fill Verification	8
SOP-HPCS-FILL	HPCS Fill and Vent	9-2
SOP-LPCS-FILL	LPCS Fill and Vent	9-2
SOP-RHR-FILL	RHR Loop Fill and Vent	10-1

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
TM-2166	Acceptance Criteria Gas Intrusion GL2008-01	3
SR-10-07	QA Audit: Gas Accumulation in Safety Systems	December 13, 2010
	Generic Letter 2008-01 Peer Review	October 27, 2008

Section 40A7: Licensee-Identified Violations

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
PPM 5.2.1	Primary Containment Control	19

ACTION REQUESTS

260848	261930
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**The following items are requested for the
Occupational Radiation Safety Inspection
at Columbia Generating Station
May 21 – 24, 2012
Integrated Report 2012003**

Inspection areas are Radiological Hazard Assessment and Exposure Controls (71124.01),

If you have any questions or comments, please contact me at (817)200-1547 or e-mail me at casey.alldredge@nrc.gov.

1. Radiological Hazard Assessment and Exposure Controls (71124.01) to be reviewed by Louis Carson

NOTE: Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for the above inspector should be in a file/folder titled 1- A, Applicable organization charts in file/folder 1- B, etc.

Please provide the requested information in Sections C, D, E, F, and G for Regional Inspector review by May 7, 2012 Other sections may be requested on a case-by-case basis. Please provide the balance of the information by May 21, 2012. Thank you for your support.

- A List of contacts and telephone numbers for the following areas:
 - 1 Radiation Protection Organization Staff and Technicians

- B Applicable organization charts

- C Audits, self assessments, surveillances, vendor or NUPIC audits of contractor support, and LERs written since April 11, 2011, related to:
 - 1. Access Control to Radiologically Significant Areas
 - 2. Radioactive material control
 - 3. Locked High Radiation Area Key Control

- D Procedure indexes for the following areas
 - 1. Access Control to Radiologically Significant Areas
 - 2. Radioactive material control
 - 3. Locked High Radiation Area Key Control
 - 4. Radiation Protection Programs

- E Please provide specific procedures related to the following areas. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
 - 1. Radiation Protection Program Description
 - 2. Radiation Protection Conduct of Operations
 - 3. Posting of Radiological Areas
 - 4. High Radiation Area Controls

5. RCA Access Controls and Radworker Instructions
6. Conduct of Radiological Surveys
7. Radioactive Source Inventory and Control

- F List of corrective action documents (including corporate and subtiered systems) written since April 11, 2011, associated with Radiological hazard assessment including:
1. Control of access to radiologically controlled areas
 2. Electronic dosimeter alarms
 3. Locked high radiation area key control

NOTE; The lists should indicate the significance level of each issue and the search criteria used.

Also include a summary of corrective action documents since April 11, 2011 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 of IP 71151)

- G List of radiologically significant work activities scheduled to be conducted during the inspection week(s)
- H Radioactive source inventory list

2. In-Plant Airborne Radioactivity Control and Mitigation (71124.03) to be reviewed by Casey Alldredge

- A List of contacts and telephone numbers for the following areas:
- 1 Respiratory Protection Program
 - 2 Self contained breathing apparatus
- B Applicable organization charts
- C Copies of audits, self-assessments, surveillances, vendor or NUPIC audits for contractor support (SCBA), and LERs, written since April 11, 2011, related to:
- 1 Installed air filtration systems
 - 2 Self contained breathing apparatuses
- D. Procedure index for:
- 1 use and operation of continuous air monitors
 - 2 use and operation of temporary air filtration units
 - 3 Respiratory protection
- E. Please provide specific procedures related to the following areas. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
- 1 Respiratory protection program
 - 2 Use of self contained breathing apparatuses

- 3 Air quality testing for SCBAs
 - 4 containment purge
 - 5 auxiliary building ventilation
- F. A summary list of corrective action documents (including corporate and subtiered systems) written since April 11, 2011, related to the Airborne Monitoring program including:
- 1 continuous air monitors
 - 2 Self contained breathing apparatuses
 - 3 respiratory protection program
- NOTE; The lists should indicate the significance level of each issue and the search criteria used.
- G List of SCBA qualified personnel - reactor operators and emergency response personnel
- H Surveillance records for self contained breathing apparatuses (SCBAs) staged in the plant for use since April 11, 2011.
- I SCBA training and qualification records for control room operators, shift supervisors, STAs, and OSC personnel for the last year.
- J A selection of personnel may be asked to demonstrate proficiency in donning, doffing, and performance of functionality check for respiratory devices.

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.