



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

October 29, 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 05000397/2012004**

Dear Mr. Reddemann:

On September 21, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Columbia Generating Station. The enclosed inspection report documents the inspection results which were discussed on September 25, 2012, with you 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.

Five NRC identified and four self-revealing findings of very low safety significance (Green) were identified during this inspection. Seven of these findings were determined to involve violations of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 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.

M.E. Reddemann

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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 NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Wayne C. Walker, Branch Chief
Project Branch A
Division of Reactor Projects

Docket: 05000397
License: NPF-21

Enclosure: Inspection Report 05000397/2012004
w/ Attachment: Supplemental Information

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 DRS Director (Tom.Blount@nrc.gov)
 Acting DRS Deputy Director (Jeff.Clark@nrc.gov)
 Senior Resident Inspector (Jeremy.Groom@nrc.gov)
 Resident Inspector (Mahdi.Hayes@nrc.gov)
 Branch Chief, DRP/A (Wayne.Walker@nrc.gov)
 Senior Project Engineer, DRP/A (David.Proulx@nrc.gov)
 Project Engineer, DRP/A (Jason.Dykert@nrc.gov)
 Site Administrative Assistant (Crystal.Myers@nrc.gov)
 Public Affairs Officer (Victor.Dricks@nrc.gov)
 Public Affairs Officer (Lara.Uselding@nrc.gov)
 Project Manager (Lauren.Gibson@nrc.gov)
 Branch Chief, DRS/TSB (Ray.Kellar@nrc.gov)
 RITS Coordinator (Marisa.Herrera@nrc.gov)
 Regional Counsel (Karla.Fuller@nrc.gov)
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000397
License: NPF-21
Report: 05000397/2012004
Licensee: Energy Northwest
Facility: Columbia Generating Station
Location: Richland, WA
Dates: June 23, 2012 through September 21, 2012
Inspectors: J. Groom, Senior Resident Inspector
M. Hayes, Resident Inspector
J. Dykert, Project Engineer
C. Smith, Project Engineer
P. Elkmann, Senior Emergency Preparedness Inspector
G. Guerra, CHP, Emergency Preparedness Inspector
N. Okonkwo, Reactor Inspector
B. Tharakan, Resident Inspector
E. Schrader, Emergency Preparedness Specialist, NSIR
J. Laughlin, Emergency Preparedness Inspector, NSIR
L. Ricketson, P.E., Senior Health Physicist
N. Greene, Ph.D., Health Physicist
Approved By: Wayne Walker, Chief, Project Branch A,
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000397/2012004; 06/23/2012 – 09/21/2012; Columbia Generating Station, Integrated Resident and Regional Report; Equipment Alignment; Maintenance Effectiveness; Operability Evaluations and Functionality Assessments; Post-Maintenance Testing; Occupational ALARA Planning and Controls; Performance Indicator Verification; Other Activities

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region-based inspectors. Seven Green non-cited violations and two Green findings 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 Technical Specification 3.8.1, "AC Sources – Operating," for the licensee's failure to enter and take required actions contained in Technical Specification 3.8.1, Condition A, when removing startup transformer feeder breakers from service for planned maintenance activities. Upon identification the licensee issued Night Order 1411 which documented that if the startup transformer is unable to supply all safety-related busses then the startup transformer offsite power source should be considered inoperable. The licensee entered this issue into the corrective action program as Action Request AR 271413.

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 to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the performance deficiency was of very low safety significance (Green) because the finding did not represent a loss of safety function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, and did not represent an actual loss of function of one or more non-technical specification equipment for greater than 24 hours. 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 ensure that work packages were complete, accurate, and up-to-date. Specifically, the licensee failed to specify the potential technical specification surveillance requirement impacts when

authorizing maintenance on startup transformer feeder breakers [H.2(c)] (Section 1R04).

- Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to maintain adequate procedures associated with critical switchgear ventilation systems. Specifically, licensee Procedure ABN-HVAC, "HVAC Trouble," Revision 10, incorrectly directs entry into Technical Specification 3.7.1, "Standby Service Water (SW) System and Ultimate Heat Sink (UHS)," Condition B, for periods when critical switch gear fans were out of service. As corrective action, the licensee changed the procedures to reflect the correct technical specification action statements that should be entered when critical switchgear ventilation systems are taken out of service. This issue was entered into the licensee's corrective action program as Action Request AR 268099.

This performance deficiency was more than minor because it adversely affected the procedural quality attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined this finding to be of very low safety significance (Green) because it was not a deficiency or qualification deficiency, did not represent a loss of system and/or function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time or two separate safety systems out of service for greater than its technical specification allowed outage time, and the finding did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The inspectors did not assign a cross-cutting aspect to this finding because the inadequate procedural guidance for critical switchgear ventilation systems was made in 2009 and is not reflective of current performance (Section 1R15).

Cornerstone: Barrier Integrity

- Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to implement preventive maintenance schedules for safety-related 480V starter coils. On June 16, 2012, fuel pool cooling pump FPC-P-1A unexpectedly stopped. Subsequent review determined that the loss of fuel pool cooling pump FPC-P-1A was due to no existing preventive maintenance requirement to replace safety-related critical starter coils that are either continuously energized or have a high duty cycle. As corrective action, the licensee implemented a preventive maintenance task to replace high duty cycle starter coils every 15 years and low duty cycle starter coils every 25 years. This issue was entered into the licensee's corrective action program as Action Request 265422.

The finding was more than minor because it affected the structures, systems, and components performance attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined this finding to be of very low safety significance (Green) because the finding did not adversely affect decay heat removal capabilities from the spent fuel pool causing the pool temperature to exceed the maximum analyzed temperature limit specified in the site-specific licensing basis. The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution associated with the operating experience component because the licensee failed to thoroughly evaluate and implement changes to the preventive maintenance schedule for 480V switchgear in response to industry operating experience [P.2(a)] (Section 1R12).

- Green. The inspectors reviewed a self-revealing Green non-cited violation of 10 CFR Part 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide work instructions appropriate for performing maintenance on the standby gas treatment system. Specifically, the licensee failed to provide work instructions that would have precluded a trip of the in-service reactor building ventilation system during calibration of the standby gas treatment system. The licensee updated similar work orders to provide provisions to swap to redundant trains to preclude future trips of running equipment. The licensee entered this issue into the corrective action program as Action Request AR 267373.

This performance deficiency was more than minor because it affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined the finding to be of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for by the standby gas treatment system. The inspectors determined the finding had a cross-cutting aspect in the area of human performance associated with the work control component in that the licensee failed to appropriately coordinate work activities to address the operational impact to the reactor building ventilation system when calibrating the standby gas treatment control flow transmitter [H.3(b)] (Section 1R19).

Cornerstone: Occupational Radiation Safety

- Green. A non-cited violation of Technical Specification 5.4.1a was identified for the failure to follow station procedures and establish conservative electronic dosimeter set-points prior to entering the radiologically controlled area during emergency preparedness exercises and drills. On August 28, 2012, during the emergency preparedness exercise, the licensee used an exercise radiation work permit that established electronic dosimeter set-points of 5 millirem dose and 50 millirem per hour dose rate. As part of the exercise scenario, the inspectors observed Operations Support Center personnel demonstrate the ability to raise electronic dosimeter alarm set-points to 200 millirem dose and 1000 millirem/hour. However, prior to entering the plant's actual radiologically-controlled area the licensee failed to re-establish conservative electronic dosimeter set-point values for the entry in accordance with Station Procedure GEN-RPP-02, "ALARA Planning and Radiation Work Permits," Revision 29, and Radiation Work Permit 30002943. The inspectors also identified eight additional occurrences of non-conservative dosimeter set-points when entering the radiologically controlled area during previous exercises and drills. The licensee entered this issue into the corrective action program as Action Request AR 269790.

The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material, and if left uncorrected, it would potentially result in unplanned radiation exposure. The inspectors evaluated the finding using Inspection Manual Chapter 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding was of very low safety significance because it did not: (1) involve ALARA planning and work controls; (2) result in an overexposure; (3) involve a substantial potential for overexposure; and (4) compromise the licensee's ability to assess dose. In addition, the finding had human performance cross-cutting aspects associated with work control because interdepartmental communication, coordination, and cooperation was necessary to assure plant and human performance [H.3(b)] (Section 4OA5).

- Green. A non-cited violation of Technical Specification 5.4.1.a was identified for the failure to follow radiation work permit requirements to brief workers on the radiological conditions in the work area and to provide workers current radiological survey information. On August 28, 2012, during the biennial graded emergency preparedness exercise, mock repair teams entered the radiologically controlled area without being briefed on the actual radiological conditions and without being provided with current radiological survey information. The licensee entered this issue into their corrective action program as Action Request AR 269791.

The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone exposure control attribute of program and process and it affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material because it could have increased worker exposure while in the radiologically-controlled area. The inspectors evaluated the finding using Inspection Manual Chapter 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding was of very low safety significance because it did not: (1) involve ALARA planning and work controls; (2) result in an overexposure; (3) involve a substantial potential for overexposure; and (4) compromise the licensee's ability to assess dose. In addition, the finding had human performance cross-cutting aspects associated with resources because the licensee did not ensure that complete, accurate, and up-to-date documentation (radiological surveys) were adequate to ensure radiological safety [H.2(c)] (Section 40A5).

- Green. The inspector reviewed a self-revealing finding for failure to maintain doses as low as is reasonably achievable (ALARA) due to poor job execution. The licensee estimated that ALARA Task 11748210101 attached to Radiation Work Permit 30002666, "R20 TG Cond-HX-9 Replacement and Repairs – Inside Condenser," would accrue 10.387 person-rem. However, the actual dose accrued was 19.447 person-rem. The primary reasons for exceeding the estimated dose was identified as a lack of experience and poor job execution that led to increased man hours. This was documented in the licensee's corrective action program as Action Request 00245959.

This finding is greater than minor because it is associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective in that it caused increased collective radiation dose for occupational workers. The inspector determined this finding to be of very low safety significance because although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. Additionally, this finding had a cross-cutting aspect in the human performance area, associated with the work practices component, because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)] (Section 2RS02).

- Green. The inspector reviewed a self-revealing finding, with two examples, for failure to maintain doses as low as is reasonably achievable (ALARA) due to inadequate job planning. In the first example, the licensee estimated that Radiation Work Permit 30002636, "R20 DW CRA-M/FN Maintenance and Repairs *LHR*," would accrue 10.549 person-rem (as revised), but actually accrued 22.657 person-rem. In the second example, the licensee originally estimated that ALARA Task 11824040102 attached to Radiation Work Permit 30002684, "R20 RF Wetwork In vessel, SFP, and Equipment Pool *HR*," would accrue 3.557 person-rem, but the actual dose accrued was 11.683

person-rem. The primary reason for exceeding the estimated dose was identified as inadequate job planning. This was documented in the licensee's corrective action program as Action Requests 00238694 and 00239554, respectively.

This finding is greater than minor because it is associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective in that it caused increased collective radiation dose for occupational workers. The inspector determined this finding to be of very low safety significance because although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. This finding had a cross-cutting aspect in the human performance area, associated with the work control component, because the licensee failed to incorporate job site conditions, including plant structures, systems, and components, human-system interface, radiological safety, and planned contingencies and compensatory actions to be consistent with nuclear safety [H.3(a)] (Section 2RS02).

Cornerstone: Emergency Preparedness

- Green. A non-cited violation of 10 CFR 50.47(b)(14) was identified for the licensee's failure to identify a deficiency occurring during a drill to ensure correction. Specifically, the licensee did not identify a failure to provide accurate information in the notification of an Alert. Corrective actions for the inaccurate notification were not implemented because the deficiency was not identified. The failure to identify a deficiency during a drill is a performance deficiency within the licensee's control. The licensee has entered this issue into their corrective action program as Action Request 00269740.

This finding is more than minor because failures to identify and correct deficiencies affect the Emergency Response Organization Performance Cornerstone attribute. The finding was evaluated using the Emergency Preparedness Significance Determination Process and was identified as having very low safety significance because it was a failure to comply with NRC requirements and was not a loss of the planning standard function. The planning standard function was not lost because the failure to identify weak performance occurred in a limited-scope drill. The finding was assigned a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program 'Low Threshold' component because the licensee failed to completely and accurately recognize a performance deficiency [P.1(a)] (Section 4OA1).

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period at 85 percent power at the request of the local grid operator for economic dispatch. The plant remained in economic dispatch and at the request of the local grid operator maintained power between 85 percent and 100 percent power until July 30, 2012, when the plant returned to 100 percent power. The plant 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)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of the adverse weather procedures for seasonal extremes (e.g., extreme high temperatures, extreme low temperatures, or hurricane season preparations). The inspectors verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions.

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 plant personnel were 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:

- Normal transformer TR-N1
- Main transformers TR-M1, TR-M2 and TR-M3
- Reactor recirculation pump adjustable speed drive temporary cooling

These activities constitute completion of one readiness for seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

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

- July 24, 2012, primary containment electrical penetration assemblies
- August 21, 2012, offsite power
- September 21, 2012, standby service water train B while the division 1 emergency diesel generator was out of service for planned maintenance

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 three partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

Introduction. The inspectors identified a non-cited violation of Technical Specification 3.8.1, "AC Sources – Operating," for the licensee's failure to enter and take required actions contained in Technical Specification 3.8.1, Condition A, when removing startup transformer feeder breakers from service for planned maintenance activities.

Description. On August 21, 2012, the inspectors performed a walkdown of the main control room and observed the feeder breaker from the startup transformer to non-safety related electrical bus SM-1 (E-CB-S/1) out of service for planned maintenance. With this breaker out of service the startup transformer is incapable of providing power to the division 1 safety-related electrical bus SM-7. The inspectors questioned if, while in this condition, Limiting Condition for Operation 3.8.1 was met which requires “two qualified circuits between the offsite transmission network and the onsite class 1E AC electric power distribution system”. The inspectors were referred to a statement in the Technical Specification Bases which reads as follows:

To ensure the requirements of [General Design Criteria 17 of 10 CFR Part 50 Appendix A] are met, the TR-S offsite circuit must be capable of providing power to the Division 3 4.16 kV ESF bus (SM-4) and either the Division 1 (SM-7) or Division 2 (SM-8) 4.16 kV ESF bus.

The inspectors referred to licensee’s Procedure OSP-ELEC-W101, “Offsite Station Power Alignment Check,” Revision 21, which is used to meet Technical Specification Surveillance Requirement 3.8.1.1. This procedure verified the correct breaker alignment and indicated power availability for each offsite circuit. Step 7.3.1 of this procedure required the licensee to perform the following:

VERIFY E-CB-S/1 OPEN as follows:

- Green OPEN light illuminated
- White LOCKOUT CIRCUIT AVAIL light illuminated

When operations personnel hung the clearance tag to start the planned maintenance, the E-CB-S/1 green open light and the white lockout circuit available light deenergized. Consequently, Step 7.3.1 could not be met meaning that Surveillance Requirement 3.8.1.1 associated with offsite power could not be met. Technical Specification 1.4 states, that “known failure of the requirements of a surveillance, even without a surveillance specifically being performed, constitutes a surveillance not met.” Therefore, the licensee was required to enter Technical Specification 3.8.1, Condition A, for one offsite power source inoperable. Technical Specification 3.8.1, Required Action A.1, required the licensee verify the remaining offsite sources are operable by performing Technical Specification Surveillance Requirement 3.8.1.1. In the case of the August 21, 2012 maintenance, no verification of the remaining offsite sources was performed by operations.

The inspectors reviewed various work planning procedures and determined the licensee did not have a specific requirement to determine if technical specification surveillance requirements could be met when reviewing work packages to determine the impact of planned maintenance activities. Based on the above, the inspectors concluded the licensee did not have complete, accurate, or up-to-date procedures for determining the impact of scheduled maintenance on technical specification compliance. The licensee entered the inspectors’ concerns into the corrective action program as Action Request 271413. Upon identification of this issue, the licensee issued Night Order 1411 which

documents that if the startup transformer is unable to supply all safety-related busses, then the startup transformer offsite power source should be considered inoperable.

Analysis. The failure to enter and comply with applicable action statements located in Limiting Conditions for Operations 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 to prevent undesirable consequences. Due to identifying this performance deficiency in Mode 1, the inspectors used Manual Chapter 0609.04, "Initial Characterization of Findings," and Manual Chapter 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and determined the performance deficiency was of very low safety significance (Green) because the finding did not represent a loss of safety function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, did not represent an actual loss of function of one or more non technical specification equipment for greater than 24 hours. 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 ensure that work packages were complete, accurate, and up-to-date. Specifically, the licensee failed to specify the potential technical specification surveillance requirement impacts when authorizing maintenance on startup transformer feeder breakers [H.2.c].

Enforcement. Technical Specification Limiting Conditions for Operation 3.8.1 requires, in part, that two qualified circuits between the offsite transmission network and the onsite Class 1E AC electric power distribution shall be operable. Limiting Conditions for Operation 3.8.1.A.1 requires, in part, with one offsite circuit inoperable perform Surveillance Requirement 3.8.1.1 for operable offsite circuit within 1 hour and every 8 hours thereafter. Limiting Conditions for Operations 3.8.1.F requires, in part, that not meeting the required action and completion time of Condition A requires entry into Mode 3 within 12 hours. Contrary to the above, on August 21, 2012, Columbia Generating Station failed to enter Mode 3 following failure to perform Surveillance Requirement 3.8.1.1 within one hour when only one qualified circuit between the offsite transmission network and the onsite Class 1E AC electric distribution was operable due to not having a qualified circuit between the startup transformer and one Class 1E electric power distribution source. Because this finding was determined to be of very low safety significance (Green) and was entered into the licensee's corrective action program as Action Request 271413, this violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012004-01, "Failure to Enter Applicable LCO for Offsite Power."

1R05 Fire Protection (71111.05)

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:

- July 6, 2012, fire areas RC-11 and RC-12, division 1 and 2 HVAC rooms
- July 11, 2012, fire areas DG-1, 4, 5, 6, 7, 8, 9, division 3 emergency diesel generator and fuel oil storage tank rooms
- July 19, 2012, fire areas R-4 and R-5, residual heat removal train A and B pump rooms
- July 24, 2012, Work Orders 01146855 and 02093410, surveillance testing of diesel driven fire pump FP-P-110
- September 18, 2012, fire area R-18, division 1 motor control center

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 five 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.

- July 17, 2012, Radwaste Building elevation 467' including vital switchgear, batteries and remote shutdown panel

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

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 August 15, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during requalification training. 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

On September 10, 2012, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to residual heat removal pump testing including pre-service and comprehensive pump inservice testing.

In addition, the inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedure 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:

- July 23, 2012, Action Request AR 265422 documenting a loss of fuel pool cooling pump FPC-P-1A
- August 1, 2012, Action Request AR 267281 documenting failures of control room emergency chillers to maintain control room temperature

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

Introduction. The inspectors reviewed a Green self-revealing non-cited violation of Technical Specification 5.4.1.a, "Procedures" for the failure of the licensee to implement preventive maintenance schedules for safety-related 480V starter coils.

Description. On June 16, 2012, fuel pool cooling pump FPC-P-1A unexpectedly stopped. At the time of the trip, the redundant fuel pool cooling pump FPC-P-1B was tagged out of service for planned maintenance which resulted in a complete loss of fuel pool cooling. Troubleshooting performed by the licensee under Work Request 29098444 revealed that the control power fuses in the 480V motor control center starter for FPC-P-1A had cleared because of a fault in the starter coil. Additional inspection of the starter coil revealed age-related swelling, cracking and other signs of heat degradation. The failed starter coil was original equipment and had been in service for approximately 28 years of which time approximately half was spent energized. The licensee replaced the faulty starter coil with an installed spare on June 16, 2012, and restored fuel pool cooling to service. The Columbia Generating Station Final Safety Analysis Report specifies a design limit of 175 degrees Fahrenheit (F) for the spent fuel pool but also states that the fuel pool will be maintained below 125 degrees F during normal plant operations. Temperature in the spent fuel pool rose from 99 degrees F to 107 degrees F during the period that both fuel pool cooling pumps were out of service.

The licensee initiated Action Request 265422 which included an apparent cause evaluation to investigate the unexpected loss of fuel pool cooling pump FPC-P-1A. The inspectors reviewed the licensee's apparent cause evaluation and noted several

pieces of external operating experience involving starter coil failures for high duty cycle or continuously energized equipment. This operating experience had previously been reviewed by the licensee under Action Requests AR 220735 and 236883. Those evaluations identified that age-related heat degradation of starter coils is a generic concern and Columbia Generating Station could be susceptible to similar problems. Corrective actions were implemented by the licensee consisting of visual inspections of motor control center starter coils. However, these inspections did not remove the starter coil from the motor control center to facilitate a comprehensive inspection of all surfaces of the coil. The apparent cause evaluation determined that these inspections were inadequate and that the June 16, 2012, loss of fuel pool cooling pump FPC-P-1A was due to no existing preventive maintenance requirement to replace safety-related critical starter coils that are either continuously energized or have a high duty cycle. As corrective action to Action Request 265422, the licensee implemented a preventive maintenance task to replace high duty cycle starter coils every 15 years and low duty cycle starter coils every 25 years.

Analysis. The failure of the licensee to provide preventive maintenance schedules for safety-related 480V motor control center starter coils was a performance deficiency. The finding was more than minor because it affected the structures, systems and components performance attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined this finding to be of very low safety significance (Green) because the finding did not adversely affect decay heat removal capabilities from the spent fuel pool causing the pool temperature to exceed the maximum analyzed temperature limit specified in the site-specific licensing basis. The inspectors determined that this finding had a cross-cutting aspect the area of problem identification and resolution associated with the operating experience component because the licensee failed to thoroughly evaluate and implement changes to the preventive maintenance schedule for 480V switchgear in response to industry operating experience [P.2(a)].

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Paragraph 9.b. of Regulatory Guide 1.33, Appendix A, requires that preventive maintenance schedules be developed for inspection or replacement of parts that have a specific lifetime. Contrary to the above, prior to August 6, 2012, the licensee failed to implement a preventive maintenance schedule for safety-related 480V starter coils which were known to have a finite service life. Because this finding is of very low safety significance (Green) and was entered into the licensee's corrective action program as Action Request AR 265422, the violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012004-02, "Failure to Develop Preventive Maintenance Schedule for Safety-Related 480V Starter Coils."

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:

- July 13, 2012, Yellow risk during predicted severe weather including the risk of lightning strikes and wild fires
- July 19, 2012, Yellow risk during planned diesel generator 2 surveillance
- July 25, 2012, Green risk while implementing a compensatory measure during planned maintenance on reactor core isolation system RCIC-LS-10
- July 26, 2012, Green risk during emergent issue with electrical inverters IN-3A and IN-3B
- August 9, 2012, Orange risk during emergent issue with critical switchgear fan WMA-FN-53A

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 five 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:

- July 5, 2012 Action Request AR 265719 documenting Part 21 notification for Rosemount™ 710DU trip units
- July 5, 2012 Action Request AR 266400 documenting over excavation of service water valve SW-V-933A
- July 11, 2012 Action Request AR 266649 documenting continued low margin for pump flow and differential pressure for residual heat removal pump RHR-P-2B. During this review, the inspectors utilized operating experience smart sample OpESS FY 12-02, "Technical Specification Interpretation and Operability Determination," Revision 1
- August 3, 2012, Action Request AR 267979 documenting a hot connection on 480V disconnect WMA-42-7F1D
- August 28, 2012, Action Request AR 269569 documenting low specific gravity on 24V dc battery E-B0-1A

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 five operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to maintain adequate procedures associated with critical switchgear ventilation systems.

Description. On August 1, 2012, during planned thermography of safety-related 480V motor control centers, the licensee discovered a power cable for the A phase of motor control center disconnect WMA-42-7F1D that was 83 degrees Fahrenheit (F) hotter than the B and C phases. Disconnect WMA-42-7F1D supplied power to the division 1 critical switchgear fan WMA-FN-53A. The shift manager called the equipment operable but degraded and based on the severity of the thermography finding, the licensee began making preparations for repair of the hot cable. Because the repairs to disconnect WMA-42-7F1D would require the removal of power from division 1 critical switchgear fan WMA-FN-53A, the licensee made preparations to enter Technical Specification 3.7.1, "Standby Service Water (SW) System and Ultimate Heat Sink (UHS)," Condition B. This action statement required restoration within 72 hours or the unit be placed in Mode 3 within an additional 12 hours. The licensee's proposed technical specification call was based on guidance in Procedure ABN-HVAC, "HVAC Trouble," Revision 10, Step 4.5.1, that directed operators to refer to Technical Specification 3.7.1 for a loss of WMA-FN-53A. Similar guidance is provided in Procedure OI-41, "Operations Work Control Expectations," Revision 43, Attachment 6.4, which stated that when WMA-FN-53A is out of service, the appropriate action statement to enter is Technical Specification 3.7.1.

The inspectors reviewed the licensee's repair plan for disconnect WMA-42-7F1D including the proposed technical specification entries. The inspectors questioned if Technical Specification 3.7.1, "Service Water," Condition B, was an appropriate action statement to enter for repairs that removed power from WMA-FN-53A. Specifically, since there is no limiting condition for operation for WMA-FN-53A, the inspectors believed that the applicable actions statements for all equipment supported by WMA-FN-53A must be entered. Equipment supported by WMA-FN-53A includes the division 1 125 Vdc batteries and battery chargers, the 250 Vdc batteries and battery chargers and division 1 AC and DC switchgear. While in Mode 1, declaring this equipment inoperable required entry into Technical Specification 3.8.4, "DC Sources - Operating" and Technical Specification 3.8.7, "Distribution Systems - Operating." The most limiting of these action statements required restoration within 2 hours or required the unit be placed in Mode 3 within an additional 12 hours.

The licensee evaluated the concern raised about the proposed technical specification entries for work on disconnect WMA-42-7F1D. The licensee concluded that Technical Specification 3.7.1 was not an appropriate action statement to enter for periods when WMA-FN-53A was out of service. On August 9, 2012, the licensee entered the applicable action statements of the equipment supported by WMA-FN-53A and performed repairs on disconnect WMA-42-7F1D. As corrective actions to address the inadequacies associated with ABN-HVAC and OI-41, the licensee changed the procedures to reflect the correct action statements that should be entered when critical switchgear ventilation systems are taken out of service. This issue was entered into the licensee's corrective action program as Action Request AR 268099.

Analysis. The inspectors concluded that the failure to maintain adequate procedures for critical switchgear room coolers was a performance deficiency. The performance deficiency was more than minor because it adversely affected the procedural quality

attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined this finding to be of very low safety significance (Green) because it was not a deficiency or qualification deficiency, did not represent a loss of system and/or function, did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time or two separate safety systems out of service for greater than its technical specification allowed outage time, and the finding did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The inspectors did not assign a cross-cutting aspect to this finding because the inadequate procedural guidance for critical switchgear ventilation systems was made in 2009 and is not reflective of current performance.

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Paragraph 5 of Regulatory Guide 1.33, Appendix A, requires written procedures for abnormal, off-normal or alarm conditions. Contrary to the above, from September 22, 2009 to August 2, 2012, licensee Abnormal Procedures ABN-HVAC, "HVAC Trouble," Revisions 8-10, were inadequate because Steps 4.5.1 and 4.6.1 directed operators to enter the wrong technical specification action statement for a loss of critical switchgear fans WMA-FN-53A and WMA-FN-53B respectively. Because this finding is of very low safety significance (Green) and was entered into the licensee's corrective action program as Action Request AR 268099, the violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012004-03, "Failure to Maintain Adequate Procedural Guidance for Critical Switchgear Ventilation Systems."

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:

- June 28, 2012, postmaintenance testing of standby gas treatment train A valve 3-A2
- July 24, 2012, postmaintenance testing of standby gas treatment summer module SGT-SUM-1B2
- July 25, 2012, postmaintenance testing of reactor core isolation cooling limit switch RCIC-LS-10 following planned replacement

- August 9, 2012, postmaintenance testing of 480V disconnect WMA-42-7F1D following planned replacement

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 (as applicable):

- 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 reviewed a self-revealing Green non-cited violation of 10 CFR Part 50 Appendix B, "Instructions, Procedures, and Drawings," for the licensee's failure to provide work instructions appropriate for performing maintenance on the standby gas treatment system. Specifically, the licensee failed to provide work instructions that would have precluded a trip of the in-service reactor building ventilation system during calibration of the standby gas treatment system.

Description. On July 24, 2012, instrumentation and control technicians performed Work Order 02019674 to check the calibration on standby gas treatment flow transmitter SGT-FT-1B2. During this work, standby gas treatment summer module SGT-SUM-1B2 was found to be out of tolerance which required recalibration. To perform the calibration, technicians removed and re-landed wires on various parts of the circuit card. Following the calibration of SGT-SUM-1B2 module, technicians re-landed the final wire for the card when the in-service trains of reactor building outside air and exhaust air fans tripped. The loss of reactor building normal ventilation momentarily caused secondary containment pressure to exceed atmospheric pressure. Technical Specification 3.6.4.1, "Secondary Containment," requires that the secondary containment be maintained greater than or equal to 0.25 inches of vacuum water gage. In response to the loss of the running train of reactor building normal ventilation the redundant train of reactor

building normal ventilation was started to restore secondary containment to within technical specification requirements.

Subsequent review revealed an interconnection between the standby gas treatment system and the reactor building ventilation system through summer module SGT-SUM-1B2. Since the B train of reactor building ventilation was in service during work on SGT-SUM-1B2, the re-landing of the lead on the summer module created a voltage signal the caused the B train of reactor building normal ventilation system to trip and the standby gas treatment system to start. The licensee's causal analysis determined that the interconnection conflict was not recognized during the work planning process or by operations prior to conducting the maintenance. Additionally, the licensee determined that the clearance order review committee did not have guidance on swapping to redundant lineups when taking systems out of service.

Analysis. The failure to provide work instructions establishing the proper lineup for maintenance activities was a performance deficiency. The inspectors determined the performance deficiency was more than minor because it affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Due to discovering the performance deficiency in Mode 1, the inspectors used Manual Chapter 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and determined the finding to be of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for by the standby gas treatment system. The inspectors determined the finding had a cross-cutting aspect in the area of human performance associated with the work control component in that the licensee failed to appropriately coordinate work activities to address the operational impact to the reactor building ventilation system when calibrating the standby gas treatment control flow transmitter SGT-FT-1B2 [H.3(b)].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions appropriate to the circumstances. Maintenance on the standby gas treatment system which affects the secondary containment function is an activity that affects quality. Contrary to the above, on July 24, 2012, the licensee failed to provide work instructions appropriate to the circumstance for standby gas treatment maintenance activities. Specifically, the licensee failed to provide instructions to swap the controlling reactor building ventilation fans to the A train when calibrating components for the B train. Because the finding was of very low safety significance (Green) and has been entered into the licensee's corrective action program as Action Request 267373, this violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012004-04, "Failure to Provide Adequate Work Instructions."

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.

- June 27, 2012, Work Order 02016232, reactor core isolation cooling quarterly inservice and operability surveillance test
- August 8, 2012, Work Order 02021934, Procedure PPM 10.27.90A, "Diesel Starting Air System Instrument Air Sampling - DG-3", Revision 4
- August 10, 2012, Work Order 02011348, Procedure TSP-DG3/LOCA-B501, "HPCS Diesel Generator DG3 LOCA Test", Revision 18

- August 13 and 16, 2012, Work Orders 02013488 and 02017911, external preventative maintenance on valves associated with Generic Letter 89-10 and containment isolation valves
- September 18, 2012, reactor coolant system leakage detection calculation used to satisfy Technical Specification Surveillance Requirement SR 3.4.5.1

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

No findings were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The licensee submitted the preliminary exercise scenario to the NRC on June 28, 2012, as required by Appendix E to Part 50, IV.F.2(b). The inspectors performed an in-office review the scenario to determine whether the preliminary scenario adequately provided opportunities to demonstrate key emergency response organization skills, tested major elements of the licensee's emergency plan, challenged exercise participants, and avoided participant pre-conditioning.

The scenario was designed to escalate from the Alert through the General Emergency classifications, and simulated:

- Condenser tube leaks;
- A failure of control rods to insert on a reactor scram;
- Failure of a main steam isolation valve to close;
- A reactor coolant system leak in the drywell;
- A failure within primary containment resulting in pressurizing the wetwell;
- Reactor vessel level lowering to below the top of active fuel;
- An unfiltered radiological release to the environment through Turbine Building ventilation; and

- Failures of other pumps and valves.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations, in the Control Room Simulator and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementing procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors compared the observed exercise performance with the requirements in the facility emergency plan, 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, and with the guidance in the emergency plan implementing procedures and other federal guidance.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management. The specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.01-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The NSIR Headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS accession numbers ML12096A337, ML12173A171, ML121850027, and ML12198A397 as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

These activities constitute completion of seven samples as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). 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 and reviewed the following items:

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

- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

- .1 Introduction. The inspector reviewed a self-revealing finding for failure to maintain doses as low as is reasonably achievable (ALARA) due to poor job execution. The finding had very low safety significance.

Description. ALARA Task 11748210101 attached to Radiation Work Permit 30002666, "R20 TG Cond-HX-9 Replacement and Repairs – Inside Condenser," was estimated to accrue 10.387 person-rem. However, the actual dose was 19.447 person-rem. Thus, the actual dose exceeded the estimated dose by 87.22 percent. Examination of the licensee's ALARA post-job review, the Refueling Outage 20 Collective Radiation Exposure Report, and discussion with staff, identified inexperienced radiation workers with deficiencies in work practice and poor job execution as the primary reasons for not meeting the dose estimate.

The licensee hired a vendor to perform the work. The vendor provided the original dose estimates and man-hours to perform the task. However, because of poor work performance, the vendor exceeded the estimates, and this was not challenged by the licensee. The man-hours estimated to complete the job were 41,736, whereas the actual man-hours were 163,375. The licensee used "new-to-nuclear," workers to perform the job. This resulted in numerous issues, including vacuum cleaner spills within the radiological controlled area, damaged tube bundles, and improper handling of radiation material leading to contamination issues. The licensee's records also documented inadequate decontamination of the hotwell floor. This required rework to complete the job and clean the floors effectively. Additionally, there were examples of using inadequate high efficiency particulate air filtration unit operations. This led to additional time to correct the issues associated with using inappropriate engineering controls. The inspectors discussed these issues with the licensee. The licensee concluded that it failed to engage itself in the work of the contractor at the level needed to maintain doses ALARA and ensure that the task was properly performed.

Analysis. Failure to maintain doses ALARA due to poor job execution was a performance deficiency. In order to be deemed a performance deficiency, the inspector must determine that the licensee did not meet a regulation or standard and that it was not foreseeable and preventable. The standard not met in this case was that ALARA principles should be applied to all phases of radiological work, as stated in GEN-RPP-02, "ALARA Planning and Radiation Work Permits," Revisions 26 and 27, Section 2.3.1, and the licensee's expectation that individuals have the responsibility of

complying with good radiological work practices, as stated in GEN-RPP-01, "ALARA Program Description," Revision 7, Section 3.20.4. This finding is greater than minor because it is associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective in that it caused increased collective radiation dose for occupational workers. Additionally, the finding was similar to Example 6.i in Inspection Manual Chapter 0612, Appendix E, in that it resulted in a collective dose greater than 5 person-rem, and the actual dose exceeded the estimated dose by greater than 50 percent. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding had very low safety significance because, although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. The inspectors noted that in accordance with NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," Volume 33, Table 4.7, the licensee's three-year rolling average collective dose for years 2009 through 2011 is approximately 232 person-rem. This finding had a cross-cutting aspect in the human performance area, associated with the work practices component, because the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported [H.4(c)].

Enforcement. No violation of regulatory requirements occurred with this issue. However, the licensee did establish additional training requirements for new-to-nuclear workers and completed a Lessons Learned review of the job activities to capture any performance deficiencies and poor job execution issues. This finding is documented in the licensee's corrective action program as Action Request 00245959 and in the Refueling Outage 20 Collective Radiation Exposure Report (October 2011): FIN 05000397/2012004-05, "Failure to Maintain Dose ALARA due to Poor Job Execution."

- .2 Introduction. The inspector reviewed a self-revealing finding, with two examples, for failure to maintain doses ALARA due to inadequate job planning. The finding had very low safety significance.

Description. In the first example, the licensee estimated that Radiation Work Permit 30002636, "R20 DW CRA-M/FN Maintenance and Repairs *LHR*," would accrue 10.549 person-rem (as revised), but it actually accrued 22.657 person-rem. Thus, the actual dose exceeded the estimated dose by 114.78 percent. Examination of the licensee's ALARA post-job review, the Refueling Outage 20 Collective Radiation Exposure Report, and discussion with staff, identified inadequate job planning or no planning at all as the primary reasons for not meeting the dose estimate.

The licensee originally estimated a dose of 18.750 person-rem for the job. However, the NRC inspector determined that this original estimate required revision because the licensee later cancelled or deferred a total of 8.201 person-rem from the original work scope. Of this total, 2.632 person-rem was cancelled because the licensee determined that removal of some piping was no longer needed to complete the job and 5.569 person-rem was deferred from the job due to the accumulation of dose during Refueling Outage 20. Thus, the original estimate was revised to 10.549 person-rem for the purpose of evaluating the licensee's efforts to maintain doses ALARA.

Documentation confirmed the licensee failed to conduct adequate job planning resulting in numerous issues. One issue involved sheet metal workers that were surprised by paint on the fan bolts, although the pictures used in the planning process clearly showed the painted bolts. The paint had to be chipped off to loosen the bolts resulting in additional man-hours. Another issue was that the licensee found there were no good rigging points on the fans and motors. As documented in the licensee's post-outage report, this could have been identified through an adequate pre-job walkdown. It was also documented that no one adequately planned how to remove the fan assemblies from their installed location. Workers moved the wrong motor from the CRA-FN-5B location to the 572 foot elevation of the drywell; subsequently, it had to be moved from the drywell to change the bearings and moved back to the drywell resulting in additional man-hours and dose. Additionally, scaffolding needs were not identified prior to the commencement of work activities. It was also noted that there was no project manager assigned to the job.

In the second example of a failure to maintain doses ALARA due to inadequate planning, the licensee originally estimated that ALARA Task 11824040102 attached to Radiation Work Permit 30002684, "R20 RF Wetwork In vessel, SFP, and Equipment Pool *HR*," would accrue 3.557 person-rem. However, the NRC inspector determined that some credit may be given to the licensee for unforeseen added work scope. This added scope resulted in an additional 3.986 person-rem, and a revised dose estimate of 7.543 person-rem. The actual dose accrued was 11.683 person-rem. Thus, the actual dose exceeded the revised estimated dose by 55 percent. Examination of the licensee's ALARA post-job review, the Refueling Outage 20 Collective Radiation Exposure Report, and discussion with staff, identified inadequate job planning and use of Refueling Outage 19 work scope conditions for Refueling Outage 20 work as the primary reasons for not meeting the dose estimate.

The licensee documented that twice the scope was used for this Refueling Outage 20 task than anticipated from the scope used in Refueling Outage 19. Specifically, a larger percentage of the core welds were inspected during Refueling Outage 20 due to BWR Vessel Internal Inspection Program (BWRVIP) requirements. BWRVIP-18, "Inspection and Evaluation Guideline for Core Spray," required the licensee to perform a sample scope of the core sprays. During this time, an indication of a potential problem was found on the sample core spray evaluated. Thus, the licensee conducted a full scope inspection of the other 11 core sprays in accordance with BWRVIP requirements. This took an additional 3.922 person-rem to complete. BWRVIP-41, "Inspection and Evaluation Guideline for Jet Pump,"- required the licensee to evaluate their jet pumps and an indication was found on jet pump riser 17, as well as a loose retainer on jet pump 5. Assessment of the indication and repair of the issues involved installation of new auxiliary wedges on the jet pump riser and resulted in an additional 0.064 person-rem. The licensee was given credit for this extended scope of work.

However, other issues found with the job that resulted in additional dose were considered foreseeable and preventable by the NRC inspector. Specifically, the licensee used a lower than average effective dose rate to estimate the job. Historically, the

effective dose rate for In-Vessel Visual Inspection work was 2.55 millirem per hour, but during Refueling Outage 20, the licensee used 1.52 millirem per hour due to the perceived favorable effects of using hydrogen peroxide injections. However, the actual effective dose rate was approximately 3 millirem per hour, twice the rate estimated for planning. This was due to increased cavity water activity and additional time was spent in the reactor cavity vicinity to perform work resulting in additional accrued dose. Time was spent in the cavity involving foreign material issues due to mishandling of materials, resulting in delayed or prolonged work activities. These issues resulted in an additional 4.15 person-rem, leading to an actual dose of 11.683 person-rem and exceeding the revised dose estimate by more than 50 percent.

Analysis. Failure to maintain doses ALARA due to inadequate job planning was a performance deficiency. In order to be deemed a performance deficiency, the inspector must determine that the licensee did not meet a regulation or standard and that it was not foreseeable and preventable. The standard not met in this case was that ALARA plans for radiological high-risk activities should incorporate well-formulated estimates of the radiation levels when actual levels are unknown, as well as incorporate specialized training, as stated in Section 5.6.5 of GEN-RPP-02, "ALARA Planning and Radiation Work Permits," Revisions 26 and 27. Additionally, Section 4.10.2 of GEN-RPP-01, "ALARA Program Description," Revision 7, states that outage planning should include training of personnel for outage work using mockups and photographs to minimize potential exposure time. Since these standards were not met due to preventable reasons, the licensee failed to maintain doses ALARA relative to the established dose limit. This finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone, exposure control attribute, and affected the cornerstone objective in that it caused increased collective radiation dose for occupational workers. Additionally, the finding was similar to Example 6.i in Inspection Manual Chapter 0612, Appendix E, in that it resulted in a collective dose greater than 5 person-rem, and the actual dose exceeded the estimated dose by greater than 50 percent. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding had very low safety significance because, although the finding involved ALARA planning and work controls, the licensee's latest three-year rolling average collective dose was less than 240 person-rem. The inspectors noted that in accordance with NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," Volume 33, Table 4.7, the licensee's three-year rolling average collective dose for years 2009 through 2011 is approximately 232 person-rem. This finding had a cross-cutting aspect in the human performance area, associated with the work control component, because the licensee failed to incorporate job site conditions, including plant structures, systems, and components, human-system interface, radiological safety, and planned contingencies and compensatory actions to be consistent with nuclear safety [H.3(a)].

Enforcement. No violation of regulatory requirements occurred with this issue. However, the licensee did establish additional training requirements for new-to-nuclear workers and completed a Lessons Learned review of the job activities to capture any performance deficiencies and inadequate job planning issues. This finding is documented in the licensee's corrective action program as Action Request 00238694

and 00239554, respectively, and in the Refueling Outage 20 Collective Radiation Exposure Report (October 2011): FIN 05000397/2012004-06, "Failure to Maintain Dose ALARA due to Inadequate Job Planning."

2RS04 Occupational Dose Assessment (71124.04)

a. Inspection Scope

This area was inspected to: (1) determine the accuracy and operability of personal monitoring equipment; (2) determine the accuracy and effectiveness of the licensee's methods for determining total effective dose equivalent; and (3) ensure occupational dose is appropriately monitored. 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:

- External dosimetry accreditation, storage, issue, use, and processing of active and passive dosimeters
- The technical competency and adequacy of the licensee's internal dosimetry program
- Adequacy of the dosimetry program for special dosimetry situations such as declared pregnant workers, multiple dosimetry placement, and neutron dose assessment
- Audits, self-assessments, and corrective action documents related to dose assessment since the last inspection

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

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.04-05.

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 second 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 Mitigating Systems Performance Index - Emergency ac Power System (MS06)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for the period from the third quarter 2011 through the second 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 narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of July 2011 through June 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - emergency ac power system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - high pressure injection systems performance indicator for the period from the third quarter 2011 through the second 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 narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of July 2011 through June 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - high pressure injection system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Mitigating Systems Performance Index - Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for the period from the third quarter 2011 through the second 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 narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of July 2011 through June 2012, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that

the change was in accordance with applicable NEI guidance. 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 mitigating systems performance index - residual heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill and Exercise Performance, performance indicator for the period July 2011 through June 2012. The performance indicator definitions and guidance of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used to determine the accuracy of the reported performance indicator data. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator; assessments of performance indicator opportunities during predesignated control room simulator training sessions, performance during the 2012 biennial exercise, and performance during other drills. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the drill/exercise performance sample as defined in Inspection Procedure 71151-05.

b. Findings

Introduction. A Green noncited violation of 10 CFR 50.47(b)(14) was identified for the licensee's failure to identify a deficiency during a drill.

Description. The NRC identified that the licensee failed to identify a performance deficiency in notifying offsite authorities that occurred during a limited facility drill and the deficiency was not corrected.

The inspector reviewed documentation for a Control Room Simulator drill conducted November 29, 2011, including the prepared scenario guide, an emergency notification form, evaluator log, and performance indicator evaluation worksheet. The scenario anticipated an Alert declaration based on emergency action level 3.1.A.1 (drywell pressure greater than 1.68 pounds), and noted the possibility of a Notification of Unusual

Event classification based on emergency action level 2.1.U.1 (unidentified reactor coolant system leakage greater than 10 gallons/minute). The documentation included a notification form for an Alert declaration (emergency action level 3.1.A.1). The drill evaluation worksheet noted that the Shift Manager recognized leakage greater than 10 gallons/minute but declared the Alert due to rapidly changing conditions.

The inspector reviewed the attached evaluator's log and noted the following entries,

1017 UE declared, 2.1.U.1
1018 DW 1.68#
1019 3.1.A.1 Alert

The inspector concluded from the evaluator's log that the Shift Manager had both recognized and declared the Notification of Unusual Event, and subsequently declared the Alert. The inspector reviewed the Alert notification form and determined the recorded classification time was 10:17 a.m., the time the Notification of Unusual Event classification was made. The inspector concluded from the documentation that the licensee did not recognize the inaccurate classification time recorded on the Alert notification form.

Analysis. The failure to identify a deficiency occurring during a drill and ensure correction is a performance deficiency within the licensee's ability to control. Manual Chapter 0609, Appendix B, Section 2, defines a weakness (deficiency) as performance which would have prevented the effective implementation of the licensee's emergency plan had it occurred during an actual event. The failure to provide accurate information regarding an emergency classification could have prevented effective implementation of offsite emergency plans under different circumstances. The finding is more than minor because the failure to identify a deficiency and ensure correction impacts the cornerstone objective. The performance weakness affected the emergency response organization performance and offsite emergency preparedness cornerstone attributes. The finding was associated with a violation of NRC requirements. The finding was evaluated using the Emergency Preparedness Significance Determination Process and was identified as having very low safety significance (Green) because it was a failure to comply with NRC requirements and was not a loss of the planning standard function. The planning standard function was not lost because the failure to identify a deficiency occurred in a limited-scope drill. This issue was entered into corrective action program as Action Request 00269740. The finding was assigned a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program 'Low Threshold,' component because the licensee failed to completely and accurately recognize a performance deficiency [P.1(a)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50.47(b)(14), states in part, that deficiencies identified in drills and exercises are (will be) corrected. Contrary to the above, Columbia Generating Station failed to identify a deficiency during a drill conducted November 29, 2011 that will be corrected. Specifically, the licensee failed to recognize inaccurate information transmitted on an Alert notification. Corrective actions were not implemented because the licensee did not identify the performance as a

deficiency requiring correction. Because this failure is of very low safety significance and has been entered into the licensee's corrective action system, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000397/2012004-07, "Failure to Identify a Performance Weakness During a Drill."

.6 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Emergency Response Organization Drill Participation performance indicator for the period July 2011 through June 2012. The performance indicator definitions and guidance of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used to determine the accuracy of the reported performance indicator data. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, rosters of personnel assigned to key emergency response organization positions, and exercise participation records. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the emergency response organization drill participation sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.7 Alert and Notification System (EP03)

a. Inspection Scope

The inspectors sampled licensee submittals for the Alert and Notification System performance indicator for the period July 2011 through June 2012. The performance indicator definitions and guidance of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used to determine the accuracy of the reported performance indicator data. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator and the results of periodic alert notification system operability tests. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the alert and notification system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

40A2 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 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 265837, documenting adjustment of a motor operated valve RCIC-V-54 without performing the required postmaintenance test. The inspectors also reviewed a corrective action item, Action Request AR 264530, documenting a reactor protection system motor generator output breakers being found in a trip free condition.

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

b. Findings

No findings were identified.

40A5 Other Activities

.1 Occupational Radiation Safety during the Biennial Emergency Preparedness Exercise

a. Inspection Scope

During the biennial emergency preparedness exercise on August 28, 2012, the inspectors observed the performance of Operations Support Center health physics technicians providing job coverage duties and radiological briefings for simulated activities within the radiologically controlled area. The Operations Support Center dispatched repair teams into the radiologically controlled area located inside the power block at Columbia Generating Station to perform simulated repairs on plant equipment. The inspectors assessed the licensee's performance in implementing physical and administrative controls for radiation areas, and worker adherence to these controls. 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 this inspection, the inspectors interviewed personnel, reviewed documents, and observed the following activities. Documents reviewed during this inspection are listed in Attachment 1.

- Measures to control radiation exposure
- Radiological survey information and maps
- Health Physics pre-job briefings
- Instructions and notices to workers, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions

- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

b. Findings

- .1 Introduction. The inspectors identified a noncited violation of Technical Specification 5.4.1.a for the failure to establish conservative electronic dosimeter set-points prior to entering the radiologically controlled area (RCA) in accordance with Station Procedure GEN-RPP-02, "ALARA Planning and Radiation Work Permits." Specifically, during an emergency preparedness exercise conducted August 28, 2012, non-conservative electronic dosimeter set-points were used to access the RCA.

Description. On August 28, 2012, during the graded biennial emergency preparedness exercise, the Operations Support Center (OSC) established a repair team to perform a simulated repair on a reactor core isolation cooling pressure transmitter. The team consisted of a non-licensed equipment operator and a health physics technician. The simulated repair was to be performed in the RCA. Also entering the RCA to observe this team was an NRC inspector, and the licensee's exercise controller for the evolution. The controller was responsible for providing simulated exercise data including simulated radiological conditions to the repair team. In addition, a health physics evaluator observed this repair team up to the point the team entered the RCA. A pre-job briefing was conducted in the OSC prior to entering the RCA. The OSC lead health physics technician briefed the team about the simulated radiological conditions which required that their electronic dosimeter alarm set-points be raised from 5 millirem dose and 50 millirem per hour dose rate to 200 millirem dose and 1000 millirem per hour dose rate. Additionally, the inspectors did not observe a briefing on the actual radiological conditions (see finding number .2 below).

All participants in the Technical Support Center and Operations Support Center logged onto a radiation work permit that established electronic dosimeter alarm set-points of 5 millirem accumulated dose and 50 millirem/hour dose rate. However, for exercise purposes and to demonstrate that the licensee had the capability to adjust electronic dosimeter alarm set-points as needed prior to entering the RCA, the health physics technician raised the electronic dosimeter set-points to 200 millirem dose and 1000 millirem/hour dose rate for the team performing the simulated reactor core isolation cooling pressure transmitter repair. The inspector, evaluator, and controller observed the health physics technician demonstrate raising the electronic dosimeter set-points for the repair team; however, the inspector observed that the technician had not reset the electronic dosimeter set-points to the pre-established exercise radiation work permit levels of 5 millirem dose and 50 millirem/hour dose rate.

Because the elevated radiological conditions were simulated, the inspector raised a concern with the health physics evaluator that the repair team should not enter the RCA with the as-changed dosimeter set-points because they were not consist with plant radiological conditions. Should the repair team encounter unexpected actual radiation levels the non-conservatively set dosimeters would not alarm to warn the workers until doses or dose rates in excess of those permitted by their radiation work permit were reached. The team subsequently entered the RCA with the as-changed dosimeter set-

points, completed the simulated repair, and exited the RCA; no unexpected radiological conditions were encountered during the exercise task. The licensee took immediate corrective action and all other dosimeter changes in the Operations Support Center were simulated and dosimeter set-points remained at the pre-established values throughout the remainder of the exercise.

Additionally, the inspectors questioned the licensee's performance during previous exercises and requested that the licensee investigate dosimeter set-points from past exercises. The inspectors determined that on eight other occasions since the 2010 graded exercise, Columbia Generating Station personnel entered the RCA with non-conservative electronic dosimeter alarm set-points.

Columbia Generating Station Procedure, GEN-RPP-02, "ALARA Planning and Radiation Work Permits," Revision 29, provided guidelines for electronic dosimeter alarm set-points. The procedure stated that for work area dose rates less than 100 millirem per hour, multiply the typical work area dose rate by 1.5 and round up to the nearest 10 millirem per hour for the electronic dosimeter dose rate alarm set-point. The dose alarm would be set by multiplying the work area dose rate by the estimated hours per entry. The typical dose per entry would be multiplied by 1.1 and rounded to the nearest 10 millirem to arrive at the dose set-point. The procedure states that the purpose of the guidelines is to provide a consistent approach for establishing electronic dosimeter set-points for personnel dose control. The procedure goes on to state that the guidelines need not strictly be followed as long as the intent of conservative electronic dosimeter alarm set-points is met.

The inspectors interviewed the radiation protection manager, the emergency preparedness manager, and other emergency preparedness and health physics staff to determine the extent of this practice. The inspectors also reviewed station procedures, radiological surveys, and radiation work permit data provided by the licensee. The inspectors determined that the licensee failed to follow the procedure and meet the intent of conservative electronic dosimeter alarm set-points because there were multiple occurrences of non-conservative set-points used to access the RCA since the 2010 biennial emergency preparedness exercise. In some cases, the set-points were non-conservatively set as high as 4000 millirem dose and 9990 millirem per hour dose rate, when actual radiological conditions were less than 100 millirem/hour.

Analysis. The failure to establish conservative electronic dosimeter alarm set-points is a performance deficiency. The finding is more than minor because it was associated with the program and process attribute of the occupational radiation safety cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material, and if left uncorrected, would potentially result in unplanned radiation exposures. The inspectors evaluated the finding using Inspection Manual Chapter 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding was of very low safety significance (Green) because it did not: (1) involve ALARA planning and work controls; (2) result in an overexposure; (3) involve a substantial potential for overexposure; and (4) compromise the licensee's ability to assess dose. In addition, the finding had human performance

cross-cutting aspects associated with work control because interdepartmental communication, coordination, and cooperation was necessary to assure plant and human performance during emergency exercises and drills [H.3(b)]

Enforcement. Technical Specification 5.4.1.a requires, in part, that procedures be written, implemented, and established for those areas recommended in Regulatory Guide 1.33, Appendix A, Revision 2, 1978. Section 7(e) of Regulatory Guide 1.33, Appendix A, requires procedures for radiation protection. Columbia Generating Station Procedure GEN-RPP-02, "ALARA Planning and Radiation Work Permits," Revision 29, Attachment 9.7, Section 2.4 states, in part, that for work area dose rates less than 100 millirem per hour, multiply the typical work area dose rate by 1.5 and round up to the nearest 10 millirem per hour for the electronic dosimeter dose rate alarm set-point. The dose alarm would be set by multiplying the work area dose rate by the estimated hours per entry. The typical dose per entry would be multiplied by 1.1 and rounded to the nearest 10 millirem to arrive at the dose set-point. Contrary to the above, on August 28, 2012, and eight other occasions between September 2010 and August 2012, Energy Northwest failed to establish electronic dosimeter alarm set-points that were 1.5 times the work area dose rate rounded up to the nearest 10 millirem per hour and 1.1 times the typical dose per entry rounded to the nearest 10 millirem prior to allowing personnel to enter the plant's radiologically controlled area. Because this violation was determined to be of very low safety significance and was entered into the licensee's corrective action program as Action Request AR 269790, this violation is being treated as a non-cited violation consistent with the Enforcement Policy: NCV 05000397/2012004-08, "Failure to Establish Conservative Electronic Dosimeter Alarm Set-points."

- .2 Introduction. The inspectors identified a Green noncited violation of Technical Specification 5.4.1.a for the failure to provide radiological briefings and current survey information to workers accessing the radiologically controlled area as required by Station Procedure GEN-RPP-04, "Entry into, Conduct in, and Exit from Radiologically Controlled Areas."

Description. On August 28, 2012, workers were dispatched from the Operations Support Center to simulate in-plant repairs during emergency preparedness exercise; however, the workers were not briefed and provided with current radiological survey maps for the work areas. Actual dose rates in plant areas which could have been accessed by the various repair teams ranged from a few millirem/hour to about 40 millirem/hour.

Radiation Work Permit 30002943 provided special instructions to workers to "review the most recent work area survey map for conditions in the work area. Health physics pre-job brief is to consist of lead outage support center health physics technician brief prior to team dispatch." The inspectors observed the health physics technician brief workers on the simulated radiological conditions provided by the exercise scenario but did not observe briefings on actual radiological conditions or observe survey maps providing the current radiation levels in the radiologically controlled area (RCA). During the exercise, the licensee used an alternate access point for the RCA that did not have current plant radiological conditions posted. Pre-staged survey maps at the alternate access point were blank, with no radiological information posted.

The inspectors reviewed the radiation work permit, station procedures, and interviewed radiation protection personnel to determine the requirements for accessing the RCA. The inspectors also reviewed the exercise scenario and current plant survey maps, and discussed processes for providing radiological briefings with exercise controllers and participants, and with emergency preparedness department staff. The inspectors determined that the licensee had failed to follow station procedure GEN-RPP-04, "Entry into, Conduct in, and Exit from Radiologically Controlled Areas," Revision 27, Step 4.1.1, which required all individuals entering the RCA to be knowledgeable of the radiological conditions in their work area and the requirements of the RWP because the alternate access point did not provide current survey maps and briefings did not provide workers with actual radiological conditions.

Analysis. The failure to provide workers with current radiological information is a performance deficiency. The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone exposure control attribute of program and process and it affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material because it could have increased worker exposure while in the RCA. The inspectors evaluated the finding using Inspection Manual Chapter 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding was of very low safety significance (Green) because it did not: (1) involve ALARA planning and work controls; (2) result in an overexposure; (3) involve a substantial potential for overexposure; and (4) compromise the licensee's ability to assess dose. In addition, the finding had human performance crosscutting aspects associated with resources because the licensee did not ensure that complete, accurate, and up-to-date documentation (radiological surveys) were adequate to ensure radiological safety [H.2(c)].

Enforcement. Technical Specification 5.4.1.a requires, in part, that procedures be written, implemented, and established for those areas recommended in Regulatory Guide 1.33, Appendix A, Revision 2, 1978. Section 7(e) of Regulatory Guide 1.33, Appendix A, requires procedures for radiation protection. Columbia Generating Station Procedure GEN-RPP-04, "Entry into, Conduct in, and Exit from Radiologically Controlled Areas," Revision 27, Step 4.1.1, required all individuals entering the RCA to be knowledgeable of the radiological conditions in their work area and the requirements of the radiation work permit. Radiation Work Permit 30002943 required workers to "review the most recent work area survey map for conditions in the work area. Health physics pre-job brief is to consist of lead outage support center health physics technician brief prior to team dispatch." Contrary to the above, on August 28, 2012, the licensee failed to provide recent work area survey maps and perform a health physics pre-job brief on actual radiological conditions in the work area. Because this violation was determined to be of very low safety significance and was entered into the licensee's corrective action program as Action Request AR 269791, this violation is being treated as a non-cited violation consistent with the Enforcement Policy: NCV 05000397/2012004-09, "Failure to Follow Radiation Work Permit Requirements to Inform Workers about Radiological Conditions."

.2 (Closed) Temporary Instruction 2515/185 "Follow-up on the Industry's Ground Water Protection Initiative"

a. Inspection Scope

The ground water protection program was inspected March 19-22, 2012, to determine whether the licensee had implemented the program elements which were found to be incomplete when previously reviewed during NRC Inspection 05000397/2009009. Inspectors performed walk-downs and interviewed cognizant licensee personnel about the following elements:

- Element 1.2.a - Identify each SSC and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.
- Element 1.2.b - Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walk downs or inspections, or integrity testing.
- Element 1.2.d - Identify potential enhancements to prevent spills or leaks from reaching ground water. Licensee personnel acknowledged this element had not yet to be completed, and it was being tracked by Condition Report CR-HQN-2010-00207, Corrective Action 12.
- Element 1.2.e - Identify the mechanism or site process for tracking corrective actions.
- Element 1.2.f - Establish long term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- Element 1.2.g - Establish the frequency for periodic reviews of SSCs and work practices.

b. Findings

No findings were identified. All elements were implemented.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On August 16, 2012, the inspectors presented the results of the radiation safety inspections 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.

On August 31, 2012, the inspectors presented the results of the onsite inspection of the licensee's biennial emergency preparedness inspection results to Mr. M. Reddemann, Chief Executive Officer, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 25, 2012, the inspectors presented the inspection results to Mr. M. Reddemann, Chief Executive Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector 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 violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a non-cited violation.

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 9.a of Regulatory Guide 1.33, Appendix A, requires that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, on July 3, 2012, Work Order 01196946-02 was not appropriate to the circumstances because it did not include seismic design considerations and did not provide reference elevations for workers performing excavation near service water valve SW-V-933A. Consequently, the licensee on July 3, 2012, over-excavated near SW-V-933A when performing buried piping inspections. This finding was identified by the licensee and entered in the licensee's corrective action program as Action Requests AR 266400 and 266405. This finding was determined to be of very low safety significance because it was a design or qualification deficiency confirmed not to result in a loss of operability.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

B. Adami, Manager, Technical Services
J. Bekhazi, CPM Manager, Engineering
V. Bhardwaj, Systems Engineer Manager, Engineering
A. Black, General Manager, Operations
D. Brown, Planning, Scheduling and Outage Manager
S. Brown, Manager, Operations
M. Davis, Manager, Radiological Services
Z. Dunham, Supervisor, Licensing
E. Dumlao, System Engineer
C. England, Manager, Organization Effectiveness
G. Egert, Health Physics Staff Advisor, Radiation Protection
R. Fahnestock, Manager, Emergency Preparedness
C. Forrester, Emergency Planner
R. Garcia, Licensing Engineer
D. Gregoire, Manager, Regulatory Affairs
W. Guldemon, Recovery Manager
M. Hedges, Principal Engineer, Licensing
W. Hettel, Vice President, Operations
A. Javorik, Vice President, Engineering
C. King, Assistant Plant General Manager
M. Laudisio, Radiological Planning Supervisor, Radiation Protection
B. MacKissock, Plant General Manager
D. Mand, Design Engineering Manager
C. Moon, Training Manager
J. Pierce, Manager, Chemistry
T. Powell, Former Emergency Planner
M. Reddemann, Chief Executive Officer
J. Redwine, Supervisor, Simulator
S. Richter, Principal Engineer, Engineering
B. Ridge, Chief Financial Officer
R. Sanker, Radiological operations Supervisor, Radiation Protection
B. Sawatzke, Chief Nuclear Officer
R. Schuetz, Manager, Maintenance
M. Shymanski, Supervisor, Radiological Services
C. Sonoda, Licensing Engineer, Regulatory Affairs

NRC Personnel

G. Skaggs-Ryan, Reactor Inspector
M. Wasem, Emergency Preparedness Specialist, NSIR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened and Closed

- | | | |
|---------------------|-----|---|
| 05000397-2012004-01 | NCV | Failure to Enter Applicable LCO for Offsite Power (Section 1R04) |
| 05000397-2012004-02 | NCV | Failure to Develop Preventive Maintenance Schedule for Safety-Related 480V Starter Coils (Section 1R12) |
| 05000397-2012004-03 | NCV | Failure to Maintain Adequate Procedural Guidance for Critical Switchgear Ventilation Systems (Section 1R15) |
| 05000397-2012004-04 | NCV | Failure to Provide Adequate Work Instructions (Section 1R19) |
| 050003972012004-05 | FIN | Failure to Maintain Dose ALARA due to Poor Job Execution (Section 2RS02) |
| 050003972012004-06 | FIN | Failure to Maintain Dose ALARA due to Inadequate Job Planning (Section 2RS02) |
| 05000397-2012004-07 | NCV | Failure to Identify a Performance Weakness During a Drill (Section 4OA1) |
| 05000397-2012004-08 | NCV | Failure to Establish Conservative Electronic Dosimeter Alarm Set-points (Section 4OA5) |
| 05000397-2012004-09 | NCV | Failure to Follow Radiation Work Permit Requirements to Inform Workers about Radiological Conditions (Section 4OA5) |

Closed

None.

Discussed

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|--------------------|--------------------------------|----------------------------|
| ABN-Transformer | Transformer Abnormal Operation | 12 |
| SOP-HOTWEATHER-OPS | Hot Weather Operations | 4 |
| SOP-HOTWEATHER-OPS | Hot Weather Operations | 5 |

ACTION REQUESTS

| | | | | |
|--------|--------|--------|--------|--------|
| 264995 | 265116 | 265384 | 266253 | 266521 |
| 266672 | 267330 | 268293 | | |

Section 1R04: Equipment Alignment

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|-----------------|---|----------------------------|
| OSP-SW/IST-Q702 | Standby Service Water Loop B Operability | 23 |
| OSP-SW/IST-Q702 | Standby Service Water Loop B Operability | 24 |
| SOP-SW-LU | Standby Service Water System Valve and Breaker Lineup | 3 |
| OSP-ELEC-W101 | Offsite Station Power Alignment Check | 21 |

MISCELLANEOUS DOCUMENTS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|------------------------------|--|------------------------|
| IEEE 1283-2004 | IEEE Guide for Determining the Effects of High-Temperature Operation on Conductors, Connectors, and Accessories | March 23, 2005 |
| NRC Information Notice 97-45 | Environmental Qualification Deficiency for Cables and Containment Penetration Pigtaills | July 2, 1997 |
| NE-02-94-33 | Gamma Radiation Dose to Electrical Penetration Feedthrough Modules | 0 |
| NE-02-94-34 | Gamma Radiation Dose to Wetwell Electrical Penetrations | 0 |
| QID 382003 | Environmental Qualification Capabilities for the Westinghouse/IST Modular Style EPA Module Sub-Assembly Modules Consisting of "Q1"/"Q2"/"Varglas" Insulated Conductors, "Q1"/"Q2"/Miscellaneous Elastomeric as Manufactured Insulated Cables | Volume 5 |
| Report PEN-TR-77-59 | The Qualification of Modular Type Electric Penetrations following the Requirements of IEEE Standard 317-1976 and 323-1974 for use in PWR and BWR | July 18, 1977 |

DRAWINGS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|---------------|--|------------------------|
| | Adapter Module Assembly (121c/#18D-TP-t) For WPPSS Plant 2 | 1994 |
| 02E12-08 | APKD Pump | 6 |
| EWD-31-008 | Electrical Wiring Diagram Reactor Recirculation System RRC-P-1B Vibration Monitoring Instrumentation | 1 |

ACTION REQUESTS

236486 250361 251958 253417 267637

WORK ORDERS

02006012 02011119 02017929 02013953

Section 1R05: Fire Protection

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|---------------|---|----------------------------|
| PPM 10.2.53 | Scaffolding | 39 |
| FSAR | Columbia Generating Station Final Safety Analysis Report, Appendix F | 60 |

DRAWINGS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|-----------------|---|-----------------|
| M573-2 | Flow Diagram Potable Water Cold & Fire Protection Systems Pumphouses | 6 |
| | Columbia Generating Station Pre-Fire Plan Radwaste 525' | 3 |
| PPF-DG-BUILDING | Diesel Generator Building; Fire Area: DG-1 through 10 | 3 |
| PPF-RB-522 | Reactor 522: Fire Area: R-1,18,21,M-27,73 | 3 |
| PPF-RB-422 | Reactor 422: Fire Area: R-1,3,4,5,6,7,8,15 | 4 |

MISCELLANEOUS DOCUMENTS

FPSI 12-0261 FPSI 11-0218 LCO Log 15117

Section 1R06: Flood Protection Measures

CALCULATIONS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|---------------|-------------------------------------|----------------------------|
| ME-02-03-04 | Radwaste Building Flooding Analysis | 0 |

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|---------------|-----------------------------|----------------------------|
| PPM 13.1.1 | Classifying the Emergency | 42 |
| PPM 5.1.1 | RPV Control | 19 |
| PPM 5.2.1 | Primary Containment Control | 19 |

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|----------------------|-------------------------------|----------------------------|
| PPM 5.3.1 | Secondary Containment Control | 18 |
| PPM 5.4.1 | Radioactivity Release Control | 16 |
| PPM 18.1.32 | RHR-P-2B Pre-Service Test | 0 |
| OSP-RHR/IST- Q703 | RHR Loop B Operability Test | 38 |

WORK ORDERS

02021637-01 02027185-01 02030388-01

Section 1R12: Maintenance Effectiveness

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|-----------------------|---|----------------------------|
| PPM 1.5.13 | Preventive Maintenance Optimization Living Program | 21 |
| PPM 1.5.13 | Preventive Maintenance Optimization Living Program | 26 |
| PPM 10.25.187 | Motor Control Center Starter (Bucket) Maintenance | 21 |
| SOP-HVAC/CR- START | Control, Cable and Critical Switchgear Rooms HVAC Start | 5 |
| SYS-4-23 | Maintenance Rule Structural Baseline Inspections | 0 |

MISCELLANEOUS DOCUMENTS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|---------------|---|----------------------------|
| NUREG/CR-3786 | A Review of Regulatory Requirements Governing Control Room Habitability Systems | August 1984 |

ACTION REQUESTS

250473 265422 261608 261693 220480
267281 263323 184168 218546 183516
225611

WORK ORDER

02027185-01

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

| <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 |

MISCELLANEOUS DOCUMENT

LCO Log 15500

ACTION REQUESTS

| | | | | |
|--------|--------|--------|--------|--------|
| 266925 | 267195 | 267513 | 267538 | 267600 |
| 267764 | 267770 | 267986 | | |

WORK ORDERS

02019561 02016232-18

Section 1R15: Operability Evaluations

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|----------------------|--|----------------------------|
| 1.3.66 | Operability and Functionality Evaluation | 20 |
| ABN-HVAC | HVAC Trouble | 10 |
| OI-41 | Operations Work Control Expectations | 43 |
| OSP-RHR/IST- Q703 | RHR Loop B Operability Test | 36 |
| SPS-9-6 | Infrared Thermography | 0 |

MISCELLANEOUS DOCUMENTS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------------|--|-----------------|
| CVI 02-02E12-03 | Residual Heat Removal System Design Spec Data Sheet | 8 |
| EC 0000011103 | CALC 8.50.11A, B, C, D Rev 7-Evaluate AR CR 266400/AR CR 266404 Excavation of QC 1 Soil around Vertical Pipe Under SW-V-933A | 0 |
| Drawing ED-SW-3 | Standby Service Water Piping (Spray Pond 1B) | March 28, 1978 |
| IEEE 1283-2004 | IEEE Guide for Determining the Effects of High-Temperature Operation on Conductors, Connectors, and Accessories | March 23, 2005 |
| OpESS FY 12-02 | Technical Specification Interpretation and Operability Determination | 1 |
| Specification 15209 | Motor Control Center Replacement Draw Out Compartments, Components, and Local Starters, Safety Related | 4 |
| QID 829213 | Motor Control Center (MCC) Equipment | 0 |

ACTION REQUESTS

| | | | | |
|--------|--------|--------|--------|--------|
| 265719 | 266400 | 266404 | 266405 | 266649 |
| 246166 | 265422 | 267979 | 269569 | 270108 |
| 269570 | 270109 | | | |

WORK ORDERS

| | | | | |
|----------|----------|---------|---------|---------|
| 01186952 | 01196946 | 2008739 | 1192568 | 1175759 |
| 1160317 | 1145583 | 2004017 | 1189436 | 1172097 |
| 1157359 | 1141307 | 2008740 | 1192569 | 1175758 |
| 1160316 | 1145582 | 2000618 | 2003966 | 1189392 |
| 1168763 | 1157320 | 1140955 | 2009037 | 1192829 |
| 1176302 | 1160641 | 1145835 | 2009038 | 1192830 |
| 1176301 | 1160640 | 1145834 | 2013601 | 1197031 |
| 1181667 | 1164233 | 1150241 | 2013602 | 1197032 |
| 1181666 | 1164232 | 1150240 | | |

Section 1R19: Post-Maintenance Testing

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|------------------|--|----------------------------|
| OSP-SGT/IST-Q701 | SGT Valve Operability (System A) | 8 |
| OSP-SGT-M701 | Standby Gas Treatment System A Operability | 14 |
| SPS-9-6 | Infrared Thermography | 0 |

WORK ORDERS

| | | | | |
|-------------|-------------|-------------|-------------|-------------|
| 02015412-01 | 02015412-05 | 02015423-01 | 02016232-01 | 02016232-01 |
| 02016232-04 | 02016232-08 | 29098636 | 02017958-01 | 02016232-05 |
| 02019674 | | | | |

DRAWINGS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|--|-----------------|
| EWD-39E-015 | Standby Gas Treatment System MOV SGT-V-3A2 | 012 |

ACTION REQUESTS

00265841 00267373

Section 1R22: Surveillance Testing

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|-------------------|--|----------------------------|
| OSP-INST-H101 | Shift and Daily Instrument Checks (Modes 1, 2 and 3) | 77 |
| OSP-RCIC/IST-Q701 | RCIC Operability Test | 47 |
| TSP-DG3/LOCA-B501 | HPCS Diesel Generator DG3 LOCA Test | 18 |
| 10.27.90C | DSA System Instrument Air Sampling DG-3 | 4 |
| 10.25.4 | Lubrication and Inspection of Limitorque MOV(s) | 26 |

ACTION REQUEST

00265759

WORK ORDER

02011348-01

Section 1EP1: Exercise Evaluation

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISIONS / DATES</u> |
|---------------|--|------------------------------|
| EPI-21 | Drill and Exercise Development and Implementation | 15 |
| EPIP 12.10.1 | Sample Station Operation | |
| EPIP 12.10.9 | Handling of Highly Radioactive Samples | |
| EPIP 13.1.1 | Classifying the Emergency | 41, 42 |
| EPIP 13.1.1A | Classifying the Emergency – Technical Bases | 22-25 |
| EPIP 13.2.1 | Determining Protective Action Recommendations | 17.2 |
| EPIP 13.4.1 | Emergency Notifications | 41 |
| EPIP 13.5.7 | Industrial Development Authority Duties | |
| EPIP 13.8.1 | Computerized Emergency Dose Projection System Operations | 30 |
| EPIP 13.9.1 | Environmental Field Monitoring Operations | |
| EPIP 13.10.1 | Control Room Operations and Shift Manager Duties | 34 |
| EPIP 13.10.2 | TSC Manager Duties | 33, 34 |
| EPIP 13.10.9 | OSC Manager and Staff Duties | 46 |
| EPIP 13.11.1 | EOF Manager Duties | 44 |
| EPIP 13.13.4 | After Action Reporting | 10.1 |
| EPIP 13.14.8 | Drills and Exercise Program | 17 |
| | Scenario Timeline, 2008 Ingestion Phase Exercise, Team B | |
| | Scenario Timeline, 2010 ERO Team C Plume Phase Exercise | August 31, 2010 |

Section 1EP1: Exercise Evaluation

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISIONS / DATES</u> |
|---------------|--|--------------------------|
| | Evaluation Report for the Team A Training Drill | January 12, 2010 |
| | Evaluation Report for the Team D Training Drill | March 16, 2010 |
| | Evaluation Report for the Team C Training Drill | May 11, 2010 |
| | Evaluation Report for the Team C Dress Rehearsal | July 20, 2010 |
| | Evaluation Report for the Team B After Hours Callout Drill | October 26, 2010 |
| | Evaluation Report for the Team D Training Drill | January 11, 2011 |
| | Evaluation Report for the Team A Training Drill | March 15, 2011 |
| | Evaluation Report for the ERO Team B/C Training Drill | November 1, 2011 |
| | Evaluation Report for the ERO Team D/B Training Drill | May 8, 2012 |
| | Evaluation Report for the Team D Dress Rehearsal | July 10, 2012 |

ACTION REQUESTS

| | | | | | |
|--------|--------|--------|--------|--------|--------|
| 210544 | 215610 | 215664 | 219490 | 221232 | 221233 |
| 221671 | 222309 | 222310 | 269533 | 269609 | 269663 |
| 269740 | 269790 | 269791 | 269798 | 269799 | 269800 |
| 269802 | 269803 | 270608 | 270610 | 270611 | 270612 |
| 270613 | 270614 | | | | |

Section 1EP4: Emergency Action Level and Emergency Plan Changes

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|---|-----------------|
| PPM 13.1.1 | Classifying the Emergency | 41, 41 |
| PPM 13.1.1A | Classifying the Emergency – Technical Bases | 25 |
| PPM 13.4.1 | Emergency Notifications | 41 |

| | | |
|-------------|--|----|
| PPM 13.10.2 | TSC Manager Duties | 34 |
| PPM 13.10.9 | Operations Support Center Manager and Staff Duties | 48 |
| | Columbia Generating Station Emergency Plan | 57 |

Section 2RS02: Occupational ALARA Planning and Controls

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|--|-----------------|
| 11.2.7.3 | High Radiation Area, Locked High Radiation Area, and Very High Radiation Area Controls | 038 |
| GEN-RPP-01 | ALARA Program Description | 007 |
| GEN-RPP-02 | ALARA Planning and Radiation Work Permits | 029 |
| GEN-RPP-04 | Entry Into, Conduct In, and Exit from Radiologically Controlled Areas | 027 |
| GEN-RPP-13 | ALARA Committee | 010 |
| SWP-RPP-02 | Cobalt Reduction Program | 002 |

ALARA Work Packages

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|---|-----------------|
| 30002666 | R20 TG Cond-HX-9 Replacement and Repairs "Inside Condenser" | 06 |
| 30002636 | R20 DW CRA-M/FN Maintenance and Repairs *LHR* | 03 |
| 30002684 | R20 RF Wetwork InVessel, SFP, and Equipment Pool *LHR* | 03 |
| 30002677 | R20 RF Rx Cavity Disassembly Work *HR* | 00 |
| 30002686 | R20 RF Rx Reassembly Cavity Work Pre and During Decon *LHR* | 02 |
| 30002687 | R20 RF Rx Reassembly Cavity Work Post Decon *LHR* | 02 |
| 30002688 | R20 RF Rx Reassembly Floor Support *HR* | 00 |

ALARA Work Packages

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|--|-----------------|
| 30002745 | R20 TG Cond-HX-9 Replacement and Repairs "Outside Condenser" | 02 |
| 30003034 | 2012 RWCU-DM-1B SEPTUM Change Out *LHRA – High Risk* | 00 |

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

| <u>NUMBER</u> | <u>TITLE</u> | <u>DATE</u> |
|---------------|---|-------------------|
| 26119R2 | Energy Northwest Trip Report: Benchmark ALARA Program During Refueling Outage | March 29, 2 012 |
| AU-RP/RW-11 | Radiation Protection/Process Control Programs Audit | November 10, 2011 |

ACTION REQUEST REPORT

| | | | | |
|----------|----------|----------|----------|----------|
| 00239287 | 00239554 | 00243508 | 00252576 | 00254284 |
| 00246577 | 00227568 | 00237536 | 00238694 | 00238774 |
| 00250677 | 00245959 | 00246785 | 00248388 | 00242939 |
| 00254540 | 00257593 | 00257674 | 00248388 | 00251962 |
| 00262104 | 00245437 | 00249216 | 00249217 | 00668498 |

MISCELLANEOUS DOCUMENTS

| <u>NUMBER</u> | <u>TITLE</u> | <u>DATE</u> |
|---------------|---|-----------------|
| | Columbia Generating Station (CGS) CRE/Source Term Reduction 10 Year Plan | 2011 |
| | Columbia Generating Station R-20 Collective Radiation Exposure (CRE) Report | October 2011 |
| 2009-202 | EPRI BWR Vessel and Internals Project Interim Guidance Letter | June 18, 2009 |
| 1695012 | RWCU Demineralizer Pit-Radwaste 507'-RWP 30002920 | August 13, 2012 |

Section 2RS04: Occupational Dose Assessment

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|----------------|---|-----------------|
| GEN-RPP-06 | Dosimetry Program Description | 8 |
| GEN-RPP-08 | Planned Special Exposure | 1 |
| HPI 2.2 | Skin Dose Evaluations | 13 |
| HPI 4.30 | Exposure Evaluations and Reporting of DLR Data | 9 |
| HPI 5.9 | Evaluation of In-Vivo Bioassay Results Following a Potential Intake | 12 |
| PPM 11.2.4.6 | Invitro Bioassay Sampling and Analysis | 2 |
| PPM 11.2.6.1 | Issuance and Retrieval of Personnel Dosimetry | 23 |
| PPM 11.2.6.7 | Special Dosimetry | 13 |
| PPM 11.2.15.13 | Control of Personnel Skin and Clothing Contamination | 6 |

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

| <u>NUMBER</u> | <u>TITLE</u> | <u>DATE</u> |
|---------------|--|-------------------|
| AU-RP/RW-11 | Radiation Protection/Process Control Program Audit | November 10, 2011 |

ACTION REQUEST REPORT

| | | | | |
|----------|----------|----------|----------|----------|
| 00232153 | 00235089 | 00238014 | 00259562 | 00264490 |
|----------|----------|----------|----------|----------|

MISCELLANEOUS DOCUMENTS

| <u>NUMBER</u> | <u>TITLE</u> | <u>DATE</u> |
|------------------|---|-----------------|
| Calculation 07-2 | Passive Internal Monitoring Sensitivity of the GEM-5 | August 30, 2007 |
| TBD 10-01 | Review of Site Isotopic Composition and Internal Dose ALI Values Evaluating Difficult to Detect, TRU, and Passive Monitoring Capabilities | April 26, 2011 |
| TBD 10-02 | Personnel External Exposure Monitoring at Columbia Generating Station | May 3, 2012 |

Section 40A1: Performance Indicator Verification

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISIONS/ DATES</u> |
|---------------|--|-----------------------------|
| EPI-11 | ERO Administration Program | 8 |
| EPI-18 | Emergency Preparedness Performance Indicators | 20 |
| EPI-26 | Tone Alert Radio Test and Survey | |
| EPIP 13.1.1 | Classifying the Emergency | 41, 42 |
| EPIP 13.1.1A | Classifying the Emergency – Technical Bases | 22-25 |
| EPIP 13.2.1 | Determining Protective Action Recommendations | 17-2 |
| EPIP 13.4.1 | Emergency Notifications | 41 |
| EPIP 13.13.4 | After Action Reporting | 10.1 |
| EPIP 13.14.4 | Emergency Equipment Maintenance and Testing | 48 |
| | FEMA Siren System Design Approval Letter | July 17, 1994 |
| TSI 6.2.34 | EP Emergency Tone Alert Radio Acceptance and Programming | |

MISCELLANEOUS DOCUMENT

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|---|-----------------|
| NEI 99-02 | Regulatory Assessment Performance Indicator Guideline | 6 |

ACTION REQUESTS

| | | | | |
|--------|--------|--------|--------|--------|
| 249959 | 253634 | 253637 | 254529 | 255400 |
| 255424 | 255494 | 256672 | 259526 | 260478 |
| 260635 | 261152 | 263184 | 263749 | 268570 |

Section 40A2: Identification and Resolution of Problems

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION / DATE</u> |
|---------------|-----------------------------|----------------------------|
| SWP-PRO-01 | Procedure Use and Adherence | 19 |

ACTION REQUESTS

| | | | | |
|--------|--------|--------|--------|--------|
| 265837 | 266371 | 266400 | 266413 | 265910 |
| 265822 | 265912 | 242743 | 256230 | 229807 |
| 247400 | 264530 | | | |

WORK ORDER

01196946-02

Section 40A5: Other Activities

MISCELLANEOUS DOCUMENTS

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|---|-----------------|
| GEN-RPP-02 | ALARA Planning and Radiation Work Permits | 29 |
| GEN-RPP-04 | Entry Into, Conduct In, and Exit From Radiologically Controlled Areas | 27 |
| | Radiation Work Permit 30002498 | |
| | Radiation Work Permit 30002772 | |
| | Radiation Work Permit 30002920 | |
| | Radiation Work Permit 30002943 | |
| | Columbia Generating Station Emergency Plan | 57 |

PROCEDURES

| <u>NUMBER</u> | <u>TITLE</u> | <u>REVISION</u> |
|---------------|--|-----------------|
| SWP-CHE-01 | Groundwater Protection Program | 3 |
| CI-6.0 | Groundwater Protection Program – Risk Assessment | 0 |
| PPM 1.3.76 | Integrated Risk Management | 32 |

Section 40A7: Licensee-Identified Violations

ACTION REQUESTS

266400

266405

WORK ORDER

01196946

**The following items are requested for the
Occupational/ Public Radiation Safety Inspection
at Columbia Generating Station
August 13-17, 2012
Integrated Report 2012004**

Inspection areas are listed below.

Please provide the requested information on or before July 16, 2012.

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

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 45 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

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

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

If you have any questions or comments, please contact Larry Ricketson at (817) 200-1165 or Larry.Ricketson@nrc.gov or Natasha Greene at (817) 200-1154 or Natasha.Greene@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

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