



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV  
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July 29, 2008

J. V. Parrish (Mail Drop 1023)  
Chief Executive Officer  
Energy Northwest  
P.O. Box 968  
Richland, Washington 99352-0968

SUBJECT: COLUMBIA GENERATING STATION - NRC INTEGRATED INSPECTION  
REPORT 05000397/2008003

Dear Mr. Parrish:

On June 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. The enclosed inspection report documents the inspection results, which were discussed on July 10, 2008, with Tom Lynch, Plant General Manager and other members of your staff.

The inspection 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.

This report documents three self-revealing findings of very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any noncited violation in this report, 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, 612 East Lamar Blvd., Suite 400, Arlington, Texas 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Columbia Generating Station.

In accordance with 10 CFR Part 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 document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

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Project Branch A  
Division of Reactor Projects

Docket: 50-397  
License: NPF-21

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NRC Inspection Report 05000397/2008003

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SUNSI Review Completed: CEJ ADAMS:  Yes  No Initials: CEJ  
 Publicly Available  Non-Publicly Available  Sensitive  Non-Sensitive  
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RIV:RI:DRP/A	SRI:DRP/A	C:SPE:DRP/C	C:DRS/EB1	C:DRS/PSB1
ZDunham	RCohen	TRFarnholtz	RLBywater	MPShannon
<b>/RA/ E-mail</b>	<b>/RA/ E-mail</b>	<b>/RA/ CEJohnson for</b>	<b>/RA/</b>	<b>/RA/</b>
7/ /08	7/ /08	7/ /08	7/21/08	7/21/08
C:DRS/OB	C:DRS/EB2	C:DRS/PSB2	C:DRP/A	
RLantz	NFOKeefe	GEWerner	CEJohnson	
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Energy Northwest

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 50-397  
License: NPF-21  
Report: 05000397/2008003  
Licensee: Energy Northwest  
Facility: Columbia Generating Station  
Location: Richland, Washington  
Dates: April 1 through June 30, 2008  
Inspectors: Z. Dunham, Senior Resident Inspector, Project Branch A, DRP  
R. Cohen, Resident Inspector, Project Branch A, DRP  
C. Graves, Health Physicist, Plant Support Branch 2, DRS  
Approved By: C. E. Johnson, Chief, Project Branch A, Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000397/2008003; 04/01/2008 - 06/30/2008; Columbia Generating Station; Access Control to Radiologically Significant Areas.

The report covered a 13-week period of inspection by resident and regional inspectors. Three green findings 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." 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 and Self-Revealing Findings

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.7.2 for failure to control a high radiation area with dose rates in excess of 1.0 rem per hour. Specifically, on January 30, 2008, a worker, within the 512' reactor traversing incore probe mezzanine room, received an electronic dosimeter alarm and the investigation survey found that Valve RFW-V-70 had a dose rate of 4.2 rem per hour on contact and 1.2 rem per hour at 30 centimeters. The area was immediately controlled as required per Technical Specifications. Review of this occurrence revealed surveys indicating an upward trend of radiation levels on the valve in the May and June 2007 time frame. The review also revealed that several crud burst causing evolutions occurred around the June to July 2007 time frame and there was no process in place for radiation protection to be informed so that they could adequately monitor for changing radiological conditions throughout the plant. The issue was entered into the licensee's corrective action program as Action Report/Condition Report Numbers 00176887 and 00178189. Initial corrective actions included controlling the area as required by Technical Specifications and procedure changes to ensure radiation protection is notified of such evolutions and enhancement of radiation protection procedures to include additional areas of the plant to be monitored upon notification of crud burst causing evolutions.

The failure to control a high radiation area with dose rates in excess of 1.0 rem per hour was a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that the failure to properly control a high radiation area with dose rates in excess of 1.0 rem per hour had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) an as low as is reasonably achievable planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, the violation has a crosscutting aspect in the area of human performance associated with the work control component because of a lack of interdepartmental communication and the failure to keep radiation protection informed of evolutions that may cause a change in

radiological conditions [H.3(b)] (Section 2OS1).

- Green. The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.7.1 for failure to barricade and conspicuously post a high radiation area. Specifically, a worker received a dose rate alarm of 216 millirem per hour while working in a HI-TRAC cask work area of the spent fuel pool floor on March 5, 2008. The worker was working on a radiation work permit that had a dose rate alarm setpoint of 80 millirem per hour. Radiation protection personnel performed radiation surveys following notification of the alarm and identified the area had radiation levels up to 230 millirem per hour on contact and 120 millirem per hour at 30 centimeters constituting a high radiation area. The issue was entered into the licensee's corrective action program as Action Report/Condition Report Number 00178381.

The failure to barricade and conspicuously post a high radiation area was a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that the failure to barricade and conspicuously post a high radiation area had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) an as low as is reasonably achievable planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, the violation has a crosscutting aspect in the area of human performance associated with the work control component because the work planning did not appropriately plan work activities by incorporating job site conditions and appropriate equipment to use [H.3(a)] (Section 2OS1).

- Green. The inspectors reviewed a self-revealing noncited violation of 10 CFR 20.1501(a) for failure to perform a survey of a potentially contaminated barrel, resulting in the contamination of a worker. Specifically, on October 5, 2007, a worker alarmed a personnel monitor with radioactive contamination on the back of the worker's T-shirt. The worker showed radiation protection personnel the work area; a barrel of scrap metal with a label indicating contamination levels <1000 decays per minute per 100 centimeters squared. Smears of the inside of the drum and closure ring revealed contamination levels up to 4000 decays per minute per 100 centimeters squared. The ring was decontaminated, the barrel was sealed and labeled as radioactive material, and was placed in an appropriate storage area. No other contamination was found in the area and a random survey of other non-radioactive barrels revealed no contamination. The issue was entered into the licensee's corrective action program as Action Report Number 00056086.

The failure to perform surveys of potentially contaminated items is a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that not completely evaluating the radiological conditions had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not

involve: (1) an as low as is reasonably achievable planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding has a crosscutting aspect in the area of human performance associated with work practices because the individual that performed the survey failed to use proper human error prevention techniques to ensure an adequate survey of the barrel [H.4(a)] (Section 2OS1).

B. Licensee-Identified Violations

None.

## REPORT DETAILS

### Summary of Plant Status

The inspection period began with Columbia Generating Station increasing reactor power to 100 percent following a planned downpower to 60 percent on March 29, 2008, to support maintenance on a reactor feedwater pump. The facility achieved 100 percent power on April 1, 2008. On May 22, 2008, reactor power was lowered to 81 percent power due to an unplanned trip of a reactor feedwater heat exchanger which occurred due to a failed level controller. Subsequently, on May 23, 2008, reactor power was lowered to approximately 50 percent power to support an economic dispatch request from Bonneville Power Administration. Reactor power was restored to 100 percent on May 27, 2008. From May 28 through June 3, 2008, reactor power was reduced periodically, to as low as 65 percent power, per Bonneville Power Administration's request for economic dispatch. On June 7, 2008, reactor power was reduced to approximately 18 percent power to support a planned entry into the drywell to support inspection and oil addition to a reactor recirculation pump. On June 8, 2008, reactor power was increased to 50 percent power and then increased to 85 percent power on June 9 for economic dispatch. Periodically throughout the remainder of the inspection period, reactor power was reduced to 85 percent power to support economic dispatch requests from Bonneville Power Administration.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather (71111.01)

##### Evaluate Summer Readiness of Offsite and Alternate AC Power Systems

###### a. Inspection Scope

On May 12, 2008, the inspectors completed a review of the licensee's procedures and plant features that assure the continued availability of offsite and alternate AC power systems. The inspectors: (1) reviewed communication protocols between the licensee and the transmission system operator; (2) verified that plant procedures addressed the actions to be taken when post-trip voltage of the offsite power system at the plant is not acceptable to assure continued operation of safety-related loads without transferring to the on site power systems; (3) verified that procedures addressed compensatory actions to be performed if it is not possible to predict post-trip voltages at the plant for the current grid conditions; and (4) verified that plant risk is assessed for maintenance activities which could affect grid reliability, or the ability of the transmission system operator to provide off-site power. Documents reviewed are listed in the attachment.

The inspectors completed one sample.

###### b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

Partial Walkdowns

a. Inspection Scope

The inspectors: (1) walked down portions of the risk important systems listed below and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walkdown to the licensee's corrective action program to ensure problems were being identified and corrected.

- Division 2 Diesel Generator (DG) following maintenance outage, May 5, 2008
- Hydraulic Control Unit Following Transponder Card Replacement, May 12, 2008
- Service Water System B, May 14, 2008
- Residual Heat Removal Train A and Low Pressure Core Spray While Keep Fill Pump was Out-of-Service for Unplanned Maintenance, June 2, 2008

Documents reviewed are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors walked down the plant fire areas listed below to assess the material condition of active and passive fire protection features and their operational lineup and readiness. Where applicable, the inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features; and (7) reviewed the corrective action program to determine if the licensee identified and corrected fire protection problems.

- Fire Area – Main Transformer Yard, April 22, 2008

- Fire Area – DG-10, Deluge Valve Equipment Room, April 23, 2008
- Fire Area – DG-4, DG-1A Diesel Oil Storage Tank, May 5, 2008
- Fire Area – DG-3, DG-2B Room, June 20, 2008
- Fire Area – RC-2, Cable Spreading Room, June 20, 2008

Documents reviewed are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

.2 Annual Inspection

a. Inspection Scope

The inspectors observed a fire brigade drill on May 29, 2008, to evaluate the readiness of licensee personnel to prevent and fight fires, including the following aspects: (1) use of protective clothing; (2) use of breathing apparatuses; (3) placement and use of fire hoses; (4) entry into the fire area; (5) use of fire fighting equipment; (6) brigade leader command and control; (7) communications between the fire brigade and control room; (8) searches for fire victims and fire propagation; (9) smoke removal; (10) use of pre-fire plans; and (11) adherence to the drill scenario. The licensee simulated a fire in the Division 1 safety-related battery room followed by demonstration of ventilating the area once the simulated fire was extinguished.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On May 1, 2008, the inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario involved loss of an off-site power source in conjunction with a loss of coolant accident, loss of a safety-related electrical bus, use of standby service water for spray down of the drywell, and emergency depressurization of the reactor pressure vessel.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the maintenance activities listed below to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work control, work practices, and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50, Appendix B, and the Technical Specifications (TS).

- Post Accident Monitoring Category II Radiation Instrumentation in Maintenance Rule a(1) and Associated Corrective Actions, May 15, 2008
- Work Order (WO) 01153964, Heater Drain Valve, HD-LCV-6B1, Control Linkage Failure, May 22, 2008

Documents reviewed are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

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

Risk Assessment and Management of Risk

a. Inspection Scope

The inspectors reviewed the risk assessment activities listed below to verify: (1) performance of risk assessments when required by 10 CFR 50.65(a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; (4) the licensee implements adequate risk management actions as applicable; and (5) identified and corrected problems related to maintenance risk assessments.

- WO 011350700a, DG-2 Outage with Reactor Building Siding Replacement Work, April 28 through May 2, 2008
- Reactor Core Isolation Cooling Maintenance Outage, May 5, 2008
- WO 0114396701A01, Multi-purpose Cask 26 Loading with Reactor Building Siding Replacement, May 15, 2008

- WO 01075448, Painting in DG-2 Room, May, 27, 2008
- Drywell Entry at 18 Percent Power, June 7, 2008

Documents reviewed are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the Updated Safety Analysis Report (USAR) and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any TSs; (5) used the significance determination process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- Action Request (AR)/Condition Report (CR) 180283, Reactor Recirculation Pump RRC-P-1A, Oil Level Low Alarm, April 20, 2008
- AR/CR 180902, Secondary Containment and Steam Tunnel, May 7, 2008
- AR/CR 178979, Reactor Core Isolation Cooling Valve RCIC-V-74 Leaks By, May 12, 2008
- AR/CR 182502, Grid Disturbance, June 11, 2008

Documents reviewed are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary plant modifications listed below to verify that: (1) applicable 10 CFR 50.59 evaluations and design reviews are adequate for the modification; (2) installation or removal of the modification does not adversely affect system operability and is consistent with modification documents; (3) applicable plant procedures, drawings, and other documents are updated to reflect installation or removal of the modification; (4) post installation and removal testing is adequate and completed satisfactorily; (5) that associated tagouts are appropriately controlled; (6) the cumulative affect of multiple temporary modifications does not adversely affect mitigating systems or radiological boundaries; and (7) the licensee has identified and implemented appropriate corrective actions associated with temporary plant modifications.

- WO 0114462, Temporary Modification 08-005; Diesel Cooling Water Temperature Switch DCW-TS-4 Bypassed, April 16, 2008

Documents reviewed are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the permanent plant modifications listed below to verify that: (1) the design is adequate and that applicable 10 CFR 50.59 evaluations and design reviews are adequate for the modification; (2) preparation, staging, and implementation does not impair emergency and abnormal procedure response actions, adversely affect key safety functions, or affect operator response to loss of key safety functions; (3) postmodification testing maintains the facility in a safe configuration during the test and that testing verifies operability by verifying that: (a) unintended system interactions do not occur; (b) system performance characteristics meet the design basis; (c) modification design assumptions are validated; and (d) modification test acceptance criteria have been met; (4) applicable plant procedures, drawings, and other documents are updated to reflect installation of the modification; and (5) the licensee has identified and implemented appropriate corrective actions associated with plant modification problems.

- Reactor Building Siding Replacement, April through June 2008

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the postmaintenance test activities listed below and applicable licensing and/or design-basis documents to: (1) determine the safety functions that may have been affected by the maintenance activity; and (2) assess the adequacy of the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that: (1) acceptance criteria were met; (2) plant impacts were evaluated; (3) test equipment was calibrated; (4) procedures were followed; (5) jumpers were properly controlled; (6) test data results were complete and accurate; (7) test equipment was removed; (8) the system was properly re-aligned; and (9) deficiencies during testing were documented. The inspectors also reviewed the corrective action program to determine if the licensee identified and corrected problems related to postmaintenance testing.

- WO 01135071, DG-2 Over-speed Trip Test, May 1, 2008
- WO 01146860, Replacement of Reactor Core Isolation Cooling Rupture Discs, May 13, 2008
- WO 01147647, Calibration of Standby Service Water Flow Indicating Switch SW-FIS-35B, May 28, 2008
- WO 01153267, Local Leak Rate Test of Containment Personnel Airlock Inner and Outer Doors, June 17, 2008
- WO 01154905, Tin Whiskers were Found in Average Power Range Monitor Channel D Circuitry, June 17, 2008
- WO 01121538, Replace Torque Switch on Low Pressure Core Spray Pump Minimum Flow Control Valve, June 24, 2008

Documents reviewed are listed in the attachment.

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the USAR, procedure requirements, and TSs to ensure that the surveillance activities listed below demonstrated that the associated systems tested

were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of American Society of Mechanical Engineering Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning systems to an operable status that did not meet the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented appropriate corrective actions associated with the surveillance testing.

- WO 01145800, OSP-RHR-A701, Residual Heat Removal Loop A Keep Fill Integrity Test, March 22, 2008
- WO 01143143, OSP-RHR/IST-Q702, RHR Loop A Operability Test, April 18, 2008
- WO 01143228A, PPM 18.1.18, DG-3 Fuel Consumption Run, April 24, 2008
- WO 01146411, TSP-CMS-B802, Containment Monitoring System Leakage – Division 2, April 28, 2009
- WO 01137031, OSP-MT-W701, Quad Voter Test, June 19, 2008

Documents reviewed are listed in the attachment.

The inspectors completed five samples including: three routine surveillance tests; one in-service test; and one reactor coolant system leakage surveillance test.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspectors used the requirements in 10 CFR Part 20, the TSs, and the licensee's procedures required by TSs as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the occupational radiation safety cornerstone
- Controls (surveys, posting, and barricades) of three radiation, high radiation, or airborne radioactivity areas
- Radiation work permits, procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm setpoints with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 mrem committed effective dose equivalent
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools.
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation work permit (or radiation exposure permit) briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

Documents reviewed are listed in the attachment.

The inspectors completed 19 of the required 21 samples.

b. Findings

1. Introduction. The inspectors reviewed a self-revealing Green noncited violation (NCV) of TS 5.7.2 for failure to control a high radiation area with dose rates in excess of 1.0 rem/hr.

Description. On January 30, 2008, a health physics technician received a dose rate alarm of 122 mr/hr while performing job coverage in the 512' reactor traversing incore probe mezzanine room. The radiation work permit dose rate alarm setpoint was 100 mr/hr. The room was posted as a high radiation area prior to entry, and upon receiving the alarm all workers exited the area. A dose rate alarm investigation survey conducted approximately 17 hours after the alarm, revealed that Valve RFW-V-70 had a dose rate of 4.2 rem/hour on contact and 1.2 rem/hour at 30 cm at which point measures were taken to properly control the area per TSs.

Review of this occurrence revealed surveys performed in May and June 2007 indicated an increasing trend in radiation levels. Specifically, a survey conducted on May 29, 2007 indicated a dose rate of 400 mr/hour at 30 cm from the valve. Approximately 6 days later on June 4, 2007, a survey indicated a dose rate of 700 mr/hour at 30 cm from the valve. The licensee's review also revealed that several crud burst causing evolutions occurred around the June-July 2007 time frame and there was no process in place for radiation protection to be informed so that they could adequately monitor for changing radiological conditions throughout the plant. The licensee's evaluation and corrective actions were in progress. However, initial corrective actions included controlling the area as required by TSs and procedure changes to ensure radiation protection is notified of such evolutions and enhancement of radiation protection procedures to include additional areas of the plant to be monitored upon notification of crud burst causing evolutions.

Analysis. The failure to control a high radiation area with dose rates in excess of 1.0 rem/hr was a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that the failure to properly control a high radiation area with dose rates in excess of 1.0 rem/hr had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) an as low as is reasonably achievable (ALARA) planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, the violation has a crosscutting aspect in the area of human performance associated with the work control component because of a lack of interdepartmental communication and the failure to keep radiation protection informed of evolutions that may cause a change in radiological conditions [H.3(b)].

The finding was self-revealing because the licensee was made aware of the high radiation area condition following an individual's electronic dosimeter alarm.

Enforcement. TS 5.7.2 requires, in part, that for a high radiation area with dose rates greater than 1.0 rem/hr, the licensee conspicuously post and lock or guard each area to prevent unauthorized entry into the area. Contrary to the above, on January 30, 2008, the licensee failed to control a high radiation area with dose rates in excess of 1.0 rem/hr to prevent unauthorized entry into the area. Because this violation was of very low

safety significance and has been entered into the licensee's corrective action program as AR/CR 176887 and 178189, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000397/2008003-01, Failure to Control Access to a High Radiation Area with Dose Rates in Excess of 1.0 rem/hr.

- .2. Introduction. The inspectors reviewed a self-revealing Green NCV of TS 5.7.1 for failure to barricade and conspicuously post a high radiation area.

Description. A worker received a dose rate alarm of 216 mr/hr while working in a HI-TRAC cask work area of the spent fuel pool floor on March 5, 2008. The worker was working on a radiation work permit that had a dose rate alarm setpoint of 80 mr/hr. Radiation protection personnel performed radiation surveys following notification of the alarm and identified the area had radiation levels up to 230 mr/hr on contact and 120 mr/hr at 30 cm constituting a high radiation area.

The area of streaming high radiation was from the gap between the multi-purpose container and the cask. Radiation protection personnel were using an ion chamber for monitoring radiation which in the case of detecting for streaming radiation is not an appropriate choice of equipment due to the make up of the detector and time for complete ionization. The ion chamber was detecting 60-70 mr/hr at 30 cm from the source while a Geiger-Mueller detector indicated up to 120 mr/hr at 30 cm from the source. The licensee made a more thorough radiation survey with an ion chamber and documented the radiation level as 120 mr/hr at 30 cm from the source.

Analysis. The failure to barricade and conspicuously post a high radiation area was a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that the failure to barricade and conspicuously post a high radiation area had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) an ALARA planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, the violation has a crosscutting aspect in the area of human performance associated with the work control component because the work planning did not appropriately plan work activities by incorporating job site conditions and appropriate equipment to use [H.3(a)].

The finding was self-revealing because the licensee was made aware of the high radiation area condition following an individual's electronic dosimeter alarm.

Enforcement. TS 5.7.1 requires, in part, that the licensee barricade and conspicuously post high radiation areas in lieu of the requirement of 10 CFR 20.1601(a). Pursuant to 10 CFR 20.1003, "high radiation area" means an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem in 1 hour at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates. Contrary to the above, on March 5, 2008, the licensee failed to adequately barricade and conspicuously post access to a high radiation area resulting in a worker entering a high radiation field and receiving an electronic dosimeter dose rate alarm. Because this violation was of very low safety significance and has been entered into the licensee's corrective action program as AR/CR 178381, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000397/2008003-02, Failure to Barricade and Conspicuously Post a High Radiation Area.

3. Introduction. The inspectors reviewed a self-revealing Green NCV of 10 CFR 20.1501(a) for failure to perform a survey of a barrel of scrap, resulting in the personnel contamination of a worker.

Description. On October 5, 2007, a worker alarmed a personnel monitor with radioactive contamination on the back of the worker's T-shirt. The worker showed radiation protection personnel the work area; a barrel of scrap metal with a label indicating contamination levels <1000 dpm/100cm<sup>2</sup>. Smears of the inside of the drum and closure ring revealed contamination levels up to 4000 dpm/100cm<sup>2</sup>. The ring was decontaminated, the barrel was sealed and labeled as radioactive material, and was placed in an appropriate storage area. No other contamination was found in the area and a random survey of other non-radioactive barrels revealed no contamination.

Analysis. The failure to perform surveys of potentially contaminated items is a performance deficiency. This finding is greater than minor because it is associated with the occupational radiation safety program and process attribute and affected the cornerstone objective, in that not completely evaluating the radiological conditions had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be very low safety significance because it did not involve: (1) an ALARA planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding has a crosscutting aspect in the area of human performance associated with work practices because the individual that performed the survey failed to use proper human error prevention techniques to ensure an adequate survey of the barrel. [H.4(a)]

The finding is self-revealing because the licensee became aware of the condition when a worker's personnel contamination monitor alarmed.

Enforcement. Title 10 of the Code of Federal Regulations, Part 20.1501(a), requires that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present. Pursuant to 10 CFR 20.1003, a "survey" means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. Title 10 of the

Code of Federal Regulations, Part 20.1201(a), states, in part, that the licensee shall control the occupational dose to individual adults to specified limits. Contrary to the above, on October 5, 2007, personnel contamination of a worker occurred because radiation protection personnel failed to adequately survey a potentially contaminated barrel. Because the violation is of very low safety significance and has been entered into the licensee's corrective action program as AR 56086, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000397/2008003-03, Failure to Perform Radiological Survey.

## 2OS2 ALARA Planning and Controls (71121.02)

### a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures ALARA. The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by TSs as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed:

- Site-specific ALARA procedures
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Dose rate reduction activities in work planning
- Workers' use of the low dose waiting areas
- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Resolution through the corrective action process of problems identified through post-job reviews and post-outage ALARA report critiques
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

Documents reviewed are listed in the attachment.

The inspectors completed 6 of the required 15 samples and 4 of the optional samples.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Mitigating Systems

- Safety System Functional Failures

The inspectors reviewed data from Energy Northwest's corrective action program, maintenance rule data, system health reports, operator logs, and licensee event reports from the first quarter 2007 through first quarter 2008. The inspectors compared the reviewed data against Energy Northwest's safety system functional failure performance indicator submitted data to determine if any discrepancies existed. The inspectors utilized Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 5, to verify the accuracy of the data submittal.

The inspectors completed one sample.

Cornerstone: Barrier Integrity

- Reactor Coolant Specific Activity
- Reactor Coolant System Identified Leakage Rate

The inspectors compared the data from surveillance procedures, operator logs, equipment out-of-service logs, and corrective action logs from second quarter 2007 through first quarter 2008. The inspectors verified that Energy Northwest calculated performance indicators in accordance with NEI 99-02.

The inspectors completed two samples.

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

The inspectors reviewed licensee documents from October 1 through December 31, 2007. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's TSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspectors toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02 were used to verify the basis in

reporting for each data element.

The inspectors completed the required sample (1) in this cornerstone.

Cornerstone: Public Radiation Safety

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

The inspectors reviewed licensee documents from October 1, 2007, through December 31, 2007. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 5, were used to verify the basis in reporting for each data element.

Documents reviewed are listed in the attachment.

The inspectors completed the required sample (1) in this cornerstone.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of all items entered into the licensee's corrective action program. This was accomplished by reviewing the description of each new corrective action document and periodically attending daily management meetings.

b. Findings

No findings of significance were identified.

.2 Annual Sample – AR/CR 180493; NRC Concern: Potential Trend Regarding Loose Fasteners

a. Inspection Scope

The inspectors reviewed corrective action documents that had been closed by Energy Northwest related to loose fasteners identified on safety-related equipment to assess the basis for closure to ensure that there were no latent operability issues for the associated

equipment. Additionally, the inspectors conducted walkdowns on safety-related equipment specifically looking for loose fasteners effecting operability. The inspectors completed one sample.

b. Findings

No significant findings were identified. However, the inspectors identified several loose fasteners on safety-related equipment. Energy Northwest evaluated the affected equipment for operability and determined that there were no operability concerns related to these loose fasteners. The inspectors did not have any information to the contrary, but did note that Energy Northwest is evaluating this concern as a potential trend regarding loose fasteners. This concern is documented in Energy Northwest's corrective action program documents as AR/CR 180493; NRC Concern: Potential Trend Regarding Fasteners.

.3 Annual Sample – Problem Evaluation Report (PER) 207-0459; Recent DG Failures Should be Reviewed to Determine if a Common Cause Exists

a. Inspection Scope

The inspectors evaluated PER 207-0459 that documented Energy Northwest's evaluation of common cause of DG issues. The DG issues centered around three separate events: (1) in September 2007, DG-1 failed to develop voltage during postmaintenance testing due to a failed auxiliary relay; (2) in October 2007, the DG-2 south engine turbocharger failed at the end of a 24 hour loaded surveillance test; and (3) in November 2007, DG-3 failed to indicate proper output voltage during a surveillance test due to a procedure deficiency which caused some fuses to clear during a shutdown of DG-3 during a previous test. In addition to these event, Energy Northwest also considered less significant DG related equipment issues during the common cause evaluation. The inspectors reviewed Energy Northwest's assessment to determine whether or not: (1) the evaluation accurately and completely documented the problem; (2) the evaluation appropriately considered operability; (3) the evaluation considered aspects of extent of condition and common cause; (4) the evaluation corrective actions are appropriately focused to correct the problem; and (5) completion of corrective actions occurred in a timely manner and/or appropriate corrective action closure occurred.

b. Findings and Observations

No findings of significance were identified. However, the inspectors identified corrective actions that were closed but were not adequately evaluated and/or documented to support closure. Examples included:

- AR/CR 179445 and AR/CR 179449 were written to address a recommendation to increase the priority of replacing the DG-3 governor due to parts obsolescence and to align DG-3 more closely in design and operation to DG-1 and DG-2. AR/CR 179445 directed reviewing a work schedule associated with replacement of the DG-3 governor and AR/CR 179449 directed locating spare parts for the DG-3 governor. However, both AR/CR evaluations only restated previously known facts regarding the current station priority of replacement of the DG-3 governor with respect to ranking of the issue with the plant health committee and

with respect to previously known deficiencies with spare parts availability. The inspectors concluded that the original recommendation to increase the priority of replacing the DG-3 governor was not addressed.

- AR/CR 179454 was written to address a recommendation to include precautions in DG-3 maintenance test procedures associated with not breaching the DG bearing insulation protection system and to consider specific training for mechanical maintenance and operations on the details of the insulation protection system. AR/CR 179454 was closed with an evaluation that stated that procedure precautions were already in place. However, the evaluation did not consider whether or not training, as recommended, should be developed and implemented.
- AR/CR 179451 was written to address a recommendation to add a synchronization check modification to DG-3 and to evaluate all operational and control differences between all the DGs and to make design changes if appropriate to eliminate any design and operational differences between the DGs. Although AR/CR 179451 addressed the addition of synchronization check circuitry to DG-3, it did not address additional evaluations to eliminate other potential design and operational differences between all of the DGs.

In each of these examples, Energy Northwest re-opened the applicable AR/CR to conduct additional analysis.

#### .4 Semi-annual Review to Identify Trends

##### a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment and corrective maintenance issues but also considered the results of daily inspectors corrective action program item screening discussed in Section 4OA2.1. The review also included issues documented outside the normal corrective action program in system health reports, corrective maintenance WOs, component status reports, and maintenance rule assessments. The inspectors' review normally considered the six-month period of January through June, 2008, although some examples extended beyond those dates when the scope of the trend warranted. Corrective actions associated with identified trends were reviewed for adequacy.

The inspectors completed one sample.

##### b. Findings

No findings or adverse trends were identified.

.5 Radiation Protection Review

a. Inspection Scope

The inspectors evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 2OS1)
- ALARA Planning and Controls (Section 2OS2)

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

(Closed) Licensee Event Report (LER) 05000397/2007-05: Inoperable Diesel Generator due to Inadequate Procedure that Caused Potential Transformer Fuses to Clear During Shutdown of the Diesel

This LER documented the inoperability of the DG-3 on two different occasions due to inadequate procedures that caused the clearing of primary fuses on the primary side of metering and relaying potential transformers in the DG control circuit. The potential transformers provided power to the electronic governor as well as the local and remote indications rendering the electronic governor inoperable while the fuses were cleared. As a result, DG-3 was inoperable from May 3 through June 7, 2005, and October 19 through November 10, 2007. See Inspection Report 05000397/2007005, Section 1R15, for more details regarding this event and NCV 05000397/2007005-03 associated with the inadequate procedures that caused the inoperability. The inspectors noted during a review of the LER that Energy Northwest determined that DG-3 failed to meet TS 3.8.1.B and TS 3.8.1.E. Specifically, TS 3.8.1.B provided, in part, that with one DG inoperable to restore the DG to an operable condition within 72 hours or within 14 days if appropriate risk management actions are implemented. Additionally, TS 3.8.1.E required that with two DGs inoperable concurrently to restore one required DG to an operable condition within 2 hours or within 24 hours if the DG-3 is inoperable. For a period of 7 days while DG-3 was inoperable, DG-2 was also inoperable for corrective maintenance. Failing to complete these actions within the prescribed time required the facility to be in Mode 3 within 12 hours and Mode 4 within 36 hours. The inspectors concluded that although the required actions of TS 3.8.1.B and TS 3.8.1.E were not met, that enforcement discretion was appropriate in that the inoperable DG-3 and associated violations of TS 3.8.1.B and TS 3.8.1.E were caused by inadequate procedures which was previously addressed in NCV 05000397/2007005-03. Energy Northwest documented the issue in the corrective action program as PER 207-0411. The inspectors did not identify any other findings associated with the inoperable DG-3.

#### 4OA5 Other Activities

##### Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period, the inspectors performed the following observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspector's normal plant status review and inspection activities.

###### b. Findings

No findings of significance were identified.

#### 4OA6 Meetings, Including Exit

##### Exit Meeting Summary

On April 10, 2008, the inspectors presented the occupational radiation safety inspection results to Mr. T. Lynch, Plant General Manager, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

On July 10, 2008, the resident inspectors presented the inspection results to Mr. T. Lynch, Plant General Manager, and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Energy Northwest Personnel

D. Atkinson, Vice President, Nuclear Generation  
D. Brown, Manager, Operations  
G. Cullen, Manager, Regulatory Programs  
M. Davis, Radiological Support Supervisor  
J. Frisco, General Manager, Engineering  
S. Gambhir, Vice President, Technical Services  
M. Huiatt, Licensing Engineer  
M. Humphries, Supervisor, Licensing  
W. LaFramboise, System Engineering Manager  
R. Lightfoot, Radiological Planning Supervisor  
T. Lynch, Plant General Manager  
J. Parrish, Chief Executive Officer  
F. Schill, Licensing  
M. Shymanski, Manager, Radiation Protection  
W. Smoot, Radiological Services Craft Supervisor  
C. Tiemens, Radiological Services Craft Supervisor

#### NRC Personnel

T. Pruett, Deputy Director, Division of Reactor Safety

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

#### Opened and Closed

05000397/2008003-01	NCV	Failure to Control Access to a High Radiation Area with Dose Rates in Excess of 1.0 Rem per Hour (Section 2OS1.b.1)
05000397/2008003-02	NCV	Failure to Barricade and Conspicuously Post a High Radiation Area (Section 2OS1.b.2)
05000397/2008003-03	NCV	Failure to Perform Radiological Survey (Section 2OS1.b.3)

#### Closed

05000397/2007-05	LER	Inoperable Diesel Generator due to Inadequate Procedure that Caused Potential Transformer Fuses to Clear During Shutdown of the Diesel (Section 4OA3.1)
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Discussed

05000397/2007005-03 NCV Failure to Provide Adequate Procedures for Shutdown of the HPCS Spray Diesel Generator (Section 4OA3)

**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

Procedures

ABN-ELEC-GRID; Degraded Off Site Power Grid; Revision 2  
ABN-ELEC-LOOP; Loss of Offsite Power; Revision 8

Corrective Action Documents

AR/CR 182502

Miscellaneous

Energy Northwest/BPA Agreement Number 04TX-11739, Agreement for Duties and Responsibilities for Integration of CGS Output, Dated August 1, 2004

**Section 1R04: Equipment Alignment**

Procedures

SOP-SW-STBY, Placing SW in Standby Status, Revision 1

SOP-DG2-STBY, Emergency Diesel Generator (DIV 2) Standby Lineup, Revision 9

ABN-SW, Service Water Trouble, Revision 10

SOP-CRD-HCU, Control Drive System, Revision 10

ABN-CR-EVAC, Control Room Evacuation and Remote Cooldown, Revision 11

Drawings and Diagrams

M512-1, Flow Diagram Diesel Oil and Misc. Systems Diesel Generator Building, Revision 41

M524-1, Flow Diagram Standby Service Water System Reactor, Radwaste, D.G. Bldg's and Yard; Revision 112

M524-2; Flow Diagram Standby Service Water System Reactor, Radwaste, D.G. Bldg's and Yard, Revision 101

M524-3, Flow Diagram Standby Service Water System Reactor, Radwaste, D.G. Bldg's and Yard, Revision 15

M528-1, Flow Diagram for CRD, Revision 74

M512-3, Flow Diagram - Diesel Oil & Miscellaneous Systems Diesel Generator Building, Revision 35

Work Order

WO 01146980

Corrective Action Document

CR/AR 181125

**Section 1R05: Fire Protection**

Procedure

PPM 1.3.10C, Control of Transient Combustibles, Revision 11

Miscellaneous

CGS Pre-Fire Plan, Revision 7  
USAR, Appendix F, Amendment 57  
National Fire Protection Association NFPA-10, 1984 Revision  
Training Crew Drill - 467 RW Battery Room

**Section 1R12: Maintenance Effectiveness**

Drawings and Diagrams

M505-1, Flow Diagram Heater Drain System Turbine Generator Building; Revision 15  
PPM 5.2.1, Primary Containment Control, Revision 16

Work Orders and Work Requests

WO 01153964      WR 29067896

Corrective Action Documents

AR/CR 181679	PER 205-0324	PER 205-0108	CR 2-06-00399	CR 2-07-04273
CR 2-07-04983	CR 2-07-08267	CR 2-04-06775	CR 2-06-04460	CR 2-06-03037
PER 205-0134	PER 205-0598	PER 204-0923	PER 201-0695	

Miscellaneous

Maintenance Rule Scoping Excel Spreadsheet, Revision 19

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

Procedures

PPM 1.5.14, Risk Assessment and Management for Maintenance/Surveillance Activities, Revision 17

PPM 1.3.68, Work Management Process, Revision 14

Work Orders

WO 011350700a    WO 0114396701    WO 01075448    WO 01148731    WO 01153267

Corrective Action Document

CR/AR 180283

Miscellaneous

RWP 30002106, 2008 Drywell Entries for RRC-M-P/1A Oil Addition

**Section 1R15: Operability Evaluations**

Drawings and Diagrams:

M513, Flow Diagram - Auxiliary & Process Steam Systems All Buildings, Revision 91

Corrective Action Documents

AR/CR 182502    AR/CR 181932    AR/CR 180283

Miscellaneous

CCER C92-00112

**Section 1R18: Plant Modifications**

Procedures

4.DG3, DG3 Annunciator Response Panel Alarms, Revision 10

Drawings and Diagrams

Sketch 1, Plan Manitowoc 999 Crane Safe Load Path and Emergency Laydown Areas Reactor Building Siding Work, Revision 0

Work Order

WO 01144662

Corrective Action Documents:

CR/AR 178245      CR/AR 177262

Miscellaneous

CE-02-88-08, Calculation to Qualify the Model 999 Manitowoc Crane Path, dated May 5, 2008

PO2852, Engineering Assessment On safe Use of Mobile Crane in Support of Reactor Building Siding Repair Columbia Generating Station, Revision 1

Engineering Change 6984, Crane Evaluation -Manitowoc 999 Series 3 for Reactor Building Exterior Siding Replacement Activities, dated April 3, 2008

TMR 08-005, DCW-TS-4 cannot be calibrated and is currently inoperable and there is no available switch for replacement

**Section 1R19: Post Maintenance Testing**

Procedures

PPM 10.20.19, Diesel Engine 2/4 Year Preventive Maintenance Division 1 and Division 2, Revision 0

TSP-DSA-B702, Air Start Motor Test, Revision 5

OSP-ELEC-S702, Diesel Generator 2 Semi-Annual Operability Test, Revision 33

OSP-SW-M102, Standby Service Water Loop Valve B Position Verification, Revision 17

PPM 10.20.19, Diesel Engine 2/4 Year Preventive Maintenance Division 1 and Division 2, Revision 0

TSP-CONT-C804, Personnel Airlock Door Seal Leak Test, Revision 1

MMP-RCIC/IST-F701, RCIC-RD-1 and RCIC-RD-2 Replacement, Revision 0

Drawings and Diagrams

M519, Flow Diagram - Reactor Core Isolation Cooling System, Revision 88

Work Orders

WO 01154905      WO 01153551      WO 01107071      WO 01135071      WO 01121538  
WO 01146860

Corrective Action Documents

AR/CR 182691      AR/CR 182507      AR/CR 1777799

Miscellaneous

CCER C91-0168, Revision 1

**Section 1R22: Surveillance Testing**

Procedures

OSP-RHR-A701, RHR Loop A Keep Fill Integrity Test, Revision 4  
TSP-CMS-B802, Containment Monitoring System Leakage - Div 2, Revision 3  
OSP-MT-W701, Quad Voter Solenoid Valve Test, Revision 2  
ABN-CR-EVAC, Control Room Evacuation and Remote Cooldown, Revision 11  
4.601.A4; 601.A4, Annunciator Panel Alarms, Revision 26  
OSP-RHR/IST-Q702, RHR Loop A Operability Test, Revision 27

Drawings and Diagrams

M543-2, Flow Diagram - Containment Monitoring System, Revision 8

Work Orders

WO 01146411      WO 01137031      WO 01145800      WO 01143143

Corrective Action Document

AR/CR 179090

Miscellaneous

FSAR, Appendix B, Section III.D.11, Amendment 56  
PPM 1.5.6 Leakage Surveillance and Prevention Program, Revision 18

**Section 20S1: Access Controls to Radiologically Significant Areas**

Corrective Action Documents

AR 56270	AR 56444	AR 56689	AR 56732	AR 57532
AR/CR 176887	AR/CR 176909	AR/CR 177186	AR/CR 177438	AR/CR 177641
AR/CR 178097	AR/CR 178189	AR/CR 178355		

Audits and Self-Assessments

AU-RP/RW-07 Radiation Protection/Process Control Program Audit

Procedures

SWP-RPP-01, Radiation Protection Program, Revision 7

PPM 11.2.7.1, Area Posting, Revision 25

PPM 11.2.7.3, High Radiation Area, Locked High Radiation Area, and Very High Radiation Area Controls, Revision 28

GEN-RPP-04, Entry Into, Conduct In, and Exit from Radiologically Controlled Areas, Revision 15

**Section 2OS2: ALARA Planning and Controls**

Corrective Action Documents

AR 56019	AR 56086	AR 56103	AR 56283	AR 56284
AR 56360	AR 56468	AR 56632	AR 56688	AR 56690
AR 56891	AR 57537	AR 57655	AR/CR 175207	AR/CR 175210
AR/CR 175824	AR/CR 176166	AR/CR 177610	AR/CR 178028	AR/CR 178261
CR-2-07-08951				

Audits and Self-Assessments

Quality Activity Report A-6150

Procedures

HPI-12.87, Use and Control of RWP/ALARA Task Quick Card Barcodes, Revision 0

PPM 11.2.13.1, Radiation and Contamination Surveys, Revision 20

PPM 11.2.13.8, Airborne Radioactivity Surveys, Revision 9

**Section 4OA1: Performance Indicator Verification**

Procedure

HPI-0.14, Accessing and Reporting NRC Occupational Exposure Control Effectiveness Performance Indicator Data, Revision 4

Corrective Action Document

AR 56732

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

Drawings and Diagrams

TI-2.2, System Walkdown, Revision 12

Work Orders and Work Requests

WR 29067402      WR 29067403      WR 29067404      WR 29067405      WR 29067406  
WR 29067407

Corrective Action Documents

AR/CR 180493	CR 2-07-06128	CR 2-07-5669	CR 2-07-03989	CR 2-07-01897
CR 2-07-01879	CR 2-06-07972	CR 2-06-07105	CR 2-06-05617	CR 2-06-04024
CR 2-06-03347	CR 2-06-03162	CR 2-06-02006	CR 2-06-02005	CR 2-06-01690
CR 2-06-01076	AR/CR 177632	AR/CR 1778367	AR/CR 177553	AR/CR 179438
AR/CR 180209	AR/CR 180891	AR/CR 180868	AR/CR180493	AR/CR 182930
AR/CR 182930	AR/CR 182957	AR/CR 182984	AR/CR 182991	AR/CR 182685
AR/CR 182968	AR/CR 182698	AR/CR 182699	AR/CR182550	AR/CR 182558
AR/CR 182567	AR/CR 182581	AR/CR 182586	AR/CR 182590	AR/CR182591
AR/CR 182490	AR/CR 182403	AR/CR 182436	AR/CR 182453	AR/CR 181576
AR/CR 182335	AR/CR 182336	AR/CR 182343	AR/CR 182379	AR/CR 182386
AR/CR 182392	AR/CR 182320	AR/CR 181820	AR/CR 1817886	AR/CR181236
AR/CR 181245	AR/CR 181373	AR/CR 181389	AR/CR 181398	AR/CR 181412
AR/CR 181417	AR/CR 180956	AR/CR 180961	AR/CR 181139	AR/CR 180963
AR/CR 180784	AR/CR 180845	AR/CR 180851	AR/CR 180855	AR/CR 180865
AR/CR 180870	AR/CR 180871	AR/CR 180824	AR/CR 180805	AR/CR 180808
AR/CR 180812	AR/CR 180822	AR/CR 180823	AR/CR 180614	AR/CR 180681
AR/CR 180689	AR/CR 180709	AR/CR 180710	AR/CR 180727	AR/CR 180547
AR/CR 180681	AR/CR 180613	AR/CR 180586	AR/CR 180604	AR/CR 180482
AR/CR 180486	AR/CR 180486	AR/CR 180501	AR/CR 180503	AR/CR 180447
AR/CR 180423	AR/CR 180460	AR/CR 180461	AR/CR 180463	AR/CR 180465
AR/CR 180466	AR/CR 180395	AR/CR 182187	AR/CR 179468	AR/CR 179445
AR/CR 179449	AR/CR 179470	AR/CR 179454	AR/CR 179451	AR/CR 179477

Miscellaneous

AS 57660-01, DG Common Cause Analysis

Calculation ME-02-02-02, Calculation for Reactor Building Flooding Analysis, Revision 3

Calculation ME-02-02-32, Calculation for PFSS (Post Safe Shutdown) Flooding Analysis, Revision 0

**LIST OF ACRONYMS**

ALARA	as low as is reasonably achievable
AR	Action Request
CFR	<i>Code of Federal Regulations</i>
CR	Condition Report
DG	diesel generator
LER	Licensee Event Report
NCV	noncited violation

NEI	Nuclear Energy Institute
PER	Problem Evaluation Report
SSCs	systems, structures, and components
TS	Technical Specification
WO	work order
USAR	Updated Safety Analysis Report