

Columbia Generating Station

1Q/2004 Plant Inspection Findings

Initiating Events



Significance: Jul 05, 2003

Identified By: NRC

Item Type: FIN Finding

Failure to take effective corrective actions resulted in main turbine trip.

The inspectors documented a self-disclosing finding for the failure to take appropriate corrective measures following a June 2000 plant trip. On June 30, 2003, the plant suffered another plant trip for the same reason - degraded main transformer differential current relay wiring. Failure to take effective corrective measures for the 2000 event directly resulted in the June 30 plant trip. The problem was not subject to NRC enforcement because the affected equipment was not safety-related.

The issue had more than minor safety significance because it impacted the initiating events cornerstone objective - to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The issue was of very low safety significance because: 1) it did not contribute to the likelihood of a loss of coolant accident initiator; 2) it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available; and 3) it did not increase the likelihood of a fire or flood

Inspection Report# : [2003005\(pdf\)](#)



Significance: Jul 05, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Procedures violation for two loss of shutdown cooling events

A self-disclosing noncited violation of Technical Specification 5.4.1.a (Procedures), with two examples, was identified concerning two loss of shutdown cooling events. First, on May 21, 2003, electricians failed to follow plant procedures and pulled the wrong electrical lead during maintenance. Consequently, the shutdown cooling system pump suction valve closed and the pump tripped. Second, operators were performing containment isolation logic functional system testing when shutdown cooling auto-isolated. The plant procedure erroneously stated that no additional isolations were expected. The inspectors identified that Energy Northwest had missed a prior opportunity to correct the procedure.

The issues had more than minor safety significance because they impacted the initiating events cornerstone objective, to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Inspection Manual Chapter 0609, Significance Determination Process, Appendix G, Shutdown Operations, was utilized to assess the safety-significance of the two events. Table 1, BWR Refueling Operations with time to boil greater than 2 hours and Reactor Coolant System Level less than 23 feet were used, respectively. The findings were of very low safety significance because decay heat removal was available for use quickly enough to meet its functional need and supporting systems were functional.

Inspection Report# : [2003005\(pdf\)](#)

Mitigating Systems



Significance: Mar 10, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate maintenance procedure renders safety-related 125 VDC battery inoperable

The inspectors identified a noncited violation of Technical Specification 5.4.1.a (inadequate procedure) for testing of the safety-related inverters. Specifically, Procedure 10.25.1, "Inspection and Cleaning Division 1, E-IN-3A and E-IN-3B, and Division 2, E-IN-2A and E-IN-2B, Inverters," prescribed placing a spare inverter in-service for load tested with a second inverter that was already in-service. This condition was not analyzed and was found to render the associated 125 VDC safety related battery inoperable. The inspectors also identified a problem identification issue related to this finding.

This issue affects the mitigating systems cornerstone objective to ensure the availability of onsite emergency DC power. This issue is more than minor because it could have an actual impact on the ability of one train of emergency batteries to mitigate a loss of AC power to the

safety-related inverters. Using the Phase 1 significance determination process the inspectors determined that the issue was of very low safety-significance because the issue: (1) was not a design or qualification deficiency; (2) did not result in the loss of a safety system; (3) did not represent an actual loss of a safety function of a single train for greater than its technical specification allowed outage time; (4) did not represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant per 10 CFR 50.65 for greater than 24 hours; and (5) was not potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event .

Inspection Report# : [2004002\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly correct a condition adverse to quality associated with the 4160 VAC breaker truck-operated cell position switches

The team identified a violation of 10 CFR Part 50 Appendix B, Criterion XVI, for the failure to promptly correct a condition adverse to quality associated with all safety-related 4160 VAC breakers. The team noted eight instances where truck-operated cell position switches had displayed indication problems, and the licensee had failed to promptly identify and correct a problem associated with seismic qualification. The associated 4160 VAC breakers were used in power circuits for emergency diesel generators, standby service water pumps, and all emergency core cooling system pumps.

Inspection Report# : [2003009\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to verify the adequacy of the safety/relief valve design

A noncited violation of Criterion III of Appendix B to 10 CFR Part 50 was identified for the failure to verify the adequacy of the design of the steam safety/relief lines by performing visual inspections to verify adequate clearances and documenting the results. Calculation ME-02-92-33 required these clearances for main steam safety/relief valve piping so it could sustain the additional loading caused by a main steam line flooding event.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Jul 08, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to follow procedure rendered RCIC inoperable

A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for the failure to properly follow a surveillance procedure, which rendered the reactor core isolation cooling system inoperable for approximately one hour. A technician pressurized an instrument out of procedural sequence, which caused the reactor core isolation cooling steam supply valve to auto-isolate.

The finding had more than minor significance because it affected the reactor safety mitigating systems objective to ensure the availability of systems that respond to initiating events. However, the finding was determined to be of very low risk significance because the issue: (1) was not a design or qualification deficiency; (2) did not result in the loss of a safety system; (3) did not represent an actual loss of a safety function of a single train for greater than its technical specification allowed outage time; (4) did not represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant per 10 CFR 50.65 for greater than 24 hours; and (5) was not potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event

Inspection Report# : [2003006\(pdf\)](#)



Significance: Apr 22, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Unapproved use of manual actions to protect safe shutdown equipment from the effects of a fire

The inspectors identified a noncited violation of License Condition 2.C(14) and 10 CFR Part 50, Appendix R, Section III.G.2 for utilizing unapproved manual actions in Procedure ABN-FIRE, "Fire," in lieu of physical protection to assure than one train of safe shutdown equipment is free of fire damage.

This finding is greater than minor because it impacts the mitigating systems cornerstone. Inspection Procedure 7111.05, "Fire protection," issued March 6, 2003, integrated inspector guidance for manual actions associated with licensee commitments to Section III.G.2 of Appendix R. This guidance is that if the manual actions are reasonable and are expected to meet the criteria outlined in Enclosure 2 to Inspection Procedure 7111.05, then the inspectors will identify this issue as a Green finding pending the Commission's acceptance of the staff initiative to incorporate the use of manual actions into Section III.G.2. The inspectors determined that the manual actions were reasonable and constituted appropriate compensatory measures. (Section 1R05.2)

Inspection Report# : [2003002\(pdf\)](#)



Significance: Apr 05, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Actions and Operability Evaluations for Emergency Diesel Generator 1

The inspectors identified that the licensee had failed to take prompt corrective measures to address a condition adverse to quality associated with the Division I emergency diesel generator and had failed to properly evaluate emergency diesel generator operability. Specifically, as early as 1998, plant vibration data indicated that one of the unit's generator bearings was significantly degraded and was continuing to degrade at an accelerated rate. The licensee's operability evaluation was inadequate because it relied on an inappropriate method to determine remaining bearing life. As a result of the NRC concerns, the licensee declared the emergency diesel generator inoperable and, ultimately, shut down the reactor to complete repairs.

A violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified that is being treated as a noncited violation in accordance with Section V1.A.1 of the NRC's Enforcement Policy. The inspectors determined that the issue was more than minor in significance because it impacted the mitigating systems cornerstone and affected the ability of the emergency diesel generator to perform its safety function for the required 30 day design requirement. The inspectors utilized the Significance Determination Process, Manual Chapter 0609, Appendix A, worksheet and determined that the issue was of very low safety significance (Green). The issue screened out as Green because the finding did not result in the loss of a safety function of the system or the loss of a single train of safety-related equipment for longer than its Technical Specification allowed outage time. The inspectors determined that the emergency diesel generator should have operated for at least 5 days, which would meet the licensee's probabilistic risk assessment mission time and would provide sufficient time to establish other compensatory measures in the event the emergency diesel generator bearing degraded further.

Inspection Report# : [2003004\(pdf\)](#)

Barrier Integrity



Significance: Dec 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate MSIV leak rate testing

The inspectors identified a violation of Technical Specifications Surveillance Requirement 3.6.1.3.11, in that the licensee had performed inadequate main steam isolation valve local leak rate testing since initial plant startup. The testing was inadequate because the licensee utilized non-safety related instrument air to help close and seat the valves during testing. The instrument air system provided substantially more seating pressure than the safety-related air accumulators. While the licensee had originally questioned the practice, they had inappropriately concluded that it was acceptable. Failure to properly evaluate a condition adverse to quality is a performance deficiency.

The issue had more than minor safety significance because it impacted the barriers cornerstone and the inadequate testing potentially masked problems that affected the ability of the main steam isolation valves to perform their accident mitigating function. The issue was of very low safety significance because the finding did not represent an actual open pathway in the physical integrity of the reactor containment

Inspection Report# : [2003007\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement adequate corrective actions to address increased Control Room In-Leakage

The team identified a violation for an inadequate corrective action in accordance 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" for the licensee's failure to adequately implement a procedure revision intended to ensure that control room dose limitation requirements in accordance with 10 CFR Part 50, Appendix A, General Design Criterion 19, "Control Room," were met.

Inspection Report# : [2003009\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to use appropriate stroke times into the inservice testing program

A noncited violation of Criterion III of Appendix B to 10 CFR Part 50 was identified for failure to establish correct acceptance limits for the inservice testing of standby gas treatment isolation valves. Specifically, the limits established would allow the valves to operate outside of the

design requirements for stroke time.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate procedure

A noncited violation of Technical Specification 5.4.1a. and Criterion V of Appendix B to 10 CFR Part 50 was identified for failure to translate design basis into a procedure. Specifically, there was no procedural direction to place a second train of standby gas treatment into service if the charcoal filters of the first train were to become depleted.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate emergency operating procedures

A noncited violation of Technical Specification 5.4.1b., and Criterion III of Appendix B to 10 CFR Part 50 was identified for failure to develop emergency operating procedures that would accomplish their intended functions. Specifically, the procedures for venting the drywell and wetwell to atmosphere would not vent the gasses through a de-energized standby gas treatment train as required.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to establish acceptance criteria for surveillance test

A noncited violation of Technical Specification 5.4.1a., and Criterion XI of Appendix B to 10 CFR Part 50, was identified for failure to establish acceptance criteria for satisfying Surveillance Requirement 3.6.3.1.1. Specifically, Procedure OSP-CAC-B701, "CAC-HR-1A Preheater Operability Test," Revision 6, did not identify an acceptance criterion for the minimum air flow through the hydrogen recombiner, as required.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate calculation

A noncited violation of Criterion III of Appendix B to 10 CFR Part 50 was identified for failure to prevent Calculation NE-02-85-12, "Secondary Containment Bypass Leakage Limit," Revision 1, from becoming effective prior to receiving license amendment approval. This could have permitted the operation of the plant outside of its license basis.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Oct 10, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to correctly translate design requirements into calculations

A noncited violation of Criterion III of Appendix B to 10 CFR Part 50 was identified for failure to accurately translate design requirements, along with supported assumptions into the determination of the minimum flow for the hydrogen recombiners under all accident conditions.

Inspection Report# : [2003010\(pdf\)](#)



Significance: Jul 05, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to perform fail-safe testing of main steam isolation valves

The inspectors identified a noncited violation of Technical Specification 5.5.6 for the failure to perform ASME Code required fail-safe tests on main steam isolation valves. Energy Northwest had stopped performing the tests in approximately 1989.

The issue had more than minor safety significance because it impacted the barriers cornerstone and the inadequate testing methods placed into question the ability of the main steam isolation valves to perform their accident mitigating function. The finding was of very low safety significance because the finding did not represent an actual open pathway in the physical integrity of the reactor containment.

Inspection Report# : [2003005\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety



Significance: Dec 19, 2003

Identified By: NRC

Item Type: FIN Finding

Failure to maintain collective doses associated with RWP 3001080 ALARA

The inspectors identified an as-low-as-reasonably-achievable finding because a performance deficiency resulted in the collective dose of a work activity that exceeded 5 person-rem and also exceeded the original dose estimation by more than 50 percent. Specifically, the licensee had to re-work the original repairs on reactor water cleanup (RWCU) Valve RWCU-MO-4. This resulted in Radiation Work Permit 30001080, "R16 RX 522' RWCU Pump Room and Mezzanine Work, High-High Rad," accruing 5.2 rem and exceeding the original dose estimate by 52 percent.

The failure to repair the reactor water cleanup Valve RWCU-MO-4 so it would pass testing requirements the first time is a performance deficiency. This finding was more than minor because it is associated with the Occupational Radiation Safety Cornerstone attribute (as-low-as-reasonably-achievable planning/projected dose) and affected the associated cornerstone objective (to ensure adequate protection of worker health and safety from exposure to radiation). This finding involved performance deficiencies which caused the re-work of the original repair on Valve RWCU-MO-4 and resulted in unnecessary occupational collective dose for the work activity. When processed through the Occupational Radiation Safety Significance Determination Process, this finding was found to have no more than very low safety significance because the finding was an as-low-as-reasonably-achievable planning issue, but the licensee's three-year rolling average collective dose was less than 240 person-rem.

Inspection Report# : [2003006\(pdf\)](#)



Significance: Oct 04, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to use proper radiation work permit

The inspectors identified additional issues associated with a licensee identified violation of Technical Specification 5.4.1.a for workers failing to read, understand, and follow special instructions on the appropriate radiation work permit when installing insulation on the reactor core isolation cooling system. The workers received additional dose as a result of temporary shielding being prematurely removed in the work area prior to performing the work activity. Problem Evaluation Request 203-2346 documented these issues and was closed prior to the inspection. Although the violation was identified by the licensee, the inspectors identified that the licensee had not developed a corrective action plan to address recurrence of two issues: (1) use of the wrong radiation work permit to perform work on the reactor core isolation cooling system and (2) performance of a work task in an area where radiological conditions resulted in additional dose due to removal of installed temporary shielding prior to work completion on the reactor core isolation cooling system.

Energy Northwest performed work without using the appropriate radiation work permit, which would have required shielding in the work area. The workers receipt of additional dose is a performance deficiency. This finding was greater than minor because it is associated with one of the Occupational Radiation Safety Cornerstone attributes (exposure control and monitoring) and affected the associated radiation safety cornerstone objective (to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material). The finding involved workers failure to adhere to appropriate radiation work permit requirements resulting in additional dose that was contrary to Technical Specification 5.4.1.a. When processed through the Occupational Radiation Safety Significance Determination Process, this finding was found to have no more than very low safety significance because it was not an as-low-as-reasonably-achievable finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised.

Inspection Report# : [2003006\(pdf\)](#)

G**Significance:** Jul 05, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to properly post and barricade a high-high radiation area

An NRC-identified noncited violation of Technical Specification 5.7.2 was identified because Energy Northwest failed to conspicuously post and barricade a high-high radiation area. Specifically, on May 14, 2003, the inspector identified that the entrance to the under vessel area of the drywell, a high radiation area greater than 1.0 Rem per hour was not conspicuously posted and barricaded.

The failure to conspicuously post and barricade a Technical Specification required high-high radiation area is a performance deficiency. The issue was more than minor because it was associated with a cornerstone attribute (program and process) and affected the occupational radiation safety cornerstone objective (to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material). The finding involved the failure to properly control radiological work in accordance with Technical Specification requirements. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was found to have very low safety significance because it was not an ALARA issue, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised.

Inspection Report# : [2003005\(pdf\)](#)

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Oct 10, 2003

Identified By: NRC

Item Type: FIN Finding

Crosscutting Issues

The team found that the licensee, in general, identified problems, entered and prioritized problems into their corrective action program. Nevertheless, weaknesses were identified in extent of condition reviews and in the development of corrective actions. The team found the corrective actions to address the substantive finding in the crosscutting area of human performance had resulted in overall improved performance during the 2003 refueling outage.

Inspection Report# : [2003009\(pdf\)](#)

Last modified : May 05, 2004