

## Columbia Generating Station 4Q/2004 Plant Inspection Findings

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### Initiating Events

**G****Significance:** Sep 27, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Ash Fall Procedure**

The NRC identified a noncited violation of Technical Specification 5.4.1.a associated with an inadequate procedure. Procedure ABN-ASH, Ash Fall, which identified Energy Northwest actions in the event of a volcanic eruption in the Pacific Northwest, was inadequate in that it defined design basis ash fall conditions at the site which could not be readily measured. In the event design basis ash fall conditions were to occur, Procedure ABN-ASH directed reducing power, scrambling the reactor, and cooling down to cold shutdown. Without readily measurable criteria, the operators may not recognize design basis ash fall conditions and therefore may not initiate a reactor shutdown and cooldown in accordance with Procedure ABN-ASH prior to the degradation of balance of plant equipment. A human performance crosscutting aspect was identified for the inadequate procedure which could not be readily implemented as written. A problem identification and resolution crosscutting aspect was identified for the issue not being documented in the corrective action program until prompted by the inspectors. The immediate corrective actions that were taken included revising Procedure ABN-ASH to establish readily measurable criteria indicative of the site reaching design ash fall conditions.

This finding was greater than minor because it involved a procedure quality issue which affected the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The finding was evaluated using Manual Chapter 0609, Significance Determination Process, Phase 1 worksheet. The finding was determined to be of very low safety significance (Green) because it was not associated with a loss of coolant accident initiator, it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions were not available, and it did not increase the likelihood of a fire or internal/external flood.

Inspection Report# : [2004005\(pdf\)](#)**G****Significance:** Aug 17, 2004

Identified By: Self Disclosing

Item Type: FIN Finding

**Inadequate Monitoring of Hotwell Level Contributes to Loss of Reactor Feedwater**

A self-revealing finding associated with control room operators failure to adequately monitor condenser hotwell level occurred when hotwell level was established high in the indicating range and above the hotwell level high level alarm. This condition resulted in the associated hotwell level high level annunciator being locked in and was effectively out of service. A manual reactor trip was initiated when the hotwell level excursion resulted in the loss of the only operating reactor feedwater pump.

This finding is greater than minor because it was a human performance issue which impacted the initiating events cornerstone objective. Specifically, adequate compensatory actions were not put in place to address the hotwell level high level annunciator. This finding had crosscutting aspects in the area of human performance in that adequate monitoring of hotwell level was not implemented which contributed to the reactor scram.

Inspection Report# : [2004004\(pdf\)](#)**G****Significance:** Jul 30, 2004

Identified By: Self Disclosing

Item Type: FIN Finding

**Failure to Follow Clearance Order Instruction Results in Loss of Reactor Feedwater**

A self-revealing finding occurred when an equipment operator failed to follow a clearance order instruction when filling and venting a condensate heat exchanger. This action resulted in a low suction trip of a reactor feedwater pump, the loss of reactor feedwater and a subsequent manual reactor scram.

This finding is greater than minor because it was a human performance issue which impacted the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. This finding had crosscutting aspects in the area of human performance in that adequate pretask briefings were not performed for the operator placing the feedwater heater back into service and that the operator failed to follow a clearance order which resulted in the loss of reactor feedwater. A Phase 2 evaluation was performed in briefings were not performed for the operator placing the feedwater heater back into service. A Phase 2 evaluation was performed in accordance with Manual Chapter 0609, "Significance Determination Process," based on the finding contributing to both the likelihood of a

reactor trip and that mitigation functions would not be available. The Phase 2 review was performed using the Columbia Generating Station site specific worksheets. A senior reactor analyst reviewed the Phase 2 results and performed a limited Phase 3 review. The senior reactor analyst considered the limited time the plant was at a low power level and adjusted the time in power operations to 3 hours. The finding was determined to be of low safety significance. Corrective actions included temporary senior reactor operator oversight of all pretask briefings and remedial training for the individuals involved.

Inspection Report# : [2004004\(pdf\)](#)

**G**

**Significance:** Jun 10, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Follow Clearance Order Results in Mispositioned Control Rod**

A self revealing noncited violation of Technical Specification 5.4.1.a (failure to follow procedure) was identified when the licensee failed to hang a clearance tag in accordance with the prescribed clearance order. This resulted in an inadvertent rod misposition event and subsequent action by control room operators to lower reactor core flow and power. Energy Northwest appropriately recovered the mispositioned control rod and hung the clearance tag in accordance with the prescribed clearance order. The failure to follow the clearance order instruction was also considered to have a cross-cutting element of human performance.

This finding was greater than minor because the failure to hang clearance tags in accordance with the Plant Clearance Order procedure was determined to be a performance deficiency which could be reasonable viewed as a precursor to a significant event. The issue was of very low risk significance because although the finding was associated with an increase in the likelihood of an initiating event (i.e. the inadvertent rod insertion resulted in the licensee reducing core flow and reactor power) the finding; 1) did not contribute to the likelihood of primary loss of coolant accident initiator; 2) did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available; and 3) did not increase the likelihood of a fire or internal/external flood.

Inspection Report# : [2004003\(pdf\)](#)

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## Mitigating Systems

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**Significance:** Nov 23, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Verify Test Equipment Configuration**

A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for a technician's failure to follow a surveillance procedure. During the conduct of a surveillance test for the reactor core isolation cooling system the technician was directed by procedure to monitor voltage across two terminals, however, the technician inadvertently jumpered across the two terminals. This resulted in an unexpected isolation of the reactor core isolation cooling system for approximately two hours when an isolation signal was generated. This finding had human performance crosscutting aspects in that the technician failed to self-check and verify the configuration of the test equipment prior to use.

This finding was greater than minor because it was a human performance issue which affected the mitigating systems cornerstone objective to ensure the reliability and availability of systems that respond to initiating events to prevent undesirable consequences. The safety significance associated with this performance deficiency was evaluated using the NRC Manual Chapter 0609, Significance Determination Process, Phase 1 Worksheet, under the mitigating system cornerstone. The finding was determined to be of very low safety significance because the finding did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Aug 24, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Identify and Return to Service APRM B in a Timely Manner**

A self-revealing noncited violation of Technical Specification 5.4.1.a occurred when operators failed to return a nuclear power range instrument to service after bypassing the instrument for a gain adjustment in accordance with a surveillance procedure. This resulted in the instrument being left out of service for an additional seven hours after it was available for use. There were indications readily available to the control room staff to identify the out of service component earlier than when it was finally identified. This finding had cross cutting aspects in the area of human performance in that the nuclear power range instrument was not appropriately returned to service and several opportunities were available, including a shift turnover to identify the condition. Corrective actions included returning the instrument to service and revising the frequency of panel walkdowns in the control room to ensure a more thorough examination of plant indications.

This finding is greater than minor because it involved a configuration control issue which impacted the mitigating systems cornerstone objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. The issue was of very low safety significance (Green) because the finding did not result in the loss of function of a safety system or represent an actual loss of a safety

function of a single train for greater than its Technical Specification allowed outage time.

Inspection Report# : [2004004\(pdf\)](#)

**G**

**Significance:** Jul 30, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to Communicate Key Annunciators Associated with EOP Entries**

A self-revealing noncited violation of Technical Specification 5.4.1.a and Procedure PPM 1.3.1, Conduct of Operations, was identified when a reactor operator failed to identify and communicate to the control room supervisor the reactor pressure vessel high trip annunciator following a reactor scram which occurred on July 30, 2004. An associated operating instruction also provides that during transient/emergency operating procedure implementation that alarms are promptly evaluated and operationally significant alarms are communicated by the operator to the control room supervisor. In addition, the annunciators flagged as potential emergency operating procedure entries are assessed by the operator and communicated to the control room supervisor as emergency operating procedure entry conditions including parameter, value, units, and trend. Human performance crosscutting aspects were identified for this finding involving the operator response to the annunciators and the lack of command and control within the control room that failed to promptly determine the cause for the reactor trip that was later considered in the emergency response managers decision to declare an Alert.

This finding was greater than minor because the failure to properly acknowledge and address annunciators was a human performance error (postevent) which affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. By acknowledging and resetting key annunciators prior to communicating key parameters, values and trends may not be appropriately considered for significance of mitigating system response, emergency operating procedure entry conditions as well as emergency plan implementation. The finding was determined to be of very low risk significance because the finding did not involve a design or qualification deficiency, it did not represent a loss of safety function of a system or train, and was not risk significant because of seismic, fire, or flooding event.

Inspection Report# : [2004005\(pdf\)](#)

**G**

**Significance:** Jun 18, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Promptly Address Extent of Condition and Seismic Qualification of Safety Related Disconnects**

An NRC identified noncited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the licensee's failure to promptly address the extent of condition of numerous electrical disconnects which the licensee had noted to not fully latch closed due to overdue preventative maintenance. The licensee also failed to address the impact of overdue preventative maintenance on seismic qualification of safety related electrical disconnects. Immediate corrective actions included reviewing the maintenance history of all safety-related electrical disconnects to determine if any disconnects had not received the required preventive maintenance within the specified periodicity. Energy Northwest conducted inspections and utilized engineering judgement to verify that the affected disconnects were fully latched closed.

The failures to address extent of condition in a prompt manner and to address seismic qualification was considered a performance deficiency. This finding was determined to affect the reliability and capability of mitigating systems that respond to initiating events and therefore was of greater than minor risk significance. However, the finding was of very low safety significance because the issue was determined to be a qualification deficiency confirmed not to result in a loss of function per GL 91-18.

Inspection Report# : [2004003\(pdf\)](#)

**G**

**Significance:** Apr 28, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Inadequate Work Order Results in Premature Overcurrent Trip of Breaker**

A self revealing noncited violation of TS 5.4.1.a was identified for an inadequate work order which resulted in a safety related breaker prematurely tripping on overcurrent. Energy Northwest appropriately adjusted the overcurrent relay and verified that the similar safety-related breaker overcurrent setpoints were appropriately set.

The licensee's failure to correctly translate design information into a work order to correctly adjust and test the overcurrent trip setpoint for a safety related breaker was determined to be a performance deficiency. This finding was determined to affect the mitigating systems cornerstone objective to ensure the reliability and capability of systems that respond to an initiating event and therefore was of greater than minor risk significance. The finding was of very low safety significance because the finding: (1) was not a design or qualification deficiency; (2) did not result in the loss of function 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. The finding also had cross-cutting elements in problem identification and resolution in that the licensee's extent of condition review was narrowly focused and did not initially consider the adequacy of the post maintenance test on all of the affected breakers.

Inspection Report# : [2004003\(pdf\)](#)

**G**

**Significance:** Apr 06, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Preconditioning of Standby Liquid Control Valve SLC-V-1B Prior to Inservice Testing**

The inspectors identified a noncited violation of Technical Specification 5.4.1.a (inadequate procedure) for inappropriate preconditioning of a standby liquid control system valve. Procedure OSP-SLC/IST-Q701, "Standby Liquid Control Pumps Operability Test," failed to prescribe testing Valve SLC-V-1B in the as-found condition.

This issue affects the mitigating systems cornerstone objective to ensure the reliability of the standby liquid control system to mitigate an initiating event to prevent undesirable consequences. This issue is more than minor because it could have an actual impact on identifying degraded valve performance and therefore impact the ability of the standby liquid control system to mitigate an anticipated transient without scram. 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. The finding also had crosscutting elements of problem identification and resolution in that the Energy Northwest failed to identify the procedure inadequacy even though industry guidance and operating experience regarding acceptable preconditioning was contrary to the licensee's interpretation.

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

**G**

**Significance:** Apr 06, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate corrective action for a condition affecting safe shutdown**

The inspectors identified a violation of License Condition 2.C(14) for the failure to take appropriate corrective measures to address a condition adverse to quality affecting the low pressure coolant injection system. During a control room fire, the system has been vulnerable to a water hammer since at least 1997 due to a leaking check valve in Train B of the residual heat removal system. The licensee took more than five years to identify the condition and failed to specify appropriate corrective measures to promptly fix the condition.

This finding is greater than minor because it impacted the mitigating systems and barrier integrity cornerstones, and affected the ability of the low pressure coolant injection system to provide adequate core cooling to prevent core damage. This finding is of very low safety significance due to the low probability that a water hammer event results in a pipe failure or loss of system function. This finding was documented in the licensee's corrective action program as Problem Evaluation Request 203-0997.

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

**G**

**Significance:** Apr 06, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to have adequate procedures in effect for alternative shutdown**

The inspectors identified a noncited violation of Technical Specification 5.4.1.d (inadequate procedure) because Procedure ABN-CR-EVAC, "Control Room Evacuation and Remote Cooldown," failed to provide adequate post-fire direction to: (1) assure suppression pool temperatures did not increase above residual heat removal pump temperature limits following depressurization; and (2) assure adequate core cooling with one safety relief valve stuck open.

This finding is greater than minor because it impacted the mitigating systems cornerstone and affected the ability of the low pressure coolant injection system to provide adequate core cooling to prevent core damage. This finding is of very low safety significance due to: (1) general operator knowledge that suppression pool temperatures must be monitored and shutdown cooling must be used as a means to ensure the pool retains the ability to feed the low pressure injection system; and (2) the need to initiate shutdown cooling after depressurization is probably not an immediate pressing issue. This finding was documented in the licensee's corrective action program as Problem Evaluation Request 203-0956.

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

**G**

**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 identified two examples of crosscutting aspects of problem identification related to this finding. First, Energy Northwest operators failed to identify that the battery trouble alarms which were received during the inverter testing were indicative of a challenge to battery operability. Second, although Energy Northwest had incorporated steps to test the inverter in parallel with the station batteries, Energy Northwest did not identify that a safety evaluation had not been performed to support such a change.

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\(pdf\)](#)

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## Barrier Integrity

**Significance:**  Oct 27, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### Failure to Manually Scram the Reactor

A self-revealing noncited violation of Technical Specification 5.4.1.a was identified for the failure to initiate a manual reactor scram when an equipment operator inadvertently scrambled an individual control rod from position 48 to 14. Abnormal Condition Procedure ABN-ROD, Control Rod Faults, Revision 6, required a manual scram for one or more control rods scrambled but do not indicate full-in. This finding had human performance crosscutting aspects related to the communications between the control room and the operator at the respective hydraulic control unit and for the failure to follow Procedure ABN-ROD and manually scram the reactor. Corrective actions included plant management reinforcing the requirement to immediately scram the reactor in the event of an inadvertently scrambled control rod which does not fully insert. The procedure was subsequently revised to rapidly reduce core flow as was done by the operations in response to this event.

This issue affected the barrier integrity cornerstone and is greater than minor because it affects the fuel cladding barrier since failing to scram with a control rod not fully inserted increased the potential for fuel cladding damage. This issue was evaluated using NRC Manual Chapter 0609, Significance Determination Process, Phase 1 Worksheet, under the barrier integrity cornerstone Item 2, Fuel Barrier, and was determined to be of very low safety significance. A review of the thermal limits (nodes) for the adjacent fuel assemblies verified that no limits were exceeded.

Inspection Report# : [2004005\(pdf\)](#)

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## Emergency Preparedness

**Significance:**  Jul 30, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

### Failure to Activate the Emergency Response Data System Within One Hour

The inspectors identified a noncited violation for Energy Northwest's failure to activate the Emergency Response Data System within 60 minutes in accordance with 10 CFR 50.72(a)(4) after declaring an Alert on July 30, 2004. This finding had cross cutting aspects in the area of human performance in that Emergency Response Data System was not initiated as required within 1 hour.

The finding is greater than minor because it was associated with an actual event response performance deficiency that affected the emergency preparedness cornerstone objective to ensure that Energy Northwest is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. By not activating Emergency Response Data System within the required time, Energy Northwest hindered the NRC's ability to verify plant conditions to ensure the appropriateness of any licensee recommended emergency response actions. The finding was of very low safety significance because although the finding was associated with an implementation problem during an actual Alert declaration, the failure to comply with the requirements of 10 CFR 50.72(a)(4) did not constitute a failure to implement a risk significant planning standard. Corrective actions included assigning additional on-shift personnel the responsibility of activating Emergency Response Data System to ensure that time requirements are met.

Inspection Report# : [2004004\(pdf\)](#)

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## Occupational Radiation Safety

**Significance:**  Oct 07, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

### Two Examples of Failure to Survey Radiological Conditions

The inspectors reviewed two examples of a noncited violation of 10 CFR 20.1501(a) because Energy Northwest failed to evaluate radiological conditions. One example was self-revealing; one was NRC-identified. In the first example, Energy Northwest failed to evaluate the changing radiological conditions during gasket replacement on Reactor Water Clean Up Pump 1B. As a result, four workers were internally and externally contaminated. In the second example, also involving the reactor water clean up system, Energy Northwest failed to survey airborne radioactivity before or during work activities on a system pump despite the potential for steam leaks. The findings were entered into Energy Northwest's corrective action program as Condition Reports 2-04-01975 (PER 20400759) and 2-04-04966. The two failures to survey when required was considered to also have cross-cutting elements of human performance.

The finding was more than minor because it was associated with one of the cornerstone attributes (exposure control) and affected the associated cornerstone objective because it resulted in decreased licensee awareness of possible radiological hazards. The occurrence involved individual workers unplanned, unintended doses or potential of such a dose resulting from actions contrary to NRC regulations that could have been significantly greater as a result of a single minor, reasonable alteration of the circumstances.

Inspection Report# : [2004004\(pdf\)](#)

**Significance:**  Apr 26, 2004

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### Failure to control a high radiation area with dose rates greater than 1.0 rem per hour

A self-revealing noncited violation of Technical Specification 5.7.2 was reviewed because the licensee failed to control a high radiation area with dose rates greater than 1.0 rem per hour. Specifically, the radiation work permit associated with waste resin processing did not specify that the dose rates in the immediate work area were as high as 8.0 rem per hour, which resulted in the loss of radiological control over work activities within the area.

The failure to control activities in a high radiation area with dose rates greater than 1.0 rem per hour is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process and affected the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radiation. The finding involved the potential for a worker's unplanned or unintended dose resulting from actions contrary to Technical Specifications. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because the finding did not involve as low as is reasonably achievable issues, no individual received an overexposure or a substantial potential for overexposure, and the ability to assess dose was not compromised. The finding was entered into the licensee's corrective action program as Problem Evaluation Request 203-2767.

Inspection Report# : [2004003\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

[Physical Protection](#) information not publicly available.

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## Miscellaneous

Last modified : March 09, 2005