Columbia Generating Station
3Q/2005 Plant Inspection Findings

Initiating Events

Significance: G Jun 23, 2005
Identified By: Self-Revealing
Item Type: FIN Finding
Loss of RFW-P-1B Due to Lack of Configuration Control and Subsequent Failure to Follow Procedure
A self-revealing finding associated with maintenance technicians' failure to follow a system operating procedure occurred when the reactor feedwater pump 1B low suction pressure switch contact was inadvertently jumpered during a maintenance activity. This resulted in the loss of reactor feedwater pump 1B and an automatic reactor scram on low reactor vessel water level when feedwater flow was lost. The main steam isolation valves subsequently closed on low-low reactor water level which resulted in the additional loss of reactor feedwater pump 1A. This finding had crosscutting aspects in the area of human performance in that the technicians failed to ensure the configuration of the circuit and subsequently failed to meet the requirement of a procedure step during the maintenance activity.

The finding was of more than minor risk significance 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. 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 adjusted the results to account for the ability of the operators to bypass and open the main steam isolation valves and recover the reactor feedwater pumps following the scram and the low power at which the event occurred. The finding was determined to be of very low safety significance. Immediate corrective actions included senior management review and approval of all maintenance related activities for the remainder of the forced outage and following restart of the plant up to 90 percent power.
Inspection Report# : 2005003*(pdf)*

Mitigating Systems

Significance: G Sep 23, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Identify and Correct 480 V Breaker Seismic Restraint Issues / Failure to Identify and Correct a Seismically Nonconforming Configuration Related to Safety Related 4160 V Breakers
The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion XVI (Corrective Actions), with two examples, because the licensee failed to promptly identify and correct conditions adverse to quality associated with seismically nonconforming 480 VAC and 4160 VAC breakers. For the first example, the licensee failed to identify dis-engaged restraint latches on 9 breakers in Motor Control Center(MCC) E-MC-4A, despite earlier, but narrowly focused, inspections for seismic issues. In the second example, the licensee missed several opportunities to identify that the front wheels of several safety-related 4160 VAC breakers did not touch the floor due to breaker-cubicle fit-up problems. The failure to promptly identify and correct seismically nonconforming breakers, following a reasonable opportunity to do so, had cross-cutting aspects in the areas of problem identification.

The findings were more than minor because they impacted the Mitigating Systems Cornerstone objective of availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Phase 1 Significance Determination Process Screening Worksheet in Inspection Manual Chapter 0609, Appendix A, the findings were of very low risk significance because they constituted design/qualification deficiencies that did not result in a loss of function per Generic Letter 91-18, “Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions,” Revision 1. The failure to promptly identify and correct seismically nonconforming breakers, following a reasonable opportunity to do so, had cross-cutting aspects in the areas of problem identification.
Inspection Report# : 2005004*(pdf)*

Significance: G Jun 22, 2005
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Correctly Terminate Current Transformer Lead Results in Oil Leak

A self-revealing finding associated with electricians' failure to follow a maintenance procedure was identified following the discovery of an oil leak on the startup transformer. The oil leak occurred due to a damaged lead which had been incorrectly terminated during the maintenance activity. The finding had crosscutting aspects in the area of human performance because the electricians' failed to follow a maintenance procedure.

This finding was greater than minor because it was a human error which affected the mitigating system cornerstone objective to ensure the availability of systems that respond to initiating events. The finding was determined to be of very low safety significance because there was no actual loss of safety function, the finding was not a design qualification issue, and the finding was not potentially risk significant due to external events. No violation of NRC requirements was identified.
Inspection Report# : 2005004*(pdf)*

Significance: G Apr 15, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to evaluate the extent of condition for 480 V breaker overcurrent knob settings
Green. The team identified a noncited violation of 10 CFR 50, Appendix B, Criterion XVI (Corrective Actions) for the failure to identify nonconforming breaker settings (conditions adverse to quality). The licensee had identified that overcurrent settings were incorrect for General Electric Type TEC molded-case circuit breakers but did not evaluate the potential for the same problem to occur with other molded case circuit breakers. In response to NRC questions, additional problems were identified. Two safety-related breakers and one non-safety related breaker required recalibration to correctly establish the breaker trip points. The finding had crosscutting aspects associated with problem evaluation.

The failure to perform an adequate engineering evaluation of a condition adverse to quality was a performance deficiency. The finding was more than minor because it affected the mitigating system cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding had very low safety significance because it did not result in a loss of safety function, a loss of a safety-related train for greater than its Technical Specification allowed outage time, the loss of risk-significant non-Technical Specification trains for greater than 24 hours, or screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event.
Inspection Report# : 2005008*(pdf)*

Significance: G Mar 24, 2005
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Promptly Identify the Cause of ECCS Pump Motor Oil Leaks
A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for a failure of Energy Northwest to promptly identify that the Emergency Core Cooling System pump motor oil reservoir drain plug o-rings had become hardened. Hardened o-rings were considered to be an equipment deficiency that had led to several pump motor drain plug leaks and had been discussed in General Electric Safety Information Letter 484. The finding was identified to have problem identification and resolution crosscutting aspects for the failure to identify the cause of the historical emergency core cooling system pump motor oil leaks prevented appropriate corrective actions from being implemented to ensure the reliability and capability of the affected pumps.

The finding was more than minor because it was an equipment performance issue 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. The finding was considered to be of very low safety significance because the finding was a qualification deficiency which was confirmed to not result in a loss of function per Generic Letter 91-18. Energy Northwest took immediate corrective actions to replace all of the affected drain plugs o-rings.

Inspection Report# : 2005002*(pdf)*

Significance: G Feb 08, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Promptly Document, Report, and Correct a Significant Condition Adverse to Quality
A Green NRC identified noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for Energy Northwest's failure to promptly identify cracked emergency core cooling system pump motor oil reservoir drain plugs. The initial condition was identified by Energy Northwest and entered into the corrective action program, however, the subsequent findings were not documented and evaluated through the corrective action program and the extent of the condition determined to assess the impact on other safety-related equipment. This finding has problem identification and resolution crosscutting aspects for the failure of Energy Northwest's engineering staff to appropriately implement the corrective action process to identify and correct the same condition on other emergency core cooling systems pumps.

The finding was more than minor because it was an equipment performance issue 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. The finding was considered to be of very low safety significance because the cracked pump motor oil reservoir drain plug did not result in the loss of a

safety function of a single train for greater than its Technical Specification allowed outage time. Energy Northwest took immediate corrective actions to replace all of the affected drain plugs.

Inspection Report# : 2005002*(pdf)*

Significance: G Nov 23, 2004
Identified By: Self-Revealing
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)*

Barrier Integrity

Significance: G Apr 29, 2005
Identified By: NRC
Item Type: FIN Finding
Compensatory Action Prevented Implementation of Drywell Emergency Ventilation Procedure
On April 29, 2005, an NRC identified finding was identified associated with an inadequate compensatory measure. The compensatory action, established in response to an inoperable primary containment isolation valve, prevented emergency ventilating the drywell during post accident conditions. This finding had crosscutting aspects of problem identification in that Energy Northwest did not identify that the compensatory action prevented implementation of the affected procedure. This finding was not subject to enforcement actions because it involved an equipment function which was not safety related.

The finding was more than minor because if left uncorrected the finding would become a more significant safety concern since primary containment integrity would be challenged due to the inability to emergency ventilate the drywell. Additionally, the finding was a configuration control issue which affected the barrier integrity cornerstone attribute to provide reasonable assurance that physical design barriers (containment) protect the public from radio nuclide releases caused by accidents or events. Using the Significance Determination Process, Phase 1 worksheet, the inspectors determined that the finding was of very low risk significance because the finding did not represent an actual open pathway in the physical integrity of the reactor containment. Corrective actions included evaluating alternate compensatory measures to address the inoperable containment isolation valve (Section 1R16).
Inspection Report# : 2005003*(pdf)*

Significance: G Oct 27, 2004
Identified By: Self-Revealing
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 scrammed 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 scrammed 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 scrammed 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 then 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)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G May 25, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to label a container of radioactive material
On May 25, 2005, the inspector identified a non-cited violation of 10 CFR 20.1904 because the licensee failed to label a canister containing radioactive material. The canister in the equipment storage area of the refueling pool contained used filters from a pool filtering system. The canister was secured to the handrail with a rope and could be moved by hand. Dose rates were measured and found to be 17 rem per hour on contact with the canister. Neither the canister nor the rope were labeled to identify the contents and radiological hazards.

This finding is greater than minor because it is associated with an Occupational Radiation Safety cornerstone attribute (human performance) and affected the cornerstone objective in that the failure to warn individuals of radiological hazards diminished the licensee ability to ensure adequate protection of the worker health and safety from exposure to radiation. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding also had crosscutting aspects associated with human performance. The failure of licensee personnel to follow the established program of controls for items stored in the refueling pool directly contributed to the finding. The licensee documented this event in Condition Report 2-05-04272.
Inspection Report# : 2005003*(pdf)*

Significance: G 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)*

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Significance: N/A Apr 15, 2005
Identified By: NRC
Item Type: FIN Finding
Problem Identification and Resolution
The team reviewed approximately 370 condition reports, apparent and root cause analyses, as well as other documents, to assess problem identification and resolution activities. While the licensee's processes were generally effective, the team observed that, for approximately the last four years, poor electrical engineering evaluations of breaker and switchgear problems resulted in a disproportionate number of NRC identified and self-revealing issues. In addition, several of the findings were related to inadequate consideration of seismic requirements. A similar performance concern was documented in the last problem identification and resolution assessment.

The team concluded that a safety-conscious work environment existed at the Columbia Generating Station. The team determined that employees and contractors felt free to enter issues into the corrective action program and raise safety concerns to their supervision, to the employees concern program, and to the NRC. All the interviewees believed that potential safety issues were being addressed. However, the team received an isolated comment regarding receptiveness of some supervisors to initiating condition reports. Energy Northwest management planned to take corrective measures to address this comment.

Inspection Report# : 2005008*(pdf)*

Last modified : November 30, 2005