



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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June 10, 2005

J. V. Parrish (Mail Drop 1023)
Chief Executive Officer
Energy Northwest
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Richland, WA 99352-0968

**SUBJECT: COLUMBIA GENERATING STATION – NRC PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000397/2005008**

Dear Mr. Parrish:

On April 27, 2005, the U. S. Nuclear Regulatory Commission (NRC) completed a team inspection at your Columbia Generating Station. The enclosed report documents the inspection findings, which were debriefed on March 31, 2005, with you and other members of your staff. Following additional in-office inspection, a telephonic exit meeting was conducted on April 27, 2005 with Mr. Roberto Torres, Quality Assurance and Corrective Action Manager, and other members of your staff.

This inspection examined activities conducted under your license as they relate to the identification and resolution of problems, compliance with the Commission's rules and regulations and with the conditions of your license. The team reviewed approximately 370 condition reports and problem evaluation requests. In addition, the team examined other selected documents, observed activities, and interviewed personnel in support of the inspection effort.

On the basis of the sample selected for review, the team concluded that, in general, your processes to identify, prioritize, evaluate, and correct problems were effective; thresholds for identifying issues remained appropriately low and, in most cases, corrective actions were adequate to address conditions adverse to quality. Notwithstanding the above, the team observed that, for the past several years, poor evaluations of breaker and switchgear problems still challenge the site, as NRC identified and self-revealing issues continue to surface. A similar observation was included in the last problem identification and resolution inspection report. The team concluded that a positive safety-conscious work environment existed at Columbia Generating Station.

The report documents three findings that were evaluated under the Significance Determination Process as having very low safety significance (Green). The NRC determined that two violations were associated with these findings. The violations are being treated as non-cited violations because they are of very low safety significance and because they have been entered into your corrective action program consistent with Section VI.A of the Enforcement Policy. If you contest the violations or the significance of these non-cited violations, you should provide a

response within 30 days of the date of the inspection report, with the basis for your denial, to the U.S. Nuclear Regulator Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; 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 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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 Web site at <http://www.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

//RA//

Linda Joy Smith, Chief
Engineering Branch 2
Division of Reactor Safety

Docket: 50-397
License: NPF-21

Enclosure:
NRC Inspection Report
05000397/2005008

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-397
License: NPF-21
Report: 05000397/2005008
Licensee: Energy Northwest
Facility: Columbia Generating Station
Location: Richland, Washington
Dates: March 14 through April 27, 2005
Inspectors: T. Jackson, Senior Resident Inspector - Team Leader
Z. Dunham, Senior Resident Inspector
G. Werner, Senior Project Engineer
T. McKernon, Senior Operations Engineer
D. Holman, Security Inspector

Approved By: Linda Joy Smith, Chief
Engineering Branch 2
Division of Reactor Safety

ATTACHMENT: Supplemental Information

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SUMMARY OF FINDINGS

IR 05000397/2005008; 3/14/05 - 4/27/05; Columbia Generating Station; biennial baseline inspection of the identification and resolution of problems. Findings were identified in the areas of Identification and Resolution; Prioritization and Evaluation; and Effectiveness of Corrective Actions.

The inspection was conducted by two senior resident inspectors, a senior operations engineer, a senior project engineer, and a security inspector. One self-revealing and one NRC-identified Green non-cited violation (NCV), one self-revealing Green finding, and two unresolved items were identified during this inspection. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process (SDP)." Findings for which the SDP 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 3, dated July 2000.

Identification and Resolution of Problems

- 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-conscience 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.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The team identified a non-cited 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-

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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 (Section 4OA2.e(2)iii).

- Green. The team documented a self-revealing finding to address an inadequate maintenance procedure. The procedure failed to specify the correct relay contact configuration for a startup transformer control circuit relay. When maintenance craftsmen installed the relay and placed the unit in service, the startup transformer tripped off-line. It was recovered approximately 20 minutes later. The issue had crosscutting aspects associated with human performance, adequacy of procedures.

The failure to provide an adequate procedure for startup transformer work was a performance deficiency. The finding was more than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The finding is similar to NRC Inspection Manual, Chapter 0612, Appendix E, non-minor Example 5.b, in that the equipment was returned to service before the problem was identified. The finding was of very low safety significance because it did not result in a loss of safety function of the system, the loss of the safety function of a single train for greater than its Technical Specification allowed-outage time, the loss of a 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, or screen as potentially risk-significant due to seismic, fire, flooding, or severe weather initiating event (Section 4OA2.e(2)iv).

Cornerstone: Occupational Radiation Exposure

- Green. The team documented a self-revealing non-cited violation of Technical Specification 5.7.2.d for the failure to provide an adequate alarming dosimeter to a worker entering a high-high radiation area. Specifically, a radiation worker could not hear an electronic dosimeter alarm in the drywell, which was posted as a high-high radiation area. The alarm was identified by a patrolling health physics technician.

The failure to provide an adequate alarming dosimeter to a worker in a high-high radiation area was a performance deficiency. The finding was more than minor

because it impacted the occupational radiation safety cornerstone objective to ensure adequate protection of the worker's health and safety from exposure to ionizing radiation. The inspectors determined that the finding was of very low safety significance because it did not involve: (1) As-Low-As-Reasonably-Achievable planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose (Section 4OA2.e(2)v).

B. Licensee Identified Violation

A violation of very low safety significance which was identified by Energy Northwest has been reviewed by the inspectors. Corrective actions taken or planned by Energy Northwest have been entered into their corrective action program. This violation and the associated corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

4 OTHER ACTIVITIES (OA)

4OA2 Identification and Resolution of Problems

The team based the following conclusions, in part, on all issues that were identified in the assessment period, which ranged from October 9, 2003 (the last biennial problem identification and resolution inspection) to the end of the inspection on April 27, 2005. The issues are divided into two groups. The first group, Current Issues, includes problems that were identified during the assessment period where the performance concern also occurred during the same period. The second group, Historical Issues, includes issues that were identified during the assessment period but the original performance deficiency occurred outside the period of interest.

a. Effectiveness of Problem Identification

(1) Inspection Scope

The inspectors reviewed items selected across the seven cornerstones to determine if problems were being properly identified, characterized, and entered into the corrective action program for evaluation and resolution. The team performed select equipment walkdowns and reviewed operator logs, work orders, plant tracking logs, and action requests for equipment deficiencies that should have also been captured in the corrective action program. The team also reviewed a sample of Energy Northwest audits and self assessments, trending reports, system health reports, and various other reports and documents related to the corrective action program.

The team interviewed station personnel and evaluated corrective action documentation to determine the licensee's threshold for identifying problems in their corrective action program. In addition, the team reviewed the licensee's evaluation of selected industry experience information, including operator event reports, NRC Generic Bulletins and Information Notices, and generic vendor notifications to assess if issues applicable to Columbia Generating Station were appropriately addressed.

(2) Assessment

The licensee generally maintained a healthy problem identification program. In most cases, the licensee properly identified performance trends and appropriately captured applicable industry operating experience in their program. However, the licensee was periodically challenged by their failure to consistently identify their own problems, as the NRC continued to identify noncompliances in this area.

Current Issues

Example 1: The NRC identified an inadequate maintenance procedure, in that the procedure instructed plant personnel to take steps which, inadvertently, rendered a safety-related battery and battery charger inoperable. The licensee had failed to identify the improper test configuration during the procedure change process (NRC Inspection Report 05000397/2004002).

Example 2: The NRC identified that operators failed to promptly return an average power range monitor to service following maintenance. Operators missed opportunities to identify the problem during control board walkdowns (NRC Inspection Report 05000397/2004004).

Example 3: The NRC identified that plant personnel failed to promptly identify disengaged 480 VAC breaker seismic latches. 8 out of 21 breakers in a safety-related motor control center did not have their latches fully engaged. The licensee missed prior opportunities to identify the problem during routine breaker inspections (see Section 4OA2.e(2)(i) of this report).

Example 4: The NRC identified that the licensee failed to document several failed electrical disconnects in their corrective action program (NRC Inspection Report 05000397/2004003).

Example 5: The NRC identified that, since breaker installation in 2001, the licensee missed several opportunities to identify seismically nonconforming 4160 VAC breakers. The breakers did not fit properly in the cubicles and the front wheels lifted off the floor, which was inconsistent with the seismically qualified configuration (see Section 4OA2.e(2)(ii) of this report).

Historical Issues

None.

b. Prioritization and Evaluation of Issues

(1) Inspection Scope

The team reviewed condition reports, problem evaluation requests and operability evaluations to assess the licensee's ability to evaluate the importance of adverse conditions. The team reviewed a sample of condition reports, apparent cause analyses and root cause analyses to ascertain whether the licensee properly considered the full extent of conditions, generic implications, common causes, and previous occurrences.

In addition, the team reviewed licensee evaluations of selected industry operating experience reports, including licensee event reports, NRC Generic Letters, Bulletins and

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Information Notices, and generic vendor notifications to assess whether issues applicable to Columbia Generating Station were appropriately addressed.

The team performed a historical review of condition reports and problem evaluation requests written over the last 5 years that addressed Class 1E 4160 V breakers, Barton differential pressure instruments, secondary containment pressure, and normally-energized Struthers-Dunn relays.

(2) Assessment

The team concluded that problems were generally prioritized and evaluated in accordance with the licensee's corrective action program guidance and NRC requirements. The team found that for the sample of root cause analyses reviewed, the licensee was generally self-critical and thorough in evaluating the causes of significant conditions adverse to quality. Notwithstanding the above, the team observed that, for the past four years, poor evaluations of breaker and switchgear problems still challenge the site, as NRC identified and self-revealing issues continue to surface. Several of the issues involved seismic qualification problems. A similar observation was included in the last problem identification and resolution inspection report.

Current Issues

Example 1: The NRC identified that the licensee failed to properly evaluate degraded electrical disconnects, as electrical disconnects continued to unexpectedly pop open due to inadequate maintenance. Further, the licensee also failed to properly address the maintenance issue's impact on the disconnects' seismic qualification (NRC Inspection Report 05000397/2004003).

Example 2: The NRC identified that the licensee had not properly evaluated the extent of condition for an improperly set Division III diesel fan breaker. The breaker tripped unexpectedly in service. The licensee determined that the failure to perform postmaintenance testing contributed to the problem, but then failed to address four other similar breakers whose settings were adjusted in approximately the same time frame (NRC Inspection Report 05000397/2004003).

Example 3: The NRC identified that the licensee failed to properly evaluate the extent-of-condition for improper 480 VAC breaker over-current trip settings. The licensee had specified corrective actions for breakers associated with one manufacturer but other breakers were also affected. In response to NRC questions, two safety-related breakers and one non-safety related breaker required recalibration (see Section 4OA2.e(2)(iii) of this report).

Historical Issues

Example 4: The NRC identified that the licensee failed to take prompt corrective actions to address a condition adverse to fire protection. The protected low pressure coolant

injection train was vulnerable to water hammer, since 1997, due to a leaking pump discharge check valve (NRC Inspection Reports 05000397/2003002 and 05000397/2004002).

c. Effectiveness of Corrective Actions

(1) Inspection Scope

The team reviewed plant records, primarily condition reports and problem evaluation requests, to verify that corrective actions related to the issues were identified and implemented, including corrective actions to address common cause or generic concerns. The team sampled specific technical issues to evaluate the adequacy of the licensee's operability determinations.

Finally, the team reviewed a sample of condition reports and problem evaluation requests that addressed past NRC identified violations, for each affected cornerstone, to ensure that the corrective actions adequately addressed the issues as described in the inspection reports. The team also reviewed a sample of corrective actions closed to the other condition reports, problem evaluation requests, and other tracking programs to ensure that corrective actions were still appropriate and timely.

In the 2004 end-of-cycle performance assessment, the NRC identified a substantive cross-cutting issue in the area of human performance. The team evaluated the licensee's actions to address the substantive cross-cutting issue.

(2) Assessment

The licensee's implementation of their corrective action program was generally effective. The NRC identified a few instances where corrective actions were not adequate but, overall, the licensee properly implemented their program.

With respect to the cross-cutting human performance issue, the licensee's subsequent self assessments, audits, and third-party assessments were critical and thorough. While the licensee has observed some improvement in their human performance indicators, the team could not determine the overall adequacy of the corrective measures because the actions were not in place for a sufficient period of time.

Current Issues

Example 1: The licensee failed to take effective measures to prevent repetitive failures of a high pressure core spray diesel room fan breaker. The first failure occurred because the specified trip setting was too low. The licensee corrected the trip setting. However, plant personnel subsequently used the same inappropriate design information at a later date when adjusting the breaker setting. Consequently, the breaker failed in service a second time (self-revealing, NRC Inspection Report 05000397/2004003).

Example 2: The NRC identified that the licensee failed to take adequate corrective measures to address 480 VAC breaker seismic latches following previously identified problems. The licensee did not specify the configuration requirements in plant maintenance documents. During a plant walkdown, the inspectors identified an unlatched (non-conforming) Division III diesel room fan breaker. The disclosure of this issue led to the identification of several other nonconforming breakers (see Section 4OA2.e(2)(iii) of this report).

Historical Issues

Example 3:

The licensee identified that their corrective measures to address a previously identified problem with minimum steam cooling reactor water level were inadequate. The licensee had identified that the Emergency Plan, emergency operating procedures, and emergency plan implementing procedures were not properly updated. Corrective measures were inadequate because they only addressed the emergency operating procedures (see Section 4OA7 of this report).

d. Assessment of Safety-Conscience Work Environment

(1) Inspection Scope

The team interviewed more than 20 individuals from the licensee's staff, representing a cross section of functional organizations and supervisory and non-supervisory personnel. These interviews assessed whether conditions existed that would challenge the establishment of a safety-conscience work environment. The team also reviewed a plant self-assessment that evaluated, in part, the safety-conscious work environment at Columbia Generating Station.

(2) Assessment

The team concluded that a safety-conscience 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. The team received an isolated comment regarding receptiveness of some supervisors to initiating condition reports. The licensee has initiated corrective measures to address the comment. All the interviewees believed that potential safety issues were being addressed.

e. Specific Issues Identified During This Inspection

(1) Inspection Scope

During the reviews described in Sections 4OA2 a.(1), 4OA2 b.(1), 4OA2 c.(1), and 4OA2 d.(1), the team identified the following findings.

(2) Findings and Observations

(i) 480 VAC Breaker Seismic Restraints

Introduction. The team identified an unresolved item involving the failure to identify 480 V breaker latch and nonconforming seismic restraints (conditions adverse to quality). As a result of the team's inspection, the licensee determined that the Division III diesel generator fuel oil transfer pump breaker was inoperable since it was not in its seismically-qualified configuration.

Description. In March, 2004 the licensee identified that six breakers in Motor Control Center E-MC-4A were not properly secured to ensure seismic qualification. The breakers should have been secured with a stud, nut and washer assembly, although the assembly was not depicted on design drawings. Two of those breakers controlled the Division III diesel generator room inlet fan and the Division III diesel generator fuel oil transfer pump. The condition was documented in Problem Evaluation Request 204-0604.

While reviewing the corrective actions for the above finding, the team identified a problem which led to the discovery of multiple seismically nonconforming breakers. During a walkdown of the Division III diesel generator room inlet fan breaker, the team noted that a latch (required for seismic qualification) was not fully engaged. In response to the team's finding, the licensee reviewed the configuration of other breakers in Motor Control Center E-MC-4A and found an additional 8, out of 21 breakers inspected, where at least one of the seismic latches was not properly secured. In addition, the licensee found that the Division III diesel generator fuel oil transfer pump breaker did not have the stud, nut and washer assembly, noted in the first paragraph above. These issues were documented in Condition Reports 2-05-01854 and 02-05-01845. As an additional corrective measure, the licensee planned to inspect the remaining breakers with similar configurations.

The licensee declared most of the breakers degraded but operable. However, the Division III diesel generator fuel oil transfer pump was declared inoperable until a stud assembly could be installed. Plant personnel determined that the stud assembly had been missing since January 5, 2005 when the breaker had been replaced under Work Order 01085125. The work order did not address the installation of the stud assembly following breaker replacement.

These issues had cross-cutting aspects in the areas of problem identification (in that work was in the area of the breakers and workers failed to discover the

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nonconformances) and effectiveness of corrective actions (in that, following the licensee's initial finding concerning the stud nuts, the licensee failed to update procedures to ensure proper installation of the fuel oil transfer pump breaker's seismic restraint assembly following maintenance).

Analysis. The failures to: 1) identify conditions adverse to quality (unlatched seismic restraints); and 2) provide adequate procedures to ensure that seismic restraints were properly restored following maintenance were performance deficiencies. The finding is more than minor because it impacted the mitigating systems cornerstone objective of availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Significance Determination Process Phase 1 worksheet, the team determined that the finding was potentially risk significant because it affected seismic initiating events. The finding requires a Phase 3 analysis, which was not completed at the close of the inspection. This issue is unresolved pending completion of the significance determination.

Enforcement. The inspectors had not completed the enforcement review at the close of the inspection. This issue is unresolved for compliance pending completion of that review (URI 05000397/2005008-01).

(ii) Safety-Related 4160 VAC Breaker Seismic Qualification

Introduction. The team documented an unresolved item concerning the seismic qualification of 4160 VAC breakers. The front wheels on several of the safety-related breakers did not touch the floor due to breaker-cubicle fit-up problems, which was not consistent with the seismically tested configuration.

Description. During the spring, 2001 refueling outage, the licensee replaced 22 existing 4160 VAC Westinghouse DHP-350 breakers with the Westinghouse DHP-VR 350 vacuum-operated breakers manufactured by Cutler-Hammer. Sixteen breakers have a safety function to reposition during design basis accidents, including those postulated accidents involving seismic events. The new breakers were utilized in power circuits for emergency diesel generators, standby service water pumps, and emergency core cooling system pumps. The breakers were installed in the old breaker cubicles. The new breakers did not have exactly the same dimensions as the old breakers, which resulted in cubicle fitup issues. Operations typically had problems getting the breakers properly positioned. The inspectors noted the following related issues:

- On February 13 and 22, 2002, operators initiated Problem Evaluation Requests 202-0476 and 202-0556 to document the excessive manual force to engage the seismic latches for two of the safety-related 4160 VAC Breakers. As part of the resolution, engineers initiated a modification to taper the seismic latches to provide a better fit.
- On December 17, 2003, the licensee initiated Problem Evaluation Request 203-4385 to document that three safety-related 4160 V breakers were bent horizontally across the face approximately 5 inches from the top of the panel.

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Excessive force to engage the seismic latches was suspected as the cause of the panel damage.

- On May 17, 2004, an equipment operator noticed that the front wheels for one of the breakers were lifted off the floor, Problem Evaluation Request 204-0775. This was inconsistent with the seismically tested configuration. The licensee checked the other safety-related 4160 VAC breakers and found that five breakers had both wheels off the floor and eight breakers had one wheel off the floor. The maximum distance between the wheels and the floor was 1/16 of an inch. The licensee initiated Follow-up Assessment of Operability 204-0775 to evaluate operability. The licensee analyzed the as-found configuration and found it acceptable.

The team noted that, normally, electrical equipment required to operate during a seismic event is tested in its qualified configuration, versus qualified by analysis. Engineering personnel stated that if a seismic event were to occur, the breakers would slide down such that all four wheels would touch the floor and the breakers would return to their seismically-qualified configuration. The team requested a technical analysis demonstrating this theory. The team had not completed the NRC evaluation prior to the end of the inspection period. This issue is unresolved pending completion of that evaluation.

The team noted the following historical problems with these breakers:

- NRC Inspection Report 05000397/2002-005, dated June 24, 2002, described a White finding associated with the licensee's failure to take effective corrective actions to address design control issues associated with mechanism-operated cell switches for the safety-related 4160 VAC breakers. After, the licensee had experienced numerous operational problems it was determined that they had failed to perform critical maintenance.
- NRC Inspection Report 05000397/2003-009, dated November 24, 2003, described a Green finding associated with the licensee's failure to promptly correct a seismic qualification issue associated with safety-related 4160 VAC breaker truck-operated cell position switches. The licensee had experienced eight operational problems before the seismic vulnerability was identified, by the NRC, and corrected.

The team determined that the issue had at least one crosscutting aspect in the area of problem identification. The licensee had missed numerous opportunities to identify the seismically nonconforming breaker configuration prior to 2004, when the condition was eventually found.

Analysis. A significance determination is not warranted at this time.

Enforcement. Enforcement will be considered when the NRC completes the evaluation of this issue (URI 05000397/2005008-02).

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(iii) Inadequate 480 VAC Breaker Settings

Introduction. The team identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI (Corrective Actions) for the failure to promptly identify nonconforming breaker settings (conditions adverse to quality). Following a breaker malfunction (tripping too soon), the NRC questioned the adequacy of the licensee's extent of condition review. As a result, the licensee identified two additional safety-related breakers and one non-safety related breaker that required calibration. This issue had cross-cutting aspects associated with problem evaluation.

Description. On August 20, 2003, during a Division III diesel generator surveillance, the diesel room exhaust fan breaker (DEA-42-4A4E) tripped on overcurrent. The licensee determined that plant personnel had failed to properly test the breaker following a previous adjustment. The licensee determined that the fan was not needed as long as outside ambient temperatures were below 105° F. Plant temperatures had not exceeded 105E F since the improper adjustment occurred.

On GE Type TEC motor controller breakers, the overcurrent trip point is set by adjusting a dial on the breaker. The dial has indication of the trip setting. Engineering personnel had assumed that a breaker's indicated setting was accurate. However, following the unexpected tripping of Breaker DEA-42-4A4E, engineers learned that the indication was not reliable. As a corrective measure, the licensee verified that the remaining GE Type TEC breakers had acceptable trip values.

Since breakers made by other manufacturer's also utilized similar trip dial indicators, the team questioned the adequacy of the licensee's extent-of-condition review. More specifically, the team was concerned about Westinghouse DS-416 metal-clad and ITE Gould molded-case circuit breaker settings. In response to the team's questions, the licensee could not verify that the following breakers had acceptable trip settings:

- Safety-related Breaker CCH-CB-CR1A, supply breaker to control room chiller 1A (the chiller itself was non-safety related).
- Safety-related Breaker E-CB-71/7C, feeder breaker from safety Bus E-SL-71 to non-safety bus E-MC-7C.
- Nonsafety-related Breaker E-CB-71/7C, feeder breaker to cooling tower valves.

The licensee subsequently recalibrated the breakers.

Analysis. The failure to properly evaluate a condition adverse to quality and address the full scope of the problem 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. Using the Manual Chapter 0609, Appendix A, Significant Determination Process, Phase 1 screening worksheet, this 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.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that conditions adverse to quality be promptly identified. Contrary to the above, the licensee failed to promptly identify non-conforming safety-related 480 V breaker settings. Because this issue is of very low safety significance and has been entered into the corrective action program as Condition Report 2-04-01555, this violation is being treated as a non-cited violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000397/2005008-03).

(iv) Startup Transformer E-TR-S

Introduction. The team documented a self-revealing finding to address an inadequate maintenance procedure. The procedure failed to specify the correct relay contact configuration for a startup transformer control circuit relay. When maintenance craftsmen installed the relay and placed the unit in service, the startup transformer tripped off-line. It was recovered approximately 20 minutes later. The issue had crosscutting aspects associated with human performance, adequacy of procedures.

Description. The startup transformers provide power to safety-related as well as balance of plant systems when the reactor is shutdown. On November 1, 2003, maintenance personnel performed on-line maintenance on Startup Transformer E-TR-S. The maintenance included calibrating and installing a replacement for Relay E-RLY-50TSN. The relay is part of the overcurrent trip circuitry for the startup transformer. Maintenance personnel did not know that they needed to configure the contacts to the "normally-open" position prior to installation. In addition, the necessary instructions were not contained in plant procedures or the associate work order. Consequently, when operators placed the transformer back in service it tripped off-line. Plant personnel recovered the startup transformer in about 20 minutes. Following the event, the licensee added instructions to Procedure PPM 10.25.21, "Testing & Setting Instantaneous Overcurrent Relays," Work Order WOT 01038854, as well as other procedures, to ensure proper relay configuration in the future.

Analysis. The failure to provide adequate maintenance instructions for startup transformer work was a performance deficiency. The finding is 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. In addition, the finding is similar to non-minor Example 5.b in Inspection Manual Chapter 0612, Appendix E, in that the transformer was placed back into service before the problem was corrected. Using the Manual Chapter 0609 Significance Determination Process Phase 1 screening worksheet, the finding was of very low safety significance because the finding did not result in a loss of safety function of the system, the loss of the safety function of a single train for greater than its Technical Specification allowed outage time, the loss of a 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, or screen as potentially risk-significant due to a seismic, fire, flooding, or severe weather initiating event.

Enforcement. No violation of regulatory requirements occurred because the affected equipment was nonsafety-related. The licensee documented the problem in Problem Evaluation Requests 203-3940 and 203-4215 (FIN 05000397/2005008-04).

(v) Inadequate Alarming Dosimeter

Introduction. The team documented a Green self-revealing noncited violation of Technical Specification 5.7.2.d.1 for the failure to provide an adequate alarming dosimeter to a worker entering a high-high radiation area. Specifically, a radiation worker could not hear an electronic dosimeter alarm in the drywell which was posted as a high-high radiation area.

Description. On June 20, 2003, an individual working in the drywell received an electronic dosimeter dose alarm but could not detect it. The worker was directed to leave the area by a roving radiation protection technician that heard the alarm. This event was documented in Problem Evaluation Request 203-2490. The licensee determined that the worker had entered the drywell on the wrong radiation work permit and had left his hearing aid in the shop. The team noted that the resolution for Problem Evaluation Request 203-2490 was narrow in scope and did not attempt to determine why the co-workers also did not hear the alarm. The licensee initiated Condition Report 2-05-01764 to evaluate this weakness. This issue was self-revealing by the alarming dosimeter.

Analysis. The failure to provide a worker in a high-high radiation area with an adequate alarming dosimeter was a performance deficiency. The finding was more than minor because it impacted the occupational radiation safety cornerstone objective to ensure adequate protection of the worker's health and safety from exposure to radiation from radioactive material. This finding was evaluated with the occupational radiation safety significance determination process in Inspection Manual Chapter 0609, Appendix C. The inspectors 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 as defined in Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process."

Enforcement. Technical Specification 5.7.1.d.2 states, in part, that any individual permitted to enter a high radiation area with dose rates greater than 1.0 rem/hour (high-high radiation area) shall be provided with a radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Contrary to the above, on June 20, 2003, the licensee failed to provide an adequate alarming dosimeter to a worker entering a high-high radiation area. The dosimeter was inadequate because the worker could not hear the

alarm. Because this violation was of very low safety significance and was entered into the corrective action program as Problem Evaluation Request 203-2490, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000397/2005008-05).

4OA6 Exit Meetings

On March 31, 2005, the team discussed the preliminary findings with Mr. J. V. Parrish, Chief Executive Officer and other members of the licensee's staff. On April 27, 2005, the team leader conducted the final exit meeting with Mr. Roberto Torres, Quality Assurance and Corrective Action Manager, and other members of the licensee's staff by telephone. The team asked the licensee whether any materials examined during the inspection should be considered proprietary. Proprietary information was reviewed by the team but all the proprietary information was returned to the licensee prior to the close of the inspection. No proprietary information was disclosed in this report.

4OA7 Licensee Identified Violations

The following violation of very low risk significance (Green) was identified by the licensee. The violation meets the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a noncited violation.

- 10 CFR 50.54(q) requires, in part, that a licensee shall follow and maintain in effect emergency plans which meet, in part, the requirements in 10 CFR 50, Appendix E. This regulation requires that provision be employed to ensure that the emergency plan and its implementing procedures are maintained up to date. Contrary to the above, following a core design change, the Emergency Plan and the emergency plan implementing procedures (as well as the emergency operating procedures) were not maintained up to date. The documents should have been changed before the reactor startup following the design change. The design change affected the minimum steam cooling reactor water level, which is lowest acceptable water level that still ensures adequate core cooling. This value is utilized as a juncture for determining protective measures for the public and emergency actions in the control room. At a later date, the licensee also identified that initial corrective measures to address the issue were inadequate in that some of the documents were still not properly updated. The licensee subsequently performed an analysis and determined that the previously specified minimum steam cooling reactor water level ensured adequate core cooling for the affected periods of time. The revised value was not needed until the end of core life, which had not yet occurred. Therefore, the issue was of very low safety significance because the fuel clad remained operable consistent with Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1. This issue had crosscutting aspects in the area of effectiveness of corrective actions.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

V. Parrish, Chief Executive Officer/Chief Nuclear Officer
D. Atchinson, Vice President, Nuclear Generation
S. Belcher, Manager, Operations
J. Bekhazi, Manager, Maintenance
I. Borland, Manager, Radiation Protection
D. Coleman, Manager, Regulatory Programs
T. Lynch, Plant General Manager
S. Oxenford, Vice President, Technical Services
R. Torres, Manager, Quality Assurance and Corrective Action
C. Whitcomb, Vice President, Organizational Performance and Staffing

NRC

R. Cohen, Resident Inspector, Columbia Generating Station
G. Replogle, Senior Reactor Inspector, Engineering Branch 2

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000397/2005008-03	NCV	Failure to Evaluate the Extent of Condition for 480 V Breaker Overcurrent Knob Settings (Section 4OA2.e(2)(iii))
05000397/2005008-04	FIN	Failure to Maintain Adequate Maintenance Procedure Resulted in Startup Transformer Tripping (Section 4OA2.e(2)(iv))
05000397/2005008-05	NCV	Failure to Provide an Adequate Alarming Dosimeter (Section 4OA2.e(2)(v))

Opened

05000397/2005008-01	URI	Failure to Identify and Correct 480 V Breaker Seismic Restraint Issues (Section 4OA2.e(2)(i))
05000397/2005008-02	URI	Failure to Identify and Correct a Seismically Nonconforming Configuration Related to Safety-Related 4160 V Breakers (Section 4OA2.e(2)(ii))

LIST OF ACRONYMS

ADAMS	Agency Document And Management System
CFR	Code of Federal Regulations
FIN	finding
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records System
URI	unresolved item

DOCUMENTS REVIEWED

Action Requests

3940 5806 6321 6961 6964 7142

Condition Reports

2-04-00029	2-04-02506	2-04-03362	2-04-04716	2-04-05425
2-04-00149	2-04-02577	2-04-03450	2-04-04881	2-04-05538
2-04-00152	2-04-02783	2-04-03558	2-04-05160	2-04-05594
2-04-00350	2-04-02973	2-04-03577	2-04-05165	2-04-05597
2-04-00353	2-04-03172	2-04-03609	2-04-05177	2-04-05617
2-04-00464	2-04-03176	2-04-03621	2-04-05267	2-04-05633
2-04-00893	2-04-03351	2-04-03647	2-04-05321	2-04-05698
2-04-01023		2-04-03701		2-04-05922
2-04-01035		2-04-03703		2-04-06058
2-04-01107		2-04-03987		2-04-06072
2-04-01130		2-04-04038		2-04-06224
2-04-01224		2-04-04178		2-04-06294
2-04-01292		2-04-04209		2-04-06340
2-04-01360		2-04-04223		2-04-06363
2-04-01453		2-04-04248		2-04-06423
2-04-01534		2-04-04264		2-04-06472
2-04-01833		2-04-04333		2-04-06491
2-04-02290		2-04-04395		2-04-06493
2-04-02314		2-04-04565		2-04-06501
2-04-02458		2-04-04622		2-04-06697

2-04-06720	2-05-00788	2-05-01719
2-04-06745	2-05-00803	2-05-01720
2-04-06853	2-05-00920	2-05-01721
2-05-00014	2-05-00945	2-05-01722
2-05-00108	2-05-01072	2-05-01723
2-05-00233	2-05-01231	2-05-01724
2-05-00482	2-05-01341	2-05-01725
	2-05-01404	2-05-01726
	2-05-01458	2-05-01727
	2-05-01468	2-05-01728
	2-05-01530	2-05-01729
	2-05-01555	2-05-01730
	2-05-01559	2-05-01731
	2-05-01618	2-05-01732
	2-05-01679	2-05-01733
	2-05-01690	2-05-01734
	2-05-01691	2-05-01751
	2-05-01695	2-05-01799
	2-05-01709	2-05-01801
	2-05-01711	2-05-01802
	2-05-01712	2-05-01803
	2-05-01713	2-05-01808
	2-05-01714	2-05-01809
	2-05-01715	2-05-01818
	2-05-01716	2-05-01845
	2-05-01717	2-05-01854
	2-05-01718	

Calculation Modification Requests

2902 2716 588

Drawings

E502-2, "Main One Line Diagram," Revision 52
E503-7, "Auxiliary One Line Diagram," Revision 76
FSKC-XX-0001-0-096, "Seismic Locking Bar for Vacuum Circuit Breaker," Revision 0
M521-1, "Flow Diagram Residual Heat Removal System Loop A," Revision 98
M521-2, "Flow Diagram Residual Heat Removal System Loop B," Revision 99

Plant Tracking Logs

A 139934	A 209873	A 216444	A 218433	A 220696
A 206427	A 210048	A 216797	A 218437	A 221093
A 207835	A 211471	A 216869	A 218441	A 221094
A 207871	A 211473	A 217061	A 219495	A 221095
A 208074	A 211941	A 217937	A 218508	A 221096
A 208289	A 212289	A 217942	A 218509	A 221180
A 208370	A 213384	A 218129	A 218524	A 221182
A 208566	A 213779	A 218423	A 218525	A 223269
A 208780	A 214002	A 218424	A 218526	A 223611
A 208986	A 214503	A 218426	A 219802	A 224403
A 209189	A 214947	A 218427	A 219803	A 224418
A 209435	A 215422	A 218431	A 220547	A 224495
A 209799	A 215493			

Problem Evaluation Reports

294-0762	202-2575	203-0956	203-2225	203-3145
297-1003	202-2707	203-0978	203-2254	203-3174
299-0127	202-2984	203-1003	203-2295	203-3181
200-0025	202-3359	203-1094	203-2326	203-3182
201-1014	202-3463	203-1263	203-2382	203-3183
201-2897	202-3581	203-1271	203-2384	203-3184
202-0556	203-0288	203-1560	203-2396	203-3185
202-0476	203-0332	203-1561	203-2534	203-3187
202-1365	203-0361	203-1580	203-2565	203-3188
202-1408	203-0423	203-1683	203-2732	203-3196
202-1522	203-0427	203-1749	203-2901	203-3204
202-1687	203-0428	203-1783	203-2955	203-3262
202-1800	203-0465	203-1902	203-2966	203-3263
202-2026	203-0500	203-2123	203-3036	203-3283
202-2199	203-0510	203-2127	203-3050	203-3287
202-2235	203-0607	203-2132	203-3059	203-3288
202-2306	203-0614	203-2202	203-3104	203-3289
202-2558	203-0725	203-2208	203-3129	203-3290

Problem Evaluation Reports (Cont.)

203-3365	203-3955	204-0334	204-0780	204-1015
203-3366	203-3975	204-0353	204-0783	204-1020
203-3370	203-3996	204-0376	204-0789	204-1024
203-3373	203-4001	204-0386	204-0795	204-1041
203-3388	203-4003	204-0457	204-0804	204-1042
203-3411	203-4041	204-0469	204-0811	204-1047
203-3416	203-4049	204-0575	204-0822	204-1056
203-3423	203-4064	204-0594	204-0825	204-1079
203-3434	203-4210	204-0595	204-0842	204-1093
203-3459	203-4211	204-0604	204-0848	204-1114
203-3460	203-4228	204-0608	204-0857	204-1127
203-3471	203-4231	204-0610	204-0858	204-1129
203-3491	203-4244	204-0612	204-0870	204-1165
203-3513	203-4330	204-0628	204-0881	204-1166
203-3533	203-4385	204-0644	204-0883	204-1172
203-3535	203-4387	204-0646	204-0906	204-1177
203-3552	203-4482	204-0647	204-0929	204-1186
203-3559	203-4493	204-0660	204-0935	204-1187
203-3561	204-0012	204-0673	204-0951	204-1211
203-3578	204-0015	204-0701	204-0954	204-1219
203-3606	204-0108	204-0711	204-0959	204-1225
203-3617	204-0112	204-0718	204-0961	204-1227
203-3645	204-0116	204-0719	204-0973	204-1237
203-3684	204-0118	204-0737	204-0981	204-1266
203-3689	204-0133	204-0745	204-0982	205-0024
203-3693	204-0189	204-0746	204-0983	205-0057
203-3766	204-0197	204-0766	204-0984	205-0064
203-3852	204-0287	204-0768	204-0986	205-0136
203-3872	204-0302	204-0775	204-0987	205-0199
203-3940				

Plant Procedures

<u>Procedure</u>	<u>Title</u>	<u>Revision</u>
CCM-1-1	Vibration Analysis and Trending	0
OSP-CAC-B701	CAC-HR-1A Preheater Operability Test	7
OSP-CAC-B702	CAC-HR-1B Preheater Operability Test	7
OSP-ELEC-M701	Diesel Generator 1 - Monthly Operability Test	19
OSP-ELEC-W102	Electrical Distribution Subsystem Breaker Alignment and Power Availability Verification	12
OSP-HPCS-A701	High Pressure Core Spray Keep Fill Integrity Test	0

OSP-HPCS/IST-Q701	HPCS System Operability Test	23
OSP-MS/IST-Q701	MSIV Closure Test - Shutdown	7
PPM 2.10.1	System Operating Procedures, Heating, Ventilation, and Air Conditioning	28, 32
PPM 10.1.13	Foreign Material Controls for Systems and Components	19
PPM 10.17.3	Main Steam Isolation Valve Overhaul	16
PPM 10.25.20	Testing & Setting Electromechanical Time Overcurrent Relays	15
PPM 10.25.35	Testing and Setting GE CEH Relays	10 - 11
PPM 11.2.10.17	Operation of the NMC Continuous Air Monitor	0
PPM 11.2.13.8	Airborne Radioactivity Surveys	6
SPIP-SEC-08	Issue, Receipt, Storage, Maintenance, Accountability and Handling of Security Equipment, Firearms and Ammunition	6
SPIP-SEC-20	Central Alarm Station Access Instructions	10
SWP-CAP-01	Corrective Action Program	9
SWP-CAP-02	Cause Determination	2
SWP-CAP-03	Operating Experience Program	3
SWP-CAP-05	Corrective Action Review Board (CARB)	2
SWP-CAP-06	Condition Review Group (CRG)	2
SWP-CAP-07	Department Assessment Review Program	2
SWP-SEC-02	Protection of SAFEGUARDS Information	5
SWP-SEC-03	Vital & Protected Area Personnel/Vehicle Access Controls and Security Responsibilities of Site Personnel	13

Other

Calculation ME-02-90-16, "Pressure Drop Verification for LPCS System," Revision 1

Calculation NE-02-39, "Evaluation of CAC Performance Under LOCA Conditions," April 5, 2004

Design Specification for Division 300 Section 309 Standby Service Water System, Revision 7

Equipment Qualification Group Task W01425, "Breaker Operability," May 18, 2004

Firearms and Range Safety Course, Squad Attendance Rosters, March 15 thru April 29, 2004

GE SIL No. 477, "Main Steam Isolation Valve Closure," December 13, 1988

Licensing Document Change Notice FSAR-03-076

Memorandum SS2-PE-95-469, "Examination of Agastat and Struthers-Dunn Relays Removed During R10," August 30, 1995

Memorandum, "Closure of EOR 81043GA-3/4, Evaluation of GE SIL #477, Main Steam Isolation Valve Closure," July 18, 1990

NE-02-39, "Evaluation of CAC Performance Under LOCA Conditions," April 5, 2004

Nuclear Energy Institute 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1

NRC Information Notice 80-16, "Shaft Seal Packing Causes Binding in Main Steam Swing Disc Check and Isolation Valves"

NRC Information Notice 88-51, "Failure of Main Steam Isolation Valves"

NRC Information Notice 03-17, "Reduced Service Life of Automatic Switch Company (ASCO) Solenoid Valves with Buna-N Material"

NRC Information Notice 03-18, "General Electric Type SBM Control Switches with Defective Cam Followers"

Nuclear Security Officer's Course, Range Operations Lesson Guide, Revision 2

Quality Assurance Audit AU-CA-03, "Corrective Action Program Audit"

Security Training Observation Checklist, Firing Range, No date

Security Training Range Operating Instructions, date January 12, 2005

Security Training Range Operating Instructions, date October 14, 2003

Self Assessment SA-2003-0046, "Utilities Service Alliance Safety Culture Assessment"

Self Assessment SA-2004-0056, "Operations Self-Evaluation"

Self Assessment SA-2004-0060, "Nuclear Safety Culture Effectiveness Review"

Work Order Task 00SKD3, "E-CB-71/7C Vendor Remove/Replace"

Work Order Task 00SKD6, "CCH-CB-CR1A Vendor Remove/Replace"

Work Orders

00SF08	01041280	01041914	01069867	01077291
00SKD3	01041631	01044697	01075433	01081111
00SKD6	01041744	01064035	01075434	01085125
01038854	01041763	01068300	01075837	01085177
01040790	01041896			

Work Requests

29018809	29032714	29038018	29044289	29045786
29026658	29036287	29038796	29044952	