



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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February 11, 2009

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

Subject: COLUMBIA GENERATING STATION - NRC INTEGRATED INSPECTION
REPORT 05000397/2008005

Dear Mr. Parrish:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 08, 2009, with Mr. S. Oxenford, Vice President, Nuclear Generation, and other members of your staff. In addition, the senior resident inspector conducted a followup exit meeting with Mr. G. Cullen, Manager Regulatory Programs, on February 10, 2009.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents two NRC-identified findings of very low safety significance (Green). These findings involved violations of NRC requirements. However, because of their very low safety significance and because they were entered into your corrective action program, the NRC is treating these violations as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the noncited violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011 4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 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 component of NRC's document system (ADAMS).

ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

George Replogle, Chief
Project Branch A
Division of Reactor Projects

Docket: 50-397
License: NPF-21

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NRC Inspection Report 05000397/2008005
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-397

License: NPF-21

Report: 05000397/2008005

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, Washington

Dates: October 1, 2008 through December 31, 2008

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Approved By: G. Replogle, Chief, Project Branch A, Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000397/2008005; 10/01/2008 – 12/31/2008; Columbia Generating Station; Maintenance Effectiveness; Other

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by regional based inspectors. Two Green noncited violations of very low safety significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation (NCV) of Technical Specification 5.4.1.a (Procedures) for Energy Northwest's failure to follow site procedures during an overhaul of the Division 1 emergency diesel engine in 2003. Specifically, care was not exercised to protect diesel fuel oil injector line seating surfaces from mechanical damage during maintenance. In addition, the procedure was inadequate, in that it required an inspection but contained no acceptance criteria. As a result, seating surfaces of diesel fuel oil injector lines were damaged during maintenance and fuel oil leaked into the lubricating oil system during emergency diesel generator operation. The leakage was not immediately noticed during postmaintenance testing (2003), but was identified substantially later during lubricating oil viscosity testing (2008). Fuel leakage into the lubricating oil system has rendered emergency diesel generators inoperable at other sites and the vendor stipulated that this condition can result in crankcase explosions and severe damage. The licensee's initial review of the issue failed to identify the inadequate inspection requirements. Further, the licensee did not follow the vendor manual recommendation of replacing the lubricating oil filter until identified by the inspectors. Energy Northwest entered the issues into the corrective action program as Condition Report 187580.

The finding was more than minor because, if left uncorrected, it could result in a more significant safety concern. Specifically, postmaintenance testing may not immediately identify fuel injector damage following maintenance and the damage could render the emergency diesel generator inoperable during event response. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the finding was of very low risk significance (Green) because it was a qualification deficiency confirmed not to result in a loss of emergency diesel generator operability. While the procedural deficiencies were aged, the licensee missed a recent opportunity in 2008 to identify the problems because they repaired the diesel but did not evaluate the adverse condition. This issue had a crosscutting aspect associated with Problem Identification and Resolution (corrective action program component), in that the licensee failed to thoroughly evaluate the problem such that the resolution addressed the cause [P.1(c)] (Section 1R12).

- Green. The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion III (Design Control) for the failure to properly translate the design basis of the facility into procedures. Specifically, when the residual heat removal system, Trains A, B or C, were used in the suppression pool cooling or mixing modes of operation, the trains were vulnerable to water hammer events that could challenge train operability during a loss of coolant accident coincident with a loss of offsite power. The licensee entered the condition into their corrective action program as Condition Report 182958.

The finding was more than minor because, if left uncorrected, it would lead to a more significant safety concern. Specifically, the licensee could use multiple trains of residual heat removal in the suppression pool cooling and mixing modes of operations, which could make them incapable of performing their safety functions during a loss of coolant accident coincident with a loss of offsite power. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the issue screened as having very low safety significance (Green) because the finding: 1) was a design or qualification deficiency that could result in loss of operability or functionality; 2) did not involve an actual loss of system safety function; 3) did not result in a loss of a single train for greater than the technical specification allowed outage time; 4) did not result in a loss of safety function of one or risk significant trains of equipment for more than 24 hours; and 5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding did not have a crosscutting aspect because the concern involved an older design issue (Section 4OA5).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

The inspection period began with Columbia Generation Station operating at full power. The station periodically scheduled reductions in power from 100 to 85 percent power to support testing. On November 15, the station entered planned maintenance outage 2008-02 to perform reactor recirculation motor 1A oil addition and inspection, balance of plant steam valve leak repairs and reactor recirculation Valve RRC-V-23B motor operator position indication repair. The station returned to 100 percent power on November 22. The facility operated at 100 percent power, with the exception of scheduled reductions in power to support testing, for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of the licensee's adverse weather procedures for seasonal extremes (e.g., extreme high temperatures, extreme low temperatures, or hurricane season preparations). The inspectors: verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes; and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions

During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Final Safety Analysis Report and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- Diesel generator rooms and service water pump houses for cold weather preparations, November 11 thru November 28, 2008

These activities constitute completion of one readiness for seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- Division 1 service water system, October 2, 2008
- Residual heat removal Pump RHR-P-2C Room, October 27, 2008

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Final Safety Analysis Report, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two partial system walkdown samples as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

On October 2, 2008, the inspectors performed a complete system alignment inspection of the Division 1 emergency diesel generator to verify the functional capability of the system. The inspectors selected this system because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors

reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Division 1 standby service water system pump house, October 1, 2008
- Division 1 emergency diesel generator room, October 1, 2008
- Turbine generator building 471 foot level lube oil reservoir, October 17, 2008
- Reactor building 525 foot level emergency chiller, October 17, 2008

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire-protection inspection samples as defined by Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Quarterly Resident Inspector Review (71111.11)

a. Inspection Scope

On November 24, 2008, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

.2 Biennial Review by Regional Specialists (71111.11B)

The licensed operator requalification program involves two training cycles that are conducted over a 2-year period. In the first cycle, the annual cycle, the operators are administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination. The inspectors reviewed the results of the biennial cycle.

The inspectors completed one sample of the biennial licensed operator requalification program.

a. Inspection Scope

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed both the operating tests and written examinations, and observed ongoing operating test activities.

The inspectors interviewed five licensee personnel, consisting of two operators, two instructors, and a training supervisor, to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written examinations and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included seven job performance measures and two scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content. The inspectors also reviewed medical records of 7 licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for 9 operators.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analysis into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review committee meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors", Revision 9, Supplement 1, and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity and existing logs of simulator deficiencies. The inspectors also reviewed results of simulator transient testing which compared actual plant data with performance data from the plant specific simulator.

On December 23, 2008, the licensee informed the lead inspector that 21 of 23 reactor operators and 22 of 22 senior reactor operators passed the biennial written examination. The individuals that failed were being remediated and retested. Seven crews were examined on the simulator and six of the seven crews passed. Three individuals of the failed crew also failed the dynamic portion of the operating test. The individuals and the crew were remediated, retested, passed and returned to shift duty.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- Condition Report 186820, Division 1 emergency diesel generator fuel leak, October 27, 2008
- Condition Report 187932, Failed maintenance and test equipment identified during implementation of Procedure ISP-CMS-X310, "Division 1 Drywell/Suppression Pool Temperature Monitoring Channel Calibration," October 28, 2008

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR Part 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR Part 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR Part 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR Part 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

Introduction. The inspectors identified a noncited violation (NCV) of Technical Specification 5.4.1.a (Procedures) for Energy Northwest's failure to follow site procedures during an overhaul of the Division 1 emergency diesel engine in 2003. Specifically, care was not exercised to protect diesel fuel oil injector line seating surfaces from mechanical damage during maintenance. In addition, the procedure was inadequate, in that it required an inspection but contained no acceptance criteria. As a result, seating surfaces of diesel fuel oil injector lines were damaged during maintenance and fuel oil leaked into the lubricating oil system during emergency diesel generator operation. The leakage was not immediately noticed during postmaintenance testing, but was identified substantially later during lubricating oil viscosity testing (2008). Fuel leakage into the lubricating oil system has rendered emergency diesel generators inoperable at other sites and the vendor stipulated that this condition can result in crankcase explosions and severe damage. The licensee's initial review of the issue failed to identify the inadequate inspection requirements. Further, the licensee did not follow the vendor manual recommendation of replacing the lubricating oil filter until identified by the inspectors. Energy Northwest entered the issues into the corrective action program as Condition Report 187580.

Description. On June 6, 2008, Energy Northwest identified that the Division 1 emergency diesel generator lubricating oil viscosity had decreased by 9 percent (Condition Report 182276). The licensee initiated Work Order 01155031 to effect repairs. On October 1, 2008, two fuel oil leaks were identified at the fuel injector connection on cylinder numbers 8 and 20 (Condition Report 186820). The damaged fuel injector lines were replaced with new lines. After repairs were made, the condition reports and the work order were closed without further action.

Leaking fuel oil into the lubricating oil system has resulted in operability concerns at other facilities. For example, in 1984 at Surry Unit-1, a fuel line joint leaked at a connector in a diesel engine which resulted in a 40 percent fuel oil dilution of the lube oil. Subsequently, the turbocharger trust bearings failed causing a small crankcase explosion and a fire in the turbocharger area. In addition, at Clinton Power Station an emergency diesel generator was declared inoperable on August 9, 1999 after discovery of a fuel oil leak in the diesel engine lube oil.

On October 7, 2008, the resident inspectors questioned Energy Northwest on how the injectors could have been damaged. Procedure PPM 10.20.12, "Diesel Generator Engine Overhaul," steps 6.2.6 and 6.5.5 stated in part, to exercise care not to scratch or nick the spherical seats on the fuel lines when removing and reinstalling the fuel line assemblies from the cylinder. In addition, the procedure required an inspection prior to installation. In response to the inspectors' questions, Energy Northwest initiated Condition Report 187580 on October 20, 2008, to evaluate the condition. Energy Northwest subsequently determined that the leaking fuel injector lines were most likely damaged during disassembly in 2003, allowing fuel oil to leak past the spherical seating surfaces and into the diesel lubricating oil. The licensee's evaluation stated, in part:

- Diesel fuel oil injector lines that were removed from cylinder #8 and cylinder #20 appeared to have flat spots on spherical seats.

- The exact event that caused the flat spot damage was not known, but these two fuel line assemblies could have been damaged during a 2003 maintenance where all 20 fuel injectors were replaced as part of the diesel's 12 year maintenance overhaul.

In response to the above, Energy Northwest planned to revise the diesel engine maintenance procedures to inspect for flat spots, nicks or deep scratches on the spherical seats of the diesel fuel oil injector lines prior to re-installation.

In addition, the inspectors identified that the licensee had not planned to replace the lubricating oil filter, which was recommended by the manufacturer (in Maintenance Instruction MI 1760, "Lubricating Oil for Diesel Engines") when lubricating oil viscosity decreased. Work request WR 29070389 was initiated on October 27, 2008 to replace the lubricating oil filters.

The inspectors also noted that lubricating oil viscosity percentage did not drop below levels that could have resulted in crank case explosions and/or severe engine damage as described in Maintenance Instruction MI 1760 while the diesel engine was in operation.

Analysis. The failure to follow a maintenance procedure, the failure to have acceptance criteria for the fuel injector inspections, and the failure to properly evaluate the leaking fuel oil injector so that the inadequate procedure was corrected were performance deficiencies. The finding was more than minor because, if left uncorrected, it could result in a more significant safety concern. Specifically, postmaintenance testing may not immediately identify fuel injector damage following maintenance and the damage could render the emergency diesel generator inoperable during event response. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the finding was of very low risk significance (Green) because it was a qualification deficiency confirmed not to result in a loss of emergency diesel generator operability. While the procedural deficiencies were aged, the licensee missed a recent opportunity in 2008 to identify the problems because they repaired the diesel but did not evaluate the adverse condition. This issue had a crosscutting aspect associated with Problem Identification and Resolution (corrective action program component), in that the licensee failed to thoroughly evaluate the problem such that the resolution addressed the cause [P.1(c)].

Enforcement. Technical Specification 5.4.1.a requires, in part, that the applicable procedures recommended in Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, be established and implemented. Regulatory Guide 1.33, Section 9.a, recommends procedures for maintenance that can affect the performance of safety-related equipment. Procedure PPM 10.20.12, Revision 14, Section 6.2.6 specified "Exercising care not to scratch or nick the spherical seats on the lines, remove the fuel line assembly from the cylinder... store fuel lines to protect from mechanical damage." In addition, Section 6.10.4 stated, "Taking care not to damage the spherical seats of the fuel lines, inspect clean and connect the fuel lines from the manifold to the injector." Contrary to the above, care was not exercised to prevent scratching or nicking the spherical seats. In addition, the procedure was inadequate, in that the step to "inspect" the fuel lines and spherical seats included no acceptance criteria for the inspection. Because this finding was of very low safety significance and was entered

into Energy Northwest's corrective action program as Action Request/Condition Report 187580, this violation is being treated as an NRC identified noncited violation, consistent with Section VI.A.1 of the Enforcement Policy: NCV 05000397/2008005-01, "Failure to follow procedures during an overhaul of emergency diesel engine 1A1 and inadequate procedure.

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

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Reactor core isolation cooling system out of service, Division 2 standby gas treatment system inoperable and reactor building siding work in progress, October 23, 2008
- Work Order 01145952, Accumulator replacement for Hydraulic Control Unit HCU-5435; October 31, 2008

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR Part 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two maintenance risk assessments and emergent work control inspection samples as defined by Inspection Procedure 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Action Report 187457, Containment instrument air pressure Switch CIA-PS-22B Out of Calibration, October 16, 2008

- Condition Report 187784, reactor core isolation cooling system Valve RCIC-V-8 operator error during maintenance, October 23, 2008
- Condition Report 187521, reactor recirculation control Valve RRC-V-23B indicates intermediate, November 4, 2008
- Condition Report 188338, residual heat removal system Valve RHR-V-209 indicated leakage, November 5, 2008
- Condition Report 188838, main generator lockout relay failed, November 16, 2008

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and the Final Safety Analysis Report to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five operability evaluations inspection sample(s) as defined in IP 7111.15-05

b. Findings

No findings of significance were identified.

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (7111.17)

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee's implementation of evaluations performed in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments," and changes, tests, experiments, or methodology changes that the licensee determined did not require 10 CFR 50.59 evaluations. The inspection procedure requires the review of 6 to 12 licensee evaluations required by 10 CFR 50.59, 12 to 25 changes, tests, or experiments that were screened out by the licensee and 5 to 15 permanent plant modifications.

The inspectors reviewed seven evaluations required by 10 CFR 50.59; 22 changes tests and experiments that were screened out by licensee personnel; and 10 permanent plant modifications. Document numbers of the evaluations, changes, and notifications reviewed are listed in the attachment.

The inspectors verified that when changes, tests, or experiments were made, that evaluations were performed in accordance with 10 CFR 50.59 and that licensee personnel had appropriately concluded that the change, test or experiment can be accomplished without obtaining a license amendment. The inspectors also verified that safety issues related to the changes, tests, or experiments were resolved. The inspectors reviewed changes, tests, and experiments that licensee personnel determined did not require evaluations and verified that the licensee personnel's conclusions were correct and consistent with 10 CFR 50.59. The inspectors also verified that procedures, design, and licensing basis documentation used to support the changes were accurate after the changes had been made.

In the inspection of modifications the inspectors verified that supporting design and license basis documentation had been updated accordingly and was still consistent with the new design. The inspectors verified that procedures, training plans and other design basis features had been adequately accounted for and updated. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of 1 sample as defined in Inspection Procedure 71111.17-04.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following temporary plant modifications to verify that the safety functions of important safety systems were not degraded:

- Temporary Modification TMR 08-010, installation of monitor on reactor recirculation control Valve RRC-V-23B, October 23, 2008

The inspectors reviewed the temporary modification and the associated safety evaluation screening against the system design basis documentation, including the Final Safety Analysis Report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration was consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Work Order 01155365, Reactor core isolation cooling system postmaintenance test, October 23, 2008
- Work Order 01155148, Average power range monitor Channel D calibration due to spiking, October 24, 2008
- WO 01141975, Replaced geared limit switch on reactor recirculation control Valve RRC-V-23B, November 18, 2008

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the Final Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three post maintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the maintenance outage, conducted November, 15 thru 20, 2008, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of

defense-in-depth. During the maintenance outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below.

- Configuration management, including maintenance of defense-in-depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service.
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error.
- Status and configuration of electrical systems to ensure that technical specifications and outage safety-plan requirements were met, and controls over switchyard activities.
- Monitoring of decay heat removal processes, systems, and components.
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.
- Controls over activities that could affect reactivity.
- Maintenance of secondary containment as required by the technical specifications.
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing.
- Licensee identification and resolution of problems related to maintenance outage activities.

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one refueling outage and other outage inspection sample as defined in Inspection Procedure 71111.20-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the Final Safety Analysis Report, procedure requirements, and technical specifications to ensure that the four surveillance activities listed below

demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and basis for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints.

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- Work Order 01154591, High pressure core spray diesel generator speed switch test; October 9, 2008
- Procedure ISP-RCIC-Q901, "Reactor Core Isolation Cooling System Isolation on Steam Supply Flow High DIV 1 - Channel Functional Test/Channel Check," Work Order 01155366, October 20, 2008
- Procedure OSP-RCIC-IST-Q702, "Reactor Core Isolation Cooling System Valve Operability Test," WO 01155362, October 20, 2008
- Procedure OSP-RCIC/IST-Q701, "Verify Cold Quick Start [of Reactor Core Isolation Cooling System];" WO 01155411, October 23, 2008

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four samples including: one inservice test, and three surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on October 14, 2008, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the postevolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and

addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of July 2008 through December 2008, although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the

licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute a single semi-annual trend inspection sample.

b. Findings

No trends of significance were identified.

40A3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report (LER) 05000397/2008-001-00; Reactor Scram due to Failed Compression Fitting

This LER documents the automatic reactor scram that occurred on August 21, 2008, due to electro-hydraulic fluid loss caused by a failed compression fitting in the digital electro-hydraulic system. Energy Northwest determined the cause of the event to be less than adequate installation and inspection/test requirements for the digital electro-hydraulic system compression fitting installation. See inspection report 05000397/2008002 for a discussion of a self-revealing finding associated with this issue. The inspectors completed a review of the LER and did not identify any other violations of regulatory requirements or findings. This LER is closed.

.2 (Closed) LER 05000397/2007-002: Discrepancy in Special Nuclear Material Inventory

During preparations for the NRC's Materials Control and Accounting Program inspection (April 16-19, 2007), the licensee wrote an LER documenting a discrepancy in special nuclear material (SNM) inventory records. Licensee documentation revealed that fuel particles, estimated to be less than 1 gram, were potentially lost and could not be confirmed as being located in the spent fuel pool. Inspectors reviewed the licensee event report, NRC Event Notification 43344 issued pursuant to 10 CFR 20.2201 and 10 CFR 74.11, and the licensee's corrective action report (CR-2007-03054), which documented this event and its causes. The inspectors verified that the cause of the event was identified, radiological consequences were assessed, and corrective actions were reasonable. The licensee concluded that fuel particles had fallen out of a bucket into the bottom of the spent fuel pool and because of the amount of debris at the bottom of the pool recovery was practically impossible.

The enforcement for this finding was documented in Section 40A5 of inspection report 05000397/2007201. The inspectors concluded that this issue was a minor violation of NRC requirements. This LER is closed.

40A5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with licensee

security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

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

b. Findings

No findings of significance were identified.

.2 Temporary instruction (TI) 2515/176 Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

a. Inspection Scope

On December 11, 2008, the inspectors completed an inspection in accordance with Temporary Instruction 2515/176, "Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing."

b. Findings

No findings of significance were identified.

.3 (Closed) Unresolved Item 05000397/2008002-03; Operability of Residual Heat Removal System C During the Suppression Pool Mixing Mode of Operation

a. Inspection Scope

The inspectors had identified a potential concern regarding Energy Northwest's basis for declaring residual heat removal system Train C operable while in the suppression pool mixing mode of operation (See NRC Inspection Report 05000397/2008002).

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR 50, Appendix B, Criterion III (Design Control) for the failure to properly translate the design basis of the facility into procedures. Specifically, when the residual heat removal system, Trains A, B or C, were used in the suppression pool cooling or mixing modes of operation, the trains were vulnerable to water hammer events that could challenge train operability during a loss of coolant accident coincident with a loss of offsite power.

Description. The NRC had provided information addressing similar concerns to the industry in NRC Information Notice 87-10, "Potential for Water Hammer During Restart of Residual Heat Removal Pumps." If a train of residual heat removal was utilized in the suppression pool cooling mode of operation when a design basis accident occurred (large break loss of coolant accident coincident with a loss of offsite power), the startup and realignment of the train to the low pressure coolant injection mode of operation could result in a significant water hammer on the system and possibly challenge train operability. The inspectors determined that Train C was also susceptible to the same phenomena when it was used for suppression pool mixing (Train C does not have a heat exchanger and can not be used for suppression pool cooling).

The Final Safety Analysis Report, Section 7.3.1.1.5 discussed the use of the residual heat removal system, Trains A and B in the suppression pool cooling mode of operation. The report stated, in part:

The suppression pool cooling mode is also used during reactor core isolation cooling operation and safety relief valve testing.

The usage as noted above was expected to be very infrequent. The Final Safety Analysis Report did not discuss the use of Train C in the suppression pool mixing mode or the use of Trains A and B for routine cool down of the suppression pool because of leaking safety relief valves.

Although a loss of coolant accident coincident with a loss of offsite power was a low probability event, the licensee was still required to ensure that the residual heat removal trains could perform their safety function while being used for the suppression pool cooling and suppression pool mixing modes. The technical specification definition for OPERABLE is:

A system, subsystem, division, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety functions(s).

Since system response to a loss of coolant accident coincident with a loss of offsite power was a safety function, the licensee was required to verify that the trains could perform their safety functions during the suppression pool cooling and mixing modes of operation or declare the trains inoperable. Guidance for operability assessments are contained in Regulatory Issue Summary 2005-20, "Revision to Guidance Formerly Contained in NRC Generic Letter 91-18, Information to Licensees Regarding Two NRC Inspection manual Sections on Resolution of Degraded and nonconforming Conditions and on Operability."

In response to NRC Questions, the licensee entered the condition into their corrective action program as Condition Report 182958 to evaluate the use of residual heat removal trains in suppression pool cooling or suppression pool mixing mode of operation. The licensee determined that there was no design basis supporting the use of the systems in these modes. Consequently, the licensee modified Procedure SOP-RHR-SPC, "Suppression Pool Cooling/Spray/Discharge/Mixing," Revision 4 to include requirements to declare a train utilized for suppression pool cooling or mixing inoperable during those modes of operation.

In 1993, the NRC gave the licensee Severity Level III notice of violation with a \$75,000 civil penalty because residual heat removal Trains A and B were used simultaneously in the suppression pool cooling mode of operation, which was not permitted by procedure (See November 10, 1993 letter from the NRC to the Washington Public Power Supply System, EA 93-191).

Analysis. The failure to properly translate design basis information into site procedures was a performance deficiency. The finding was more than minor because, if left uncorrected, it would lead to a more significant safety concern. Specifically, the licensee could use multiple trains of residual heat removal in the suppression pool cooling and mixing modes of operations, which could make them incapable of performing their safety functions during a loss of coolant accident coincident with a loss of offsite power. Using

the Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the issue screened as having very low safety significance (Green) because the finding: 1) was a design or qualification deficiency that could result in loss of operability; 2) did not involve an actual loss of system safety function; 3) did not result in a loss of a single train for greater than the technical specification allowed outage time; 4) did not result in a loss of safety function of one or risk significant trains of equipment for more than 24 hours; and 5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

Enforcement. 10 CFR 50, Appendix B, Criterion III, requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, the licensee failed to assure that the design basis was properly translated into Procedure SOP-RHR-SPC, in that operation of the Train A, B and C residual heat removal system in the suppression pool cooling or suppression pool mixing modes while in Modes 1, 2 or 3 was not evaluated in the design basis but the procedure permitted the operation without declaring the trains inoperable. Because the licensee entered the condition into their corrective action program as Condition Report 182958, this violation is being treated as an NRC identified noncited violation, consistent with Section VI.A.1 of the Enforcement Policy: NCV 05000397/2008005-02; "Failure to translate design basis into procedures for residual heat removal operating modes."

b. Findings

No findings of significance were identified.

4OA6 Meetings

Exit Meeting Summary

On December 9, 2008, the inspectors presented the inspection results to Mr. D. Atkinson, Vice President, Nuclear Generation, and other members of his staff of the results of the Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications inspection. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

The inspectors briefed Mr. C. Moon, Training Manager, and other members of the licensee's staff of the results of the licensed operator requalification program inspection on December 14, 2008. The licensee acknowledged the findings presented. After final review of the overall biennial requalification examinations the lead inspector conducted an exit with the Operations Training Supervisor on December 29, 2008. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 8, 2009, the inspectors presented the inspection results to Mr. S. Oxenford, Vice President, Nuclear Generation, and other members of the licensee staff. On February 10, 2009,

the senior resident inspector conducted a final exit meeting with Mr. G. Cullen and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Energy Northwest Personnel

J. Parrish, Chief Executive Officer
D. Atkinson, Vice president, Nuclear Generation
G. Cullen, Manager, Regulatory Programs
B. Boyum, Assistant General Manager, Engineering
J. Brower, Mechanical Design Supervisor, Design Engineering
J. Dittmer, Manager, Design Engineering
J. Frisco, General Manager, Engineering
S. Gambhir, Vice President, Technical Services
R. Garcia, Licensing Engineer, Licensing
G. Hendrickson, Assistant Operations Manager
S. Jerrow, Operations Training Supervisor
W. LaFramboise, System Engineering Manager
T. Lynch, Plant General manager
G. Strong, Electrical and I & C Design Supervisor, Design Engineering
R. Torres, Quality Manager, Quality
C. Whitcomb, Vice President, Organizational performance and Staffing

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000397/2008005-01	NCV	Failure to follow procedures during an overhaul of emergency diesel engine 1A1 (Section 1R12)
05000397/2008005-02	NCV	Failure to translate design basis into procedures for residual heat removal operating modes (Section 4OA5.3)

Closed

05000397/2008002-03	URI	Operability of Residual Heat Removal System Pump RHR-P-2C During the Suppression Pool Mixing Mode of Operation (Section 1R15)
05000397/2008-001-00	LER	Reactor Scram due to Failed Compression Fitting (Section 4OA3.1)
05000397/2007-002-00	LER	Discrepancy in Special Nuclear Material Inventory (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED

Section 1RO1: Adverse Weather

SOP-COLDWEATHER-OPS; Cold Weather Operations; Revision 10

Section 1RO4: Equipment Alignment

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
M524-1	Flow Diagram Standby Service Water System, Reactor, Radwaste, Diesel Generator Buildings and Yard	Revision 112
M512-1	Flow Diagram Diesel Oil & Miscellaneous Systems Diesel Generator Building	Revision 41

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SOP-SW-STBY	PLACING STANDBY SERVICE WATER IN STANDBY STATUS	REVISION 1
SOP-DG1-STBY	Emergency Diesel Generator (DIV 1) Standby Lineup	REVISION 7

Section 1RO5: Fire Protection

DOCUMENTS

<u>TITLE</u>	<u>REVISION / DATE</u>
Columbia Generating Station Pre-Fire Plans	Revision 3
Columbia Generating Station Final Safety Analysis Report; Appendix F	Amendment 57
National Fire Protection Association NFPA-10	1984 Revision

Section 1R11: Licensed Operator Requalification Program

Columbia Generating Station Simulator Examination; LR001468; Dated November 10, 2008

Crew Evaluation Summary; Scenario LR001468; Dated December 12, 2008

Scenarios

Dynamic Exam Scenario, LR001892, Revision 0, "Reactor Core Isolation Cooling Trip; Loss of SM-3; Loss of Vacuum; Scram to trip main turbine; Hydraulic Anticipated Transient without Scram"

Dynamic Exam Scenario, Revision 3, "Loss of High Pressure Feed; Compressed Air System Failure; Main Steam Isolation Valve Isolation; on Level"

Job Performance Measures

Job Performance Measure, LR000165, Revision 12, "Start 'B' Standby Gas Treatment for Drywell Venting"

Job Performance Measure, LR0001513; Revision 2, "Complete Classification Notification Based on Additional Protective Action Recommendations"

Job Performance Measure, 000235; Revision 12, "Reopen Main Steam Isolation Valves to Reestablish Main Condenser as Heat Sink"

Job Performance Measure, LR000218, Revision 9, "Bypass Reactor Core Isolation Cooling Trips and Isolations"

Job Performance Measure, LR001895, Revision 3, "Parallel Division 1 Diesel Generator Locally"

2008 LORQ Annual Examination Sample Plan, Revision 0

Remediation Plans and Records for the two year Requalification training period

SWO-TQS-02; Revision 5, "Training Performance Review Committee Charter"

TDI-02, Revision 5, "Systematic Approach to Training"

Personnel Qualification Data, dated 12/8/2008

CAP Documents Reviewed (Action Request)

072682	178881	183021	186772
178385	182858	184366	263201

2008 Training Feedback

Cycle 08-01	Cycle 08-03	Cycle 08-05
Cycle 08-02	Cycle 08-04	

Columbia Training Self-Assessment Report for Operations and Engineering Training Programs; SA-2008-0008; A/R 68256; Conducted June 2 - 6, 2008.

Section 1R12: Maintenance Effectiveness

DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
AR/CR 186820	Division 1 Emergency Diesel Generator Fuel Leak	October 27, 2008
AR/CR 187932	Failed Maintenance and Test Equipment Identified During ISP-CMS-X310;	October 28, 2008

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

WO 01145952	Replacement of Accumulator for Hydraulic Control Unit HCU 5435	October 31, 2008
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Section 1R15: Operability Evaluations

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
AR/CR 187457	Containment Instrument Air Pressure Switch CIA-PS-22B Out of Calibration	October 16, 2008
AR/CR 187784	Reactor Core Isolation Cooling Valve RCIC-V-8 Operator Error During Maintenance	October 23, 2008
AR/CR 187521	Reactor Recirculation Control Valve RRC-V-23B, Indicates Intermediate	November 4, 2008
AR/CR 188338	Residual Heat Removal System Valve RHR-V-209 Indicated Leakage	November 5, 2008
AR/CR 188838	Main Generator Lockout Relay Failed	November 16, 2008
EC 7604	E-RLY-301X1UOA Relay Failure Evaluation	November 18, 2008

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
SWP-IRP-01	"Plant Operation Committee"	Revision 14
SWP-PRO-02	"Preparation, Review, Approval and Distribution of Procedures"	Revision 19
DES-2-1	"Plant Design Changes"	Revision 25
DES-2-10	"Minor Alteration"	Revision 5
OSP-RHR/IST-Q702	"Residual Heat Removal Loop A Operability Test"	Revision 27
OSP-LPCS/IST-Q702	"Low Pressure Spray Injection System Operability Test"	Revision 23
PPM 3.1.10	"Operating Data and Logs"	Revision 57
PPM 2.8.6	"Condensate Storage and Transfer System"	Revision 20
SWP-LIC-02	"Licensing Basis Impact Determination"	Revision 8
USA 50.59	"10 CFR 50.59 Resource Manual"	Revision 3
ABN-FPC-ASSIST	"Fuel Pool Cooling Assist"	Revision 5
PPM-10.3.21	"Reactor Pressure Vessel Disassembly"	Revision 22, 25
PPM-10.3.22	"Reactor Pressure Vessel Reassembly"	Revision 23
SOP-RFT-OPS	"Reactor Feedwater Turbine Operations"	Revision 3
SOP-FWH-Isol/Maint	"Feedwater Heater Isolation and Maintenance"	Revision 1
4.840.A1	"840.A1 Annunciator Panel Alarm"	Revision 9

Evaluations

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
5059-06-0003	Digital Electro-hydraulic Control System Replacement	Revision 1
5059-06-0004	New Accident Scenario	Revision 0
5059-07-0002	Residual Heat Removal/Fuel Pool Cooling Assist Alternate Cooling Paths	Revision 0
5059-07-0003	Lost Brush in the Reactor Pressure Vessel	Revision 0

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
5059-08-0001	Increase the Heat Load in Secondary Containment Due to ISFSI Cask	Revision 0
5059-08-0003	Replace Feedwater Turbine Control System	Revision 0
5059-08-0004	High Pressure Core Spray Miniflow Bypass Flow	Revision 0

50.59 Screens

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
5059SCREEN-06-0185	Replacement of Gamma Portal Monitors	11/14/06
5059SCREEN-07-0140	Raising Condensate Storage Tank Low Level Limit	06/26/07
5059SCREEN-06-0188	Raising Condensate Storage Tank Low Level Limit	11/03/06
5059SCREEN-07-0108	Changing Allowable Oil Leakage Rates for Residual Heat Removal, Low Pressure Core Spray and High Pressure Core Spray Pumps	05/30/07
5059SCREEN-07-0202	Using 15 Minute Average Core Thermal Power	11/28/07
5059SCREEN-07-0072	Temporarily Install House Fans to Direct Air Flow to Transformers E-TR-IN/2 and E-TR-IN/1	4/12/07
5059SCREEN-06-0194	Disconnects for Residual Heat Removal System Valves RHR-V-8 and RHR-V-9 may be opened when transferring power supplies	01/02/07
5059SCREEN-06-0189	De-icer pumps in both spray ponds	11/08/06
5059SCREEN-06-0154	Replacement of the Reactor Recirculation Motor RRC-M-P/1A	05/23/07
5059SCREEN-07-0213	Furmaniting Reactor Feedwater Valve RFW-V-110A	01/03/08
5059SCREEN-08-0067	Weight Difference in replacement motor for High Pressure Core Spray pump	07/15/08
5059SCREEN-08-0085	Graphite pressure seal gasket in Reactor Core Isolation Cooling Valve RCIC-V-22	04/30/08
5059SCREEN-06-0210	Low flow alarm setpoint for SW-FIS-9 lowered	11/14/06
5059SCREEN-07-0031	Install two additional columns on the 441 ft. turbine deck to provide support	02/16/07

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
5059SCREEN-07-0020	Closing stroke time high limit for control rod drive Valves CRD-V-11 and CRD-V-180 changed	01/23/07
5059SCREEN-07-0062	Update Final Safety Analysis Report table 8.3-1 Emergency Diesel Generator Loading	05/09/07
5059SCREEN-07-0059	Low alarm setpoint for normal Reactor Building Differential Pressure changed	03/29/07
5059SCREEN-07-0033	New Main Steam Line Plugs	03/14/07
5059SCREEN-07-0119	Presence of Foreign Material in the Reactor Pressure Vessel	06/12/07
5059SCREEN-06-0003	Digital Electro-hydraulic Control System Replacement	Revision 1
5059SCREEN-08-0003	Replace Reactor Feedwater Turbine Control System	Revision 0
5059SCREEN-07-0003	Lost Brush in Reactor Pressure Vessel	Revision 0
5059SCREEN-08-0004	Accept-as-is High Pressure Core Spray Minflow Bypass Flow Valve HPCS-V-12	Revision 0
5059SCREEN-06-0209	Residual Heat Removal Pump Tagging	01/24/07
5059SCREEN-07-0175	Relocate High Pressure Core Spray Air Start Battery HPCS-B3-2	11/14/07
5059SCREEN-07-0005	Addition of 2 Low Pressure Alarm Switches RFP	01/05/07
5059SCREEN-07-0214	Furmanite Valve Reactor Feedwater Valve RFW-V-110B	01/03/08
5059SCREEN-08-0037	Implement Comp Measures for the Damaged Turbine Building	02/29/08
5059SCREEN-08-0022	Increase the Heat Load Assumed in the Secondary Containment Drawdown Analysis	02/25/08
5059SCREEN-07-0063	Implementation of Minor Alteration MALT 05573	04/30/07
5059SCREEN-07-0118	Two Bolt Heads Dropped in the Spent Fuel Pool	08/17/07
5059SCREEN-07-0041	Convert MS-1000N from Sway Struts to a Snubber Design	03/15/07
5059SCREEN-07-0205	Minimum Voltage on Emergency Buses SM-7 and SM-8	09/13/07
5059SCREEN-05-0066	Document Change to Support Installation of	05/10/07

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
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Spare High Pressure Core Spray Pump

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
CMR 4841	"Replace Calculation E/I-02-91-1011"	Revision 0
CMR 5571	"Revision to Calculation E/I-02-91-1011"	Revision 0
ME-02-05-01	Calculation, "Determination of Acceptable Oil Leak Rates"	Revision 1

Engineering Changes

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EC 4747	Minor Modification Change, "Replace High Pressure Core Spray Pump Motor HPCS-M-P/1"	Revision 0
EC MALT 05386	"Install new GEM-5 Gamma Portal Monitors and Add Shielding for the 24" Cond (20)-1 Line in the Generation Services Building Basement"	11/14/06
EC MALT 6586	"Replacement of Division II Emergency Diesel Generator K1 Relay (DG-RLY-DG2/SDR/K1)"	Revision 0
EC 4744	Condensate Booster Pump Motor Replacement	Revision 0
EC 5769	Allow Helical Coil Inserts for Main Steam Relief Valve Inlet Flange Repair	Revision 0
EC 5405	Modify RWM Software to Include Hot & Slow Control Rod Evaluation	Revision 0
EC-4661	Upgrade RFP Trip Logic & Stagger RFP Low Suction Pressure Trips	Revision 0
EC-4559	Upgrade Trip Logic for the Reactor Feedwater from Single Point to 2 of 3 Logic	Revision 0
EC-4787	Replace Radiation Monitors with New Digital Units	03/13/07
EC-6495	Relocate High Pressure Core Spray Air Start Battery HPCS-B3-2	11/20/07
EC-5521	Main Steam C and D Hanger Support Modification	Revision 0

Other Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
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<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
LDCN-FSAR-07-002	Licensing Document Change Notice	4/27/07
WO 01106765 01	"MS-RPV-3 Disassemble Reactor"	5/20/07
WO 01123179 01	"MS-RPV-3 Reassembly"	6/14/07
SA-2006-0023	"50.59 Self Assessment"	6/1/06
SA-2007-0137	"Effectiveness Review of SA-2006-0023, 50.59 Program Assessment"	Revision 1
AR-SA-00074808	"Effectiveness Review, 20 August 2008 of SA-2006-0023, 50.59 Program Assessment"	Revision 1
SA 177007	"Category C Focused Self-Assessment, FCRs Issued in Support of R-18 Activities"	Revision 0

Corrective Action Documents

AR 00044330	AR 00051297	AR 00177571	AR 00189268	AR 00186369
AR 00050457	AR 00053702	AR 00177572	AR 00189269	AR 00189460
AR 00050431	AR 00177046	AR 00188648	AR 00189270	AR 00189540

Section 1R18: Plant Modifications

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
TMR 08-010	Installation of Monitor on Reactor Recirculation Control Valve RRC-V-23B;	October 23, 2008

Section 1R19: Postmaintenance Testing

DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
WO 01155365	Reactor Core Isolation Cooling Post Maintenance Operability Test	October 23, 2008
WO 01155148	Average Power Range Monitor D Calibrate Due to Spiking	October 24, 2008
WO 01141975	Replaced geared limit switch on Reactor Recirculation	November 18,

Section 1R18: Plant Modifications

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
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	Control Valve RRC-V-23B	2008
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Section 1R20: Refueling and Other Outage ActivitiesProcedures

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
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SOP-ENTRY-DW	Personnel Entry into Drywell	Revision 10
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OPS-CONT-Q101	Inside Primary Containment Integrity Verification	Revision 2
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TSP-CONT-B803	Primary containment Personnel Airlock Leak Rate Test	Revision 0
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SOP-CN-CONT- INERTING	Containment Inerting	Revision 5
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PPM 1.20.9	Forced Outage Planning and Preparation	Revision 0
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PPM 3.2.1	Normal Plant Shutdown	Revision 58
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PPM 1.20.6	Outage Management Qualification Management	Revision 3
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PPM 3.3.1	Reactor Scram	Revision 51
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SOP-RHR-SDC	Residual Heat Removal Shutdown Cooling	Revision 10
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PPM 9.3.6	Estimated Critical Position Calculation	Revision 1
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PPM 3.1.1	Master Startup Checklist	Revision 36
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PPM 3.1.2	Reactor Plant Startup	Revision 68
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EC 7593	Engineering Change – Reactor Recirculation Control Pump RRC-M-P/1A Internal and External Oil Leakage	November 17, 2008
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Dwg 4004D1207BE	Reactor Recirculation Motor Bearing Assembly	July 21, 1994
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Work Order

01141975 01

Section 1R22: Surveillance Testing

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
WO 01154591	High Pressure Core Spray Diesel Generator Speed Switch Test	October 9, 2008
ISP-Reactor Core Isolation Cooling-Q901	Reactor Core Isolation Cooling Isolation on Reactor Core Isolation Cooling Steam Supply Flow High DIV 1 - Channel Functional Test/Channel Check	16
OSP-Reactor Core Isolation Cooling-IST-Q702	Reactor Core Isolation Cooling Valve Operability Test	26
OSP-Reactor Core Isolation Cooling/IST-Q701	Verify Cold Quick Start	39

Work Orders

WO 01155362 WO 01155366 WO 01155411

Section 1EP6: Drill Evaluation

DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Training Drill	2008 Team A Training Drill	October 14, 2008
Training Drill Evaluation	2008 Team A Training Drill Evaluation	November 14, 2008

Section 40A2: Identification and Resolution of Problems

AR/CR 186692	AR/CR 186693	AR/CR 187521	AR/CR 187324
AR/CR 186689	AR/CR 186690	AR/CR 186685	AR/CR 186686
AR/CR 186687	AR/CR 186688	AR/CR 186784	AR/CR 186798
AR/CR 186801	AR/CR 186802	AR/CR 186803	AR/CR 186804
AR/CR 186805	AR/CR 186811	AR/CR 186695	AR/CR 186696
AR/CR 186929	AR/CR 186930	AR/CR 186813	AR/CR 186814
AR/CR 186815	AR/CR 186817	AR/CR 186864	AR/CR 186866
AR/CR 186867	AR/CR 186684	AR/CR 186818	AR/CR 186820
AR/CR 186824	AR/CR 186825	AR/CR 186826	AR/CR 186827
AR/CR 186828	AR/CR 186831	AR/CR 186834	AR/CR 186836
AR/CR 186837	AR/CR 186840	AR/CR 186842	AR/CR 186843
AR/CR 186844	AR/CR 186846	AR/CR 186847	AR/CR 186849
AR/CR 186851	AR/CR 186852	AR/CR 186853	AR/CR 186855
AR/CR 186857	AR/CR 186858	AR/CR 186860	AR/CR 186861
AR/CR 186862	AR/CR 186863	AR/CR 186931	AR/CR 186949
AR/CR 186950	AR/CR 186951	AR/CR 187165	AR/CR 187073
AR/CR 186782	AR/CR 186783	AR/CR 186953	AR/CR 186954
AR/CR 186955	AR/CR 186956	AR/CR 186957	AR/CR 186959
AR/CR 186960	AR/CR 186961	AR/CR 186962	AR/CR 186963
AR/CR 187007	AR/CR 187010	AR/CR 187219	AR/CR 187205
AR/CR 187192	AR/CR 187088	AR/CR 187210	AR/CR 187218
AR/CR 187197	AR/CR 187096	AR/CR 187238	AR/CR 187279
AR/CR 187291	AR/CR 187099	AR/CR 187133	AR/CR 187136
AR/CR 187503	AR/CR 187515	AR/CR 187362	AR/CR 187363
AR/CR 187378	AR/CR 187385	AR/CR 187447	AR/CR 187417
AR/CR 187433	AR/CR 187322	AR/CR 187453	AR/CR 187457
AR/CR 187460	AR/CR 187463	AR/CR 187464	AR/CR 187468
AR/CR 187476	AR/CR 187491	AR/CR 187577	AR/CR 187596
AR/CR 187598	AR/CR 187535	AR/CR 187640	AR/CR 187642
AR/CR 187643	AR/CR 187448	AR/CR 187551	AR/CR 187621
AR/CR 187625	AR/CR 187637	AR/CR 187762	AR/CR 187777
AR/CR 187786	AR/CR 187806	AR/CR 187808	AR/CR 187637
AR/CR 187642	AR/CR 187680	AR/CR 187684	AR/CR 187705
AR/CR 187705	AR/CR 187723	AR/CR 187726	AR/CR 187735
AR/CR 187750	AR/CR 187756	AR/CR 187661	AR/CR 187643
AR/CR 187655	AR/CR 187661	AR/CR 189347	AR/CR 189363
AR/CR 189395	AR/CR 189293	AR/CR 189308	AR/CR 189305
AR/CR 189139	AR/CR 189069	AR/CR 189070	AR/CR 189036
AR/CR 189069	AR/CR 189070	AR/CR 189077	AR/CR 189096
AR/CR 188976	AR/CR 188982	AR/CR 189010	AR/CR 189014
AR/CR 189023	AR/CR 189027	AR/CR 189029	AR/CR 189036
AR/CR 188889	AR/CR188906	AR/CR 188913	AR/CR 188833
AR/CR 188834	AR/CR 188836	AR/CR 188844	AR/CR 188846
AR/CR 188856	AR/CR 188803	AR/CR 188802	AR/CR 188801
AR/CR 188788	AR/CR 188789	AR/CR 188795	AR/CR 188805
AR/CR 188806	AR/CR 188808	AR/CR 188809	AR/CR 188811
AR/CR 188812	AR/CR 188815	AR/CR 188816	AR/CR 188818
AR/CR 188820	AR/CR 188821	AR/CR 188822	AR/CR 188782
AR/CR 188785	AR/CR 188770	AR/CR 188771	AR/CR 188782
AR/CR 188703	AR/CR 188709	AR/CR 188712	AR/CR 188720

AR/CR 188723	AR/CR 188739	AR/CR 188741	AR/CR 188747
AR/CR 188755	AR/CR 188756	AR/CR 188759	AR/CR 188760
AR/CR 188760	AR/CR 188761	AR/CR 188762	AR/CR 188640
AR/CR 188650	AR/CR 188651	AR/CR 188660	AR/CR 188663
AR/CR 188676	AR/CR 188690	AR/CR 188699	AR/CR 188538
AR/CR 188560	AR/CR 188575	AR/CR 188577	AR/CR 188580
AR/CR 188586	AR/CR 188587	AR/CR 188592	AR/CR 188599
AR/CR 188611	AR/CR 188621	AR/CR 188632	AR/CR 188641
AR/CR 188642	AR/CR 188645	AR/CR 188401	AR/CR 188406
AR/CR 188418	AR/CR 188424	AR/CR 188426	AR/CR 188441
AR/CR 188447	AR/CR 188450	AR/CR 188451	AR/CR 188454
AR/CR 188462	AR/CR 188481	AR/CR 188358	AR/CR 188382
AR/CR 188208	AR/CR 188224	AR/CR 188265	AR/CR 188338
AR/CR 188342	AR/CR 188294	AR/CR 188153	AR/CR 188161
AR/CR 188162	AR/CR 188167	AR/CR 188177	AR/CR 188187
AR/CR 188191	AR/CR 188194	AR/CR 188189	AR/CR 188153
AR/CR 188154	AR/CR 188148	AR/CR 188144	AR/CR 188018
AR/CR 188036	AR/CR 188041	AR/CR 188048	AR/CR 188068
AR/CR 188075	AR/CR 188027	AR/CR 187997	AR/CR 187941
AR/CR 187946	AR/CR 187968	AR/CR 187971	AR/CR 187976
AR/CR 187981	AR/CR 187987	AR/CR 187978	AR/CR 187994
AR/CR 187880	AR/CR 187888	AR/CR 187893	AR/CR 187910
AR/CR 187914	AR/CR 187931	AR/CR 185742	AR/CR 185744
AR/CR 183858	AR/CR 183413	AR/CR 179822	

Section 40A3: Event Follow-Up

Section 40A5: Other Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
TI 176	Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing	May 16, 2008
53-00-2-1	Instruction Manual Operation Maintenance Instruction and Parts Catalog for 4400 KW Generator	Sept. 8, 2000
HPCS DG-02E22 -07-2-2	Instructions and parts Manual for High Pressure Core Spray Diesel Generator	April 2, 1992
TSP-DG1-B502	Standby Diesel Generator DG1 Load Testing	Revision 7
TSP-DG2-B502	Standby Diesel Generator DG2 Load Testing	Revision 8

Section 40A5: Other Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
TSP-DG3-B502	Standby Diesel Generator DG3 Load Testing	Revision 7
OWA	Operations Aggregate Impact Index	October 14, 2008
DCRD	Daily Control Room Deficiencies	October 15, 2008
SPIP-SEC-49	Intrusion Detection System Operability	Revision 7

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SR 3.8.1	Columbia Generating Station Technical Specifications	Amendment 187

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
E/I-02-91-03	Division 1, 2 and 3 Diesel Generator Loading	Revision 14
E/I-02-87-07	Emergency Diesel Generator Power Factors	Revision 5

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Final Safety Analysis Report	Design Criteria – Structures, Components, Equipment, and Systems	Amendment 54