



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

April 23, 2009

EA-03-0214  
EA-07-199

Mr. Barry Allen  
Site Vice President  
FirstEnergy Nuclear Operating Company  
Davis-Besse Nuclear Power Station  
5501 North State Route 2, Mail Stop A-DB-3080  
Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION INTEGRATED INSPECTION  
REPORT 05000346/2009-002 AND CONFIRMATORY ORDER EA-07-199**

Dear Mr. Allen:

On March 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Davis-Besse Nuclear Power Station. The enclosed inspection report documents the inspection findings that were discussed on April 15, 2009, with you and other members of your staff.

The inspection 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.

Based on the results of this inspection, two NRC-identified findings and one self-revealed finding of very low safety significance were identified. Two of the findings involved a violation of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, 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, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Davis-Besse Nuclear Power Station. In addition, if you disagree with the cross-cutting aspect of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made 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), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Jamnes L. Cameron, Chief  
Branch 6  
Division of Reactor Projects

Docket No. 50-346  
License No. NPF-3

Enclosure: Inspection Report 05000346/2009-002  
w/Attachment: Supplemental Information

cc w/encl: The Honorable Dennis Kucinich  
J. Hagan, President and Chief  
Nuclear Officer - FENOC  
J. Lash, Senior Vice President of  
Operations and Chief Operating Officer - FENOC  
Manager - Site Regulatory Compliance - FENOC  
D. Pace, Senior Vice President of  
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D. Jenkins, Attorney, FirstEnergy Corp.  
Director, Fleet Regulatory Affairs - FENOC  
Manager - Fleet Licensing - FENOC  
C. O'Claire, State Liaison Officer, Ohio Emergency Management Agency  
R. Owen, Administrator, Ohio Department of Health  
Public Utilities Commission of Ohio  
President, Lucas County Board of Commissioners  
President, Ottawa County Board of Commissioners

B. Allen

-2-

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Enclosure

Letter to B. Allen from J. Cameron dated April 23, 2009

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION NRC INTEGRATED INSPECTION  
REPORT 05000346/2009-002 AND CONFIRMATORY ORDER EA-07-199

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-346

License No: NPF-3

Report No: 05000346/2009-002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Dates: January 1, 2009, through March 31, 2009

Inspectors: J. Rutkowski, Senior Resident Inspector  
A. Wilson, Resident Inspector  
J. Bozga, Reactor Inspector  
C. Brown, Reactor Inspector  
T. Go, Health Physicist  
P. Voss, Reactor Engineer  
G. Wright, Project Engineer

Approved by: Jamnes L. Cameron, Chief  
Branch 6  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000346/2009-002; 1/1/09 – 3/31/09; Davis-Besse Nuclear Power Station; Maintenance Effectiveness, Identification and Resolution of Problems

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings, two of which were considered as Non-Cited Violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 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 4, dated December 2006.

### **A. NRC-Identified and Self-Revealed Findings**

#### **Cornerstone: Initiating Events**

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50.65(a)(1), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," because the licensee did not establish appropriate corrective actions to address the potential for a transformer deluge initiation due to water hammer, and provide reasonable assurance that the system was capable of fulfilling its intended function and could return to monitoring under 10 CFR 50.65(a)(2). This issue was entered into the licensee's corrective action program.

The finding is more than minor. In accordance with IMC 0612, Appendix E, "Examples of Minor Issues," Section 7, Maintenance Rule a(1) and a(2) violations are not minor because they involve structures, systems, and components (SSCs) that have demonstrated some degraded performance or condition. The finding was determined to be of very low safety significance (Green) because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. (Section 1R12)

- Green. A finding of very low safety significance was self-revealed when improper installation of insulation surrounding the main turbine bearing number two oil deflector caused the main turbine to be taken off-line due to smoking insulation. An insulation blanket was blocking normal air flow used for cooling the oil deflector, causing oil to carbonize and clog the oil deflector screen. This issue was caused by the lack of procedural guidance for the installation and removal of insulation from the turbine. A corrective action was initiated to create a procedure which incorporates specific guidance for removing and installing the insulation.

This finding was more than minor because the issue is associated with the design control attribute of the initiating events cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability. The finding was not a loss of coolant accident (LOCA) initiator and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding was not considered an external event initiator. Therefore, the finding was determined to be of very low safety significance. (Section 4OA2)

## **Other Findings**

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that the licensee failed to have appropriate qualitative or quantitative measures to ensure that corrective actions specified in department directives and requirements of business practices were actually being accomplished. This contributed to further issues in the Chemistry Department with adherence to procedure requirements. This issue was entered into the licensee's corrective action program.

The finding was more than minor because if left uncorrected the finding could become a more significant safety concern and was a factor in subsequent procedure compliance and component mispositioning issues within the Chemistry department. The inspectors determined that the finding was not suitable for SDP evaluation because the failure to adhere to specified requirements or to have methods to determine adherence did not directly result in degraded or inoperable equipment. This finding was reviewed by Regional Management and determined to be of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not ensure adequate supervisory and management oversight of work activities of the technicians in the field and of personnel providing activities to upgrade procedures and standing orders. (H.4.c) (Section 4OA2)

## **B. Licensee-Identified Violations**

No violations of significance were identified.

## REPORT DETAILS

### Summary of Plant Status

The plant remained at 100 percent power during the inspection period, except for a brief period to support routine testing and to exercise control rod drives.

### REACTOR SAFETY

#### CORNERSTONE: INITIATING EVENTS, MITIGATING SYSTEMS, AND BARRIER INTEGRITY

##### 1R01 Adverse Weather Protection - Readiness For Impending Adverse Weather Condition – High Wind Conditions (71111.01)

###### a. Inspection Scope

Since high winds with potential thunderstorms, associated with a cold front that had spawned tornadoes, were forecast in the vicinity of the facility for February 11 and 12, 2009, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On February 11, 2009, the inspectors walked down the areas around the switchyard and under the high voltage lines from the plant to the switchyard, in addition to the licensee's emergency alternating current (AC) power systems, because their safety-related functions could be affected or required as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors' tours included looking for any loose debris that could become missiles during a tornado or high winds. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of corrective action program items (CAP) to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment.

This inspection constituted one readiness for impending adverse weather condition sample as defined in IP 71111.01-05.

###### b. Findings

No findings of significance were identified.

1R04 Equipment Alignment - Quarterly Partial System Walkdowns (71111.04)

a. Inspection Scope

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

- High Pressure Injection train 1 during maintenance outage on train 2 on January 6, 2009;
- High Pressure Injection train 2 during maintenance outage on train 1 on February 17, 2009;
- Motor Driven Feedwater Pump during AFW train 1 surveillance on March 18, 2009; and
- Decay Heat train 1 during planned maintenance on train 2 on March 31, 2009.

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 impact the function of the system, and therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, 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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

These activities constituted four partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection – Routine Resident Inspector Tours (71111.05)

a. Inspection Scope

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

- Emergency Core Cooling System Room 2 (Room 115, Fire Area A);
- Mechanical Penetration Room No. 1 (Room 208, Fire Area AB);
- Service Water Pump Room (Room 52, Fire Area BF);

- Low Voltage Switchgear and Battery Rooms (Rooms 428, 428A, 429, 429B, Fire Areas X, Y);
- Main Feed Pump Room (Room 252, Fire Area II);
- Mechanical Penetration Room No. 4 (Room 314, Fire Area A); and
- No. 2 Electrical Penetration Room (Room 427, Fire Area DF).

The inspectors reviewed areas to assess whether the licensee 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 (IPEEE) with later additional insights, their potential to impact equipment which 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 CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted seven quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program – Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On January 27, 2009, 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;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and

- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness - Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- Safety Feature Actuation System;
- Switchyard and Transformers; and
- Control Room Emergency Ventilation System.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in equipment or operability issues 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 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

Introduction: The inspectors identified a non-cited violation (NCV) of 10 CFR 50.65 (a)(1), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," because the licensee did not establish appropriate corrective actions for the switchyard/transformers system in a manner sufficient to provide reasonable assurance that the system was capable of fulfilling its intended function and could return to monitoring under 10 CFR 50.65(a)(2).

Description: The Davis-Besse Maintenance Rule Program Manual defines a functional failure for the switchyard/transformers system as a spurious actuation of the fire suppression deluge system for all 345 KV transformers. The reliability performance criteria of the switchyard/transformers allow one functional failure of the fire suppression system every five cycles. Consequences from an inadvertent deluge actuation include the possibility of the system to initiate a plant trip.

A functional failure occurred on April 6, 2003, when a short circuit actuated the solenoid coil for the hydrogen seal oil room deluge. The main transformer deluge is located on the same firewater feeder as the seal oil deluge system, and was mechanically agitated upon seal oil room initiation due to water hammer in the piping. Vibration was sufficient to break the latch engagement on main transformer deluge valve and initiate a main transformer deluge. This functional failure, coupled with a spurious fire suppression deluge actuation in 1997, caused the switchyard/transformers system to be classified maintenance rule (a)(1) due to exceeding the reliability performance criteria.

The maintenance rule (a)(1) action plan stated that the 345 KV transformer deluge valve assemblies should be replaced in order to ensure continued high levels of reliability. Specifically, the main and auxiliary 11 transformer deluge valves should be replaced during 14RFO (2006), and the startup 01 and startup 02 transformer deluge valves should be replaced during 15RFO (2008). However, the corrective actions in the (a)(1) action plan only listed the development of periodic maintenance for periodic replacement of the transformer deluge valve assemblies. The corrective actions did not address the susceptibility of the valve assemblies to inadvertently actuate the deluge system when mechanically agitated, as a result of a marginal design application. The switchyard/transformers system was returned to maintenance rule (a)(2) status in December 2006 without replacing the deluge valve assemblies. The design of the valves still left the station vulnerable to a deluge system inadvertent actuation.

A subsequent functional failure occurred on November 4, 2008, during deluge system testing of the startup 01 transformer. Upon initiation of the startup 01 transformer deluge test, plant staff observed violent shaking of the deluge system due to water hammer in the piping. The vibration was sufficient to inadvertently initiate the main transformer deluge system. The deluge system was immediately isolated and the main transformer was examined from a safe distance with no abnormal conditions noted.

Analysis: The inspectors determined that returning the switchyard/transformers system to 10 CFR 50.65(a)(2) status without completing appropriate corrective actions was a performance deficiency. The finding is more than minor. In accordance with IMC 0612, Appendix E, "Examples of Minor Issues," Section 7, Maintenance Rule a(1) and a(2) violations are not minor because they involve SSCs that have demonstrated some degraded performance or condition. The finding was evaluated by IMC 0609,

“Significance Determination Process,” Appendix A, using Attachment 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” Table 4a for the Initiating Events cornerstone. The finding was determined to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspectors did not identify a cross-cutting aspect associated with this finding because the concern was not indicative of current plant performance.

Enforcement: 10 CFR 50.65(a)(1), requires, in part, that the holders of an operating license monitor the performance or condition of SSCs within the scope of the rule as defined by 10 CFR 50.65(b), against licensee established goals, in a manner sufficient to provide reasonable assurance that such SSCs, are capable of fulfilling their intended functions. Such goals shall be established commensurate with safety. When the performance or condition of an SSC does not meet established goals, appropriate corrective action shall be taken.

Contrary to the above, the licensee did not take appropriate corrective actions to address the potential of a transformer deluge initiation due to water hammer before returning the switchyard/transformers system to (a)(2) status. Specifically, the licensee’s failure to take appropriate corrective action caused a repeat system functional failure on November 4, 2008. This issue was entered into the licensee’s corrective action program as CR 08-48956. Short-term corrective actions included inspection of the deluge valve for degraded hardware and revision of periodic deluge test procedures to ensure isolation of the deluge valves that are not being tested. A long-term corrective action is in place to obtain funding and implement a design change to replace the transformer deluge valves. Because this issue is of very low safety significance and is entered into the licensee’s corrective action program, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000346/2009002-01)

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

a. Inspection Scope

The inspectors reviewed the licensee'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:

- Scheduled work and risk assessments for the week of January 12, 2009, and January 19, 2009, which involved an operations evolution order to remove a gas void detected in the makeup flow test line piping;
- Scheduled work and risk assessments for the week of February 2, 2009, which involved multiple yellow risk scheduled surveillance activities and included the need for decisions on control room ventilation system damper inspections and potential impacts due to problems with the refrigeration compressor in control room emergency ventilation system train 2;
- Scheduled work and risk assessments for the week of February 9, 2009, which involved scheduled yellow risk surveillance activities and continued troubleshooting of the refrigeration compressor in Control Room Emergency

- Ventilation system train 2, which caused entry into yellow risk to generation due to exceeding 50 percent of the TSs allowable inoperability time; and
- Scheduled work and risk assessments for the week of March 16, 2009, which involved scheduled high green risk activities and one yellow risk activity and also involved maintenance activities for unexpected issues with Reactor Protection channel two, with level control for Feedwater Heater 1-6, with measurement of flow from the Dilution Water Pump, and with feedwater flow measurement by the leading edge flowmeter system.

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. 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 TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control activities constituted four samples as defined in IP 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:

- CR 08-51210 which addressed the operability of Control Rod 5-8 and its position indication after observation that the absolute position indication, as measured and recorded in the plant computer, displayed erratic drifting;
- CR 08-51283 which documented an air leak on Emergency Diesel Generator air receiver number one pressure control valve;
- CR 09-53112 which documented a failed post maintenance test due to a leak through the Control Room Emergency Ventilation System train 2 solenoid operated isolation valve;
- CR 09-52766 which documented and discussed causes for a reactor core actual axial offset more negative than predicted in fuel design documents;
- CR 09-54171 which documented relay chatter during a seismic event on motor starter fused disconnects, which could affect various service water valves; and
- CR 09-53245 which addressed the unreviewed impact of a newly constructed building on the operability of temperature and wind direction instruments used in Emergency Plan assessments of offsite releases.

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 TS 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 TS and Updated Safety Analysis Report (USAR) 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. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted six samples as defined in IP 71111.15-05

b. Findings

No findings of significance were identified.

1R18 Plant Modifications – Temporary Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- Temporary Modification 09-0114, "Temporary Removal of Breaker BE2146 to Support Energization of Motor Control Center E21A".

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modification with operations and reviewed the drawing and procedure changes made to address the temporary modification.

This inspection constituted one temporary modification sample as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

## 1R19 Post-Maintenance Testing (71111.19)

### a. Inspection Scope

The inspectors reviewed the following post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- High Pressure Injection train 2 pump and valve surveillance test on January 7, 2009, after AC lube oil pump motor maintenance and valve maintenance;
- Control Room Emergency Ventilation System train 1 monthly test on January 23, 2009, after replacement of the pump-down solenoid valve (SV 11188) and repair of a minor leak on the condenser inlet;
- Service Water Pump 2 testing on January 30, 2009, after motor mechanical and electrical preventive maintenance activities;
- Control Room Emergency Ventilation System train 2 monthly test on February 5, 2009, which was a failed post maintenance test for the refrigeration compressor portion of the system;
- Hydrogen Analyzer 2 discharge containment isolation valve, CV5010E, stroke and operability test on February 27, 2009, after preventive maintenance on the valve's motor operator;
- Emergency Diesel Generator 2 monthly surveillance test on March 5, 2009, after adjustments made to the hydraulic governor; and
- Service Water Pump 1 quarterly test on March 12, 2009, after preventive maintenance associated with the pump motor and strainer.

These activities were selected based upon the SSC's ability to impact 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; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 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 CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted seven post-maintenance testing samples as defined in IP 71111.19-05.

### b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- DB-SP-4150, "AFP 1 Monthly Test" (Routine);
- DB-MI-3245, "Channel Functional Test and Device Calibration of SFRCS Steam Generator Level Inputs 83C-ISLSP9A6, A7, B8, and B9 to Actuation Channel 1" (Routine);
- DB-PF-3017; "Service Water Pump 1 Testing" (Inservice Testing);
- DB-SC-4271; "Station Blackout Diesel Generator Monthly Test" (Routine);
- DB-SS-4150, -4151, and -4152; Main Turbine Generator stop valves, control valves, and intercept valves testing (Routine)
- DB-SP-3376, "Quarterly Makeup Pump 2 Inservice Test and Inspection" (Inservice Testing); and
- DB-SP-3136; "Decay Heat Train 1 Pump and Valve Test" (Inservice Testing).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;

- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four routine surveillance testing samples and three inservice testing samples as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

**CORNERSTONE: Emergency Preparedness**

1EP6 Drill Evaluation – Emergency Preparedness Drill Observation (71114.06)

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on March 19, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Control Room Simulator, Technical Support Center, and Emergency Operations Facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstone: Public Radiation Safety

#### 2PS2 Radioactive Material Processing and Transportation (71122.02)

##### .1 Radioactive Waste System

###### a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system description in the UFSAR for information on the types and amounts of radioactive waste (radwaste) generated and disposed. The inspectors reviewed the scope of the licensee's audit program with regard to radioactive material processing and transportation programs to verify that it met the requirements of 10 CFR 20.1101(c).

This inspection constituted one sample as defined in Inspection Procedure (IP) 71122.02–5.

###### b. Findings

No findings of significance were identified.

##### .2 Radioactive Waste System Walkdowns

###### a. Inspection Scope

The inspectors performed walkdowns of the liquid and solid radwaste processing systems to verify that the systems agreed with the descriptions in the UFSAR and the Process Control Program and to assess the material condition and operability of the systems. The inspectors reviewed the status of radwaste processing equipment that was not operational and/or was abandoned in place. The inspectors reviewed the licensee's administrative and physical controls to ensure that the equipment would not contribute to an unmonitored release path or be a source of unnecessary personnel exposure.

The inspectors reviewed changes to the waste processing system to verify that the changes were reviewed and documented in accordance with 10 CFR 50.59 and to assess the impact of the changes on radiation dose to members of the public. The inspectors reviewed the current processes for transferring waste resin into shipping containers to determine if appropriate waste stream mixing and/or sampling procedures were utilized. The inspectors also reviewed the licensee's methods for waste concentration averaging to determine if representative samples of the waste product were provided for the purposes of waste classification, as required by 10 CFR 61.55.

This inspection constituted one sample as defined in IP 71122.02–5.

###### b. Findings

No findings of significance were identified.

### .3 Waste Characterization and Classification

#### a. Inspection Scope

The inspectors reviewed the licensee's radiochemical sample analysis results for each of the licensee's waste streams, including dry active waste (DAW), spent resins, and filters. The inspectors also reviewed the licensee's use of scaling factors to quantify difficult-to-measure radionuclides (e.g., pure alpha or beta emitting radionuclides). The reviews were conducted to verify that the licensee's program assured compliance with 10 CFR 61.55 and 10 CFR 61.56, as required by Appendix G of 10 CFR Part 20. The inspectors also reviewed the licensee's waste characterization and classification program to ensure that the waste stream composition data accounted for changing operational parameters and thus remained valid between the annual sample analysis updates.

This inspection constituted one sample as defined in IP 71122.02–5.

#### b. Findings

No findings of significance were identified.

### .4 Shipment Preparation and Shipment Manifests

#### a. Inspection Scope

The inspectors reviewed the documentation of shipment packaging, radiation surveys, package labeling and marking, vehicle inspections and placarding, emergency instructions, determination of waste classification/isotopic identification, and licensee verification of shipment readiness for 12 non-excepted material and radwaste shipments made in 2008. In 2008, the licensee made 85 shipments, and none of these shipments were Type-B. The shipment documentation reviewed consisted of:

- Eight Low Specific Activity (LSA-II) and Three Surface Contaminated Object (SCO-II) Shipments to Waste Processors; and
- One Type-A Package to Areva, Lynchburg, VA.

For each shipment, the inspectors determined if the requirements of 10 CFR Parts 20 and 61 and those of the Department of Transportation (DOT) in 49 CFR Parts 170-189 were met. Specifically, records were reviewed and staff involved in shipment activities was interviewed to determine if packages were labeled and marked properly, if package and transport vehicle surveys were performed with appropriate instrumentation, if radiation survey results satisfied DOT requirements, and if the quantity and type of radionuclides in each shipment were determined accurately. The inspectors also determined whether shipment manifests were completed in accordance with DOT and NRC requirements, if they included the required emergency response information, if the recipient was authorized to receive the shipment, and if shipments were tracked as required by 10 CFR Part 20, Appendix G.

This inspection constitutes one sample as defined by Inspection Procedure 71122.02–5.

Selected staff involved in shipment activities were observed and interviewed by the inspectors to determine if they had adequate skills to accomplish shipment related tasks and to determine if the shippers were knowledgeable of the applicable regulations to satisfy package preparation requirements for public transport with respect to NRC Bulletin 79–19, “Packaging of Low-Level Radioactive Waste for Transport and Burial,” and 49 CFR Part 172 Subpart H. The shipper’s training conducted by WMG Inc., and related certificates were reviewed for compliance with the hazardous material training requirements of 49 CFR 172.704. Additional hazmat training requirements for radiation protection staff were also reviewed by the inspectors for adequacy.

This inspection constitutes one sample as defined by IP 71122.02–5.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed condition reports, audits and self assessments that addressed radioactive waste and radioactive materials shipping program deficiencies since the last inspection to verify that the licensee had effectively implemented the corrective action program and that problems were identified, characterized, prioritized and corrected. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors reviewed corrective action reports from the radioactive material and shipping programs since the previous inspection, interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This inspection constituted one sample as defined in IP 71122.02–5.

b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES

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

#### 4OA1 Performance Indicator Verification (71151)

##### .1 Unplanned Scrams per 7000 Critical Hours

###### a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator (PI) for the period from the first quarter 2008 through the fourth quarter of 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection Reports for the period of first quarter through the fourth quarter of 2008 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams per 7000 critical hours sample as defined in IP 71151-05.

###### b. Findings

No findings of significance were identified.

##### .2 Reactor Coolant System Leakage

###### a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Leakage performance indicator for the period from the first quarter of 2008 through the fourth quarter of 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, issue reports, event reports and NRC Integrated Inspection Reports for the period of the first through fourth quarters of 2008 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one reactor coolant system leakage sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered Into the Corrective Action Program

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 CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result 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 CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-Up Inspection: Root Cause Analysis of the Turbine Bearing Number 2 Oil Deflector Failure

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting the as-found condition of the turbine bearing # 2 oil deflector after smoking insulation caused the licensee to reduce unit power and take the main turbine off-line on December 24, 2008 (CR 08-51322). On December 25, 2008, black debris was found in the high pressure turbine end of the # 2 bearing oil deflector for the main turbine which restricted flow through the oil drain passages. The screen between the deflector inner and outer sections was also nearly clogged with the debris. The inspectors reviewed the root cause analysis and the developed corrective actions for appropriateness. The inspectors determined that the cause analysis and corrective actions were adequate; however, the inspectors identified a performance deficiency in the analysis involving improper installation of insulation surrounding the oil deflector.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction: A self-revealing finding was identified for the improper installation of insulation surrounding the main turbine bearing # 2 oil deflector, causing the main turbine to be taken off-line due to smoking insulation.

Description: On December 24, 2008, plant staff observed smoking insulation near main turbine bearing # 2. The insulation was soaked with oil. The oil had contacted hot metal associated with the high pressure turbine which caused the oil to smoke. The operating crew assessed the situation and took immediate actions to begin a rapid reduction in power and to remove the turbine from service. A small fire, that was quickly extinguished, occurred in the area after the turbine was removed from service

During the immediate investigation of the event, black debris was found in the turbine end of the bearing # 2 oil deflector for the main turbine. The debris restricted flow through the oil drain passages. The clogged oil deflector caused oil to travel along the turbine shaft until it escaped the oil system and eventually soaked the surrounding insulation.

In 14 RFO (2006), the clearances for the mid-standard oil deflectors were checked due to other turbine work that was performed. The insulation blankets on the high pressure turbine, adjacent to the # 2 turbine end oil deflector, had to be moved to perform this check. A review of this work found that no documentation existed for removing or installing the insulation. There were no drawings or procedures to direct the removal and installation of the insulation. This activity was performed using skill of the craft.

The insulation blanket that was reinstalled during 14RFO was placed over the air gap between the # 2 turbine end oil deflector and the high pressure turbine packing gland. This blocked the normal air flow path past the # 2 oil deflector and out the top of the high pressure turbine housing. Natural circulation of air normally helps cool the turbine end oil deflector. Due to the loss of a cooling mechanism, the temperatures of the oil

deflector and the oil itself increased to the point where oil began to carbonize. The carbonized oil built up and trapped debris which coated the oil deflector screen. The clogged screen caused the oil to escape from the oil deflector by traveling along the turbine shaft. The oil then proceeded to soak the insulation located below the oil deflector.

Analysis: The inspectors determined that the failure to adequately install insulation surrounding the # 2 bearing turbine end oil deflector was a performance deficiency. This issue was caused by the lack of procedural guidance for the installation and removal of insulation from the turbine. This finding was more than minor because the issue is associated with the design control attribute of the initiating events cornerstone and affects the cornerstone objective of limiting the likelihood of events that upset plant stability.

The inspectors evaluated the finding using IMC 0609, "Significance Determination Process," Appendix A, Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Initiating Events cornerstone. The finding was not a LOCA initiator and does not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions will not be available. Because the fire was very small and did not damage or affect plant equipment, the finding is not considered an external event initiator. The finding was determined to be of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the concern was not indicative of current plant performance.

Enforcement: No violation of NRC regulatory requirements occurred. The licensee included this finding in their corrective action program as CR 08-51322. A corrective action was initiated to create a procedure that incorporates specific guidance for removing and installing insulation on the main turbine, the auxiliary feed pump turbines, and the main feed pump turbines, to ensure a similar event does not happen again. (FIN 05000346/2009002-02)

.4 Selected Issue Follow-Up Inspection: Review of Apparent Cause Analysis and Corrective Action Development for a Mispositioned Valve

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item (CR 09-51887) documenting licensee's apparent cause evaluation of an event where a service water sample valve was left open even though the sampling procedure directed the chemistry technician to close the valve. The inspectors reviewed the cause evaluation for thoroughness and the developed corrective actions for appropriateness. Additionally, the inspectors reviewed condition reports discussed in the apparent cause that addressed a previously identified negative trend in procedure compliance (CR 08-44017) and a recently identified negative trend in procedure compliance (CR09-52485). The inspectors also reviewed licensee's completion of corrective actions to determine if the status of those actions was adequately represented in the more recent condition report documentation.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that the licensee failed to have appropriate qualitative or quantitative measures to ensure that corrective actions specified in department directives and requirements of business practices were actually being accomplished. This contributed to further issues in the Chemistry Department with adherence to procedure requirements.

Description: CR 09-51887 reviewed and analyzed, using full apparent cause techniques, the failure of a chemistry technician to close valve SW4691B in accordance with procedure after taking a sample of service water on January 12, 2009. The mispositioned valve was later discovered by an operator during daily rounds because the mispositioning caused indicated service water pump discharge pressure to read much lower than expected and actual values.

The apparent cause evaluation concluded that the cause of the failure involved many items including improper procedure "placekeeping" and less than adequate self-checking. Placekeeping techniques were required by NOP-LP-2601, "Procedure Use and Adherence." Self checking requirements were specified in and required by NOBP-LP-2603, "Event-Free Tools and Verification Practices." The evaluation also noted that self-assessments had identified a negative trend of Chemistry Department procedure compliance for the previous two review periods (each review period was approximately 6 months). Condition reports (CR 08-44017 and 09-52485) were generated to review those trends using limited apparent cause techniques.

CR 09-51887 determined that the corrective actions developed in CR 08-44017 were completed but were less than adequate and that there was inadequate implementation of the corrective actions. The evaluation concluded that the previously specified corrective actions did not adequately address cultural issues and change management issues associated with the new desired method of performing activities. Additional conclusions were that there was an inadequate level of accountability and follow-up to ensure that the specified corrective actions were being internalized and applied.

The inspectors independently reviewed the corrective actions developed by CR 08-44017. Although CR 09-51887 stated that all the CR 08-44017 corrective actions were completed, the inspectors found that some of the developed corrective actions had not been completed. Corrective actions within the corrective action computer program had been indicated as complete once notifications to accomplish those activities were written within the work order computer system. However, the actual activities associated with some corrective actions were not complete and were not scheduled to be completed until the second and third quarters of 2009.

The inspectors noted that one of the tasks that was completed as part of CR 08-44017 actions was an effectiveness review. That task was completed in November 2008 but the review was not conducted in accordance with the requirements of NOBP-LP-2007, "Condition Report Process Effectiveness Review." The results of the effectiveness review concluded that the developed action plan was effective in identifying and ensuring compliance with chemistry program requirements. The review described that only about 2 months of data was reviewed and, as stated in CR 09-55187, the corrective actions were not effective as desired.

The inspectors also reviewed Chemistry Standing Order 08-013, "Verification Practices to Ensure Proper Plant Status Control." The intent of the standing order was to supplement existing procedure requirements by providing, for certain valves, additional verification requirements for valve manipulations and thus minimize the probability of valves being mispositioned. Technicians were directed to use the verification techniques specified in the standing order. The inspectors noted that there were many valves specified for each listed procedure within the standing order but the standing order did not include all valves that actually appeared in the listed chemistry procedures. The specified verification techniques included peer checking, concurrent verification, or independent verification.

The licensee's stated intent was to incorporate the standing order requirements into the procedures when the procedures were revised. Standing Order 08-013 was issued on July 14, 2008. The inspectors' review of chemistry procedures revised after July 2008 did not find any incorporation of the standing order requirements in the procedures. Standing Order 08-013 was superseded by Standing Order 09-007 on January 15, 2009. Standing Order 09-007 did not change any requirements. The inspectors' review of that Standing Order found that at least two of the procedures listed in the order had been superseded by other procedures in September 2008.

When concurrent verification or independent verification was conducted, NOBP LP-2603, "Event-Free Tools and Verification Practices," required documentation of the verification next to the completed procedure step. The inspectors asked the licensee to demonstrate that the concurrent verifications or independent verifications specified in the Standing Order were actually being conducted. The inspectors chose three completed chemistry test procedures. Review of the completed procedures did not have any indication that concurrent or independent verifications had been accomplished as specified in Standing Order 09-007. The completed procedures documented that a work group supervisor had reviewed the procedures for proper completion.

Analysis: The inspectors determined that licensee personnel not adhering to specified requirements and not using methods to determine adherence to requirements was a performance deficiency. The finding was more than minor because if left uncorrected the finding could become a more significant safety concern and was a factor in subsequent procedure compliance and component mispositioning issues within the Chemistry Department.

The inspectors determined that the finding was not suitable for SDP evaluation because the failure to adhere to specified requirements or to have methods to determine adherence did not directly result in degraded or inoperable equipment. Therefore, this finding was reviewed by Regional Management and determined to be of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not ensure adequate supervisory and management oversight of work activities of the technicians in the field and of personnel providing activities to upgrade procedures and standing orders. Specifically, the technicians were given a requirement that was difficult to implement, but supervisors and management failed to recognize the difficulty and failed to realize that specified requirements were not being accomplished. (H.4(c))

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires that activities affecting quality be prescribed by and conducted in accordance with documented instructions, procedures, or drawings appropriate to the circumstances. Additionally, the instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Contrary to those requirements, the licensee developed corrective actions to correct conditions adverse to quality but did not implement any criteria to determine if the corrective actions were being satisfactorily accomplished. This issue was entered into the licensee's corrective action program as CR 09-55141. Because this issue is of very low safety significance and is entered into the corrective action program, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000346/2009002-03)

4OA3 Follow-Up of Events and Notices of Enforcement Discretion – High Pressure Feedwater Heater Trip (71153)

a. Inspection Scope

The inspectors reviewed the plant's response on January 13, 2009, to a trip of high pressure feedwater heaters 2-4 and 2-5. The feedwater heaters tripped on high level during a maintenance activity to adjust the HP feedwater heater 2-4 normal drain valve. Power increased to 100.45 percent due to a loss of plant efficiency. Action was taken immediately to maintain power less than 100 percent. No high power alarms were illuminated, and no outward control rod motion occurred during the transient. HP feedwater heaters 2-4 and 2-5 were eventually reset. Documents reviewed in this inspection are listed in the Attachment.

This event follow-up review constituted one sample as defined in Inspection Procedure 71153-05.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Licensee Activities and Meetings

The inspectors observed select portions of licensee activities and meetings and met with licensee personnel to discuss various topics. The activities that were sampled included:

- Fix-It-Now Team morning planning meeting on January 22, 2009;
- Corporate Assessment Team follow-up assessment exit on January 23, 2009;
- Monthly performance review meeting on January 23, 2009;
- Corrective Action Review Board meeting on February 2, 2009, March 2, 2009, and March 16, 2009;
- Managers Council meeting on February 10, 2009;
- Electrical Maintenance Team morning planning meeting on February 20, 2009; and
- Supervisor Briefing on company and plant issues by senior plant management on March 10, 2009.

.2 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted 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.

.3 In-Process Observation of Corrective Actions Associated with the NRC's August 15, 2007, Confirmatory Order

a. Inspection Scope

By letter dated August 15, 2007, the NRC issued an immediately effective Confirmatory Order EA-07-199 (Order) that formalized commitments made by the FirstEnergy Nuclear Operating Company (FENOC). FirstEnergy Nuclear Operating Company's commitments were documented in its July 16, 2007, letter responding to the NRC's May 14, 2007, Demand for Information (DFI).

The DFI was issued in response to information provided by FENOC relative to an analysis, performed by Exponent Failure Analysis Associates and Altran Solutions Corporation, into the 2002 Davis-Besse reactor pressure vessel head degradation event. On June 13, 2007, FENOC provided its response to the DFI and on June 27, 2007, the NRC held a public meeting with FENOC to discuss the DFI response. On July 16, 2007, FENOC provided a supplemental response to the DFI that provided additional detail regarding the planned implementation of commitments established in the June response to the DFI.

In addition to implementing interim corrective actions, the Order required the licensee to:

- Order Item 1: Conduct regulatory sensitivity training for selected FENOC and non-FENOC First Energy employees to ensure those employees identify and communicate information that has the potential for regulatory impact either at FENOC sites or within the nuclear industry to the NRC. The licensee was to provide the population to be trained, the training methodology and materials, and the training objective at least 30 days prior to conducting the training. All training was to be conducted by November 30, 2007. (Refer to Inspection Report (IR) 05000346/2007005);
- Order Item 2: Conduct an effectiveness review to determine if an appropriate level of regulatory sensitivity was evident among First Energy employees including those who received regulatory sensitivity training in January 2008 and

2009. (Refer to IR 00500346/2007005, 05000346/2008002, and 05000346/2008004 for previous effectiveness reviews);

- Order Item 3: Develop a formal process to review technical reports prepared as part of a commercial matter. The process was to be implemented no later than December 14, 2007;
- Order Item 4: Assess its Regulatory Communications Policy and make process changes to its NRC correspondence procedure to ensure specific questions are asked during the process relative to the experience gained from efforts to respond to the NRC's May 14, 2007, Demand for Information. Revisions were to be completed by December 14, 2007;
- Order Item 5: Provide an Operating Experience (OE) document to the nuclear industry by September 15, 2007;
- Order Item 6: Complete a root cause evaluation of the events that culminated in the issuance of the May 14, 2007, DFI, and provide the NRC with a summary of the analysis no later than December 14, 2007; and
- Order Item 7: Maintain the interim corrective actions, discussed, in part, in Section II of the Order until the procedural changes described in Order Items 3 and 4 were implemented.

To assess the licensee's activities associated with the effectiveness reviews, Order Item 2, the inspectors observed the independent assessment team's activities during the week of January 19, 2009, at FirstEnergy Headquarters in Akron, Ohio. The observations included review of the standard questions being asked of FirstEnergy individuals, observations of the team members conducting interviews, and observation of the team's internal meetings assessing the results from the interviews.

In addition, the inspectors reviewed documentation referenced in the licensee's letters dated September 13, 2007, and December 31, 2007. The reviews were conducted to assess the licensee's actions associated with Order Items 3 through 6. The inspectors also discussed with FENOC's Director – Fleet Regulatory Affairs, additional actions he had taken regarding Order Item 5, providing the industry with operating experience.

b. Observations and Findings

Based on the documentation reviews and observations, the inspectors concluded that:

- The licensee had met Order Item 2, to conduct an effectiveness review in 2009, to determine whether an appropriate level of regulatory sensitivity was evident among previously selected FirstEnergy employees.

The 2009 effectiveness review was conducted by an independent team of qualified individuals. The team was comprised of three experienced individuals: an independent contractor, a manager from a non-FENOC nuclear facility, and an individual from the Nuclear Energy Institute (NEI). The team conducted approximately 70 interviews covering FirstEnergy Nuclear Operating Company

individuals at Davis-Besse, Perry, and Beaver Valley and individuals from FirstEnergy and FENOC in Akron, Ohio.

The questions asked of each FirstEnergy/FirstEnergy Nuclear Operating Company individual interviewed were appropriate and designed to elicit the interviewee's knowledge and understanding of the material presented during the sensitivity training. The inspectors also determined that the interviews were conducted in a manner that allowed the interviewees to express their understanding of the subject matter and to provide examples of how the information affected their daily activities. The interviews were also designed to assess the level to which individuals understood the concepts discussed in the training, such as safety conscious work environment;

- The following documents, described in FENOC's December 31, 2007, letter were consistent with the descriptions provided in the letter and addressed Order Items 3 and 4;

Policy:

NOPL-LP-4002, "Regulatory Communications," Rev. 1, 11/29/2007;  
NOPL-LP-4003, "Regulatory Sensitivity," Rev. 0, 11/6/2007;

Business Practice:

NOBP-LP-4013, "Regulatory Impact Assessment Process," Rev. 0,  
11/30/2007;

Procedure:

NOP-LP-4007, "Regulatory Agency Communications," Rev 3, 11/30/2007;  
NOP-LP-4010, "Regulatory Sensitivity Assessment," Rev. 0, 11/14/07,

Nuclear Operating Reference Material:

NORM-LP-4003, "Communication References," Rev 0, 11/30/2007; and  
NORM-LP-4009, "FENOC Regulatory Interface Strategy," Rev. 0,  
11/30/2007;

- Operating Experience, provided to the industry on August 10, 2007, and to the NRC via FENOC's September 13, 2007, letter addressing Order Item 5, accurately described the events surrounding the NRC May 14, 2007, Demand for Information, including a review of technical reports prepared for commercial uses;
- The licensee's summary of its root cause evaluation, Order Item 6, submitted to the NRC via FENOC's December 21, 2007, letter accurately portrayed the results of the full root cause evaluation; and
- The licensee had maintained interim corrective actions until the procedural changes described in Order Items 3 and 4 were implemented.

Based on the results of this inspection and actions documented in IRs 05000346/2007005, 05000346/2008002, and 05000346/2008004, the inspectors concluded that the licensee had completed all actions required by the Confirmatory Order (EA-07-199).

These results are being documented in Inspection Reports for Davis-Besse (05000346/2009002), Perry (05000440/2009002) and Beaver Valley (05000334/2009002 and 05000412/2009002).

No findings of significance were identified.

.4 Safety Culture/Safety Conscious Work Environment (SC/SCWE) Independent Assessment, CY2008

a. Inspection Scope

The inspectors reviewed documents to assess the licensee's implementation of the March 8, 2004, Confirmatory Order as it applied to the annual external, independent evaluations of safety culture (SC) and safety conscious work environment (SCWE). Documents reviewed included the licensee's assessment plan submitted to the NRC on June 06, 2008 (ML 081610511), the licensee's SCWE survey, and external independent assessment report submitted to the NRC by FENOC letter dated January 26, 2009 (ML 090270490). As part of the process of verifying compliance with the March 8, 2004, Order, the inspectors also observed the licensee's implementation of its Business Practice, NOBP-LP-2501, for assessing SC and SCWE. In addition, the inspectors observed the external independent contractor's meetings during which they discussed input from interviews of selected staff members (Inspection Report 05000346/2008-005).

b. Findings and Observations

1) Actions for Areas-For-Improvement (AFI)

One localized AFI was identified during the 2008 external, independent SC/SCWE assessment associated with the Other Supply Chain organization. The licensee developed an action plan to address this localized issue and generated a condition report (CR 08-51329, "COIA-SC-2008 Other Supply Chain Localized AFI") to enter the condition into its corrective action program.

The inspectors reviewed the condition report and the action plan to address the concern and concluded that both documents were appropriate. The inspectors will review the results of the assessment following the licensee's identification of cause(s) and corrective actions.

2) Effectiveness of Corrective Actions for Issues Identified during the 2007 Independent SC/SCWE Assessment

The CY 2008 independent SC/SCWE assessment specifically evaluated the effectiveness of the corrective actions for the issues identified during the 2007 assessment. The 2008 assessment concluded that while actions had been taken to address all the areas in need of attention, not all the actions had been fully effective, as evidenced by similar issues being identified in the 2008 assessment. The inspectors, through independent review of the assessment's results, concurred with the assessment team's conclusions.

3) External, Independent Assessment Team

The inspectors reviewed the team member's resumes and concluded that the assessment team met the Order's requirement for an external, independent team to assess SC/SCWE at Davis-Besse.

c. Conclusion

No findings of significance were identified.

Overall, the inspectors concluded that the SC/SCWE at Davis-Besse continued to be adequate to support continued safe facility operation. In addition, the inspectors concluded that the licensee had met the requirements contained in the NRC's March 8, 2004, letter, "Approval to Restart the Davis-Besse Nuclear Power Station, Closure of Confirmatory Action Letter, and Issuance of Confirmatory Order," for the 2008 independent external SC/SCWE assessment.

The inspector also reviewed CR-08-51329, "COIA-SC-2008 Other Supply Chain Localized AFI," the associated Analysis Report dated March 19, 2009, and corrective actions for the condition report. The inspector noted that the analysis was performed by an outside, independent reviewer. Based on the reviews conducted, the inspector concluded that the CR appropriately captured the issues that formed the area for improvement, that the analysis appropriately reviewed the issues, and that the corrective actions addressed the issues identified during the analysis.

.5 Power Uprate - Safety Evaluations (71004)

a. Inspection Scope

The inspectors reviewed safety evaluations for modifications that were required for this measurement uncertainty recapture (MUR) power uprate. This includes evaluation of the high energy line break (HELB) program for MUR power uprate, evaluation of the accident analysis for MUR power uprate, and evaluation of modifications to plant systems to support the power increase afforded by the installation of the Caldon Leading Edge Flow Meter feedwater flow measurement system. A listing of the documents reviewed is provided in the Attachment to this report.

This inspection constitutes three safety evaluation samples as defined in Inspection Procedure 71004.

b. Findings

Steam Generator Blowdown (SGBD) Pipe Whip Restraint R7 - Updated Safety Analysis Report (USAR) and high energy line break (HELB) Requirements – Power Uprate

Introduction: The inspectors determined that an unresolved item (URI) existed concerning the design basis structural analysis for the SGBD pipe whip restraint R7 being in conformance with safety-related HELB and USAR requirements. Specifically, the pipe whip restraint calculation failed to consider a dynamic amplification factor (DAF) for the pipe whip force as required in USAR Section 3.6.2.5.9. As a result, the

inspectors were not able to determine if the design basis calculation was sufficient to ensure conformance with safety-related HELB design requirements.

Description: The inspectors reviewed Calculation No. VF11/B00-016, "FCR 78-126: Steam Generator Blowdown Line Pipe Whip Restraint R7," Revision 5, and Drawing No. C-299A, "Auxiliary Building Steam Generator Blowdown Whip Restraint R7," Revision O. The design calculation and design drawing of the pipe whip restraint R7 were identified as nuclear safety-related (Q). As described in USAR Section 3.2.1.1, Class I structures, systems, and components are also defined as nuclear safety-related (Q) and are relied upon to remain functional during design basis events. The design function of the SGBD pipe whip restraint R7 was to hold and maintain the SGBD line in position and ensure that the restraint structure did not impact safety-related systems, structures, or components during a HELB event. The inspectors identified a non-conservative technical error in Calculation VF11/B00-016. The inspectors identified that the calculation of the pipe whip force did not include a DAF. The USAR Section 3.6.2.5.9 required restraint structures to withstand a pipe whip force, which is the product of the thrust multiplication factor, DAF, break flow area and maximum operating pressure.

In response to the concern, the licensee initiated Condition Report (CR) 09-52701 on January 28, 2009. The licensee initiated a revision of the calculation and identification of the required modifications to ensure conformance with USAR Section 3.6.2.5.9 requirements. Near the end of the inspection period, the licensee provided the inspectors additional information relevant to the design basis of the restraint which will require additional review. Therefore, this issue is considered an unresolved item (URI 05000346/2009002-04) pending completion of inspector review and evaluation and, as appropriate, determination of risk significance.

.6 Power Uprate - Plant Modifications (71004)

a. Inspection Scope

The inspectors reviewed plant modifications for those implemented for MUR power uprate. This includes reactor protection system (RPS) power related setpoint changes for MUR, and the seismic qualification of mounting the Caldon Leading Edge Flow Meter electronic cabinet C5757E. A listing of the documents reviewed is provided in the Attachment to this report.

This inspection constitutes two plant modification samples as defined in Inspection Procedure 71004.

b. Findings

No findings of significance were identified.

.7 Power Uprate - Post Maintenance or Surveillance Tests (71004)

a. Inspection Scope

The inspectors reviewed systems modified for power uprate for which surveillance tests were performed. This included reviewing the preventative maintenance work order for

spool pieces, which contain 16 transducers on each main feedwater flow header, including the specification, which requires full radiography of spool piece welds on feedwater piping. A listing of the documents reviewed is provided in the Attachment to this report.

This inspection constitutes two post maintenance or surveillance test samples as defined in Inspection Procedure 71004.

b. Findings

No findings of significance were identified.

.8 Power Uprate - Integrated Plant Evolutions at Uprated Power Level (71004)

a. Inspection Scope

The inspectors reviewed a procedure and a work order that involved integrated plant evolutions conducted by the licensee at the uprated power level. This included an abnormal operating procedure for load shedding during loss of control room emergency ventilation and a work order to change plant simulator to incorporate changes as a result of the MUR. A listing of the documents reviewed is provided in the Attachment to this report.

This inspection constitutes two integrated plant evolutions at uprated power level samples as defined in Inspection Procedure 71004.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 15, 2009, the inspectors presented the inspection results to Mr. B. Allen and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Radioactive material processing and transportation under the public radiation safety cornerstone with Mr. Vito Kaminskas, Director of Site Operation on January 16, 2009;
- On January 30, 2009, the inspectors presented the power uprate inspection results to Mr. B. Allen, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that a licensee procedure was considered proprietary and was returned to the licensee staff;

- Review of Confirmatory Order EA-07-199 required activities with Ms. K Fili on January 22, 2009; and
- Safety Culture/Safety Conscious Work Environment (SC/SCWE) Independent Assessment CY 2008 with B. Allen, C. Price, V. Kaminskas, B. Boles, D. Wuokko, J. Dominy and G. Wolf on February 26, 2009, and on March 31, 2009, with Mr. B. Allen.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

B. Boles, Director, Site Maintenance  
T. Chowdary, Staff Nuclear Engineer  
G. Chung, Gaseous, Liquid & HVAC Radiation Monitors System Engineer  
S. Cope, Senior Nuclear Specialist, Emergency Planning  
L. Harder, Manager, Radiation Protection  
D. Hartnett, Shift Manager Operations Training  
R. Hovland, Training Manager  
V. Kaminskas, Director, Site Operations  
T. Laurer, Staff Engineer-Plant Engineer  
M. Meyer, Advanced Nuclear Engineer  
D. Moul, Director, Site Engineering  
A. Percival, Sr. Nuclear Technologist, Chemistry  
C. Price, Director, Site Performance Improvement  
J. Reuter, Radwaste Supervisor / Shipper  
C. Stenbergen, Superintendent Operations Training  
J. Sturdavant, Senior Specialist, Regulatory Compliance  
S. Trickett, Superintendent, Radiation Protection  
J. Vetter, Emergency Response Manager  
G. Wolf, Regulatory Compliance Engineer  
D. Wuokko, Acting Manager, Regulatory Compliance  
B. Young, Supervisor Nuclear Electrical System Engineer

### LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

#### Opened

05000346/2009002-04	URI	SGBD pipe whip restraint R7 did not meet USAR HELB requirements – Power Uprate
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#### Opened and Closed

05000346/20009002-01	NCV	Switchyard Transformers Returned to Maintenance Rule A.2 Status Without Appropriate Corrective Actions Completed
05000346/20009002-02	FIN	Improper Insulation Replacement Causes Rapid Main Turbine Downpower Due to Smoldering Oil-Soaked Insulation
05000346/20009002-03	NCV	Inadequate Management Oversight to Ensure Specified Corrective Actions Were Being Accomplished

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R01 Adverse Weather

#### Condition Reports:

- 03-9574; Temporary Structure on Auxiliary Building Roof
- 08-37255; Turbine Rotor Tarps Beaten by Weather
- 08-42994; NRC Question Regarding Aux Building Roof Replacement

#### Procedures:

- NOP-OP 1012; Material Readiness and Housekeeping Inspection Program; Revision 1
- RA-EP-1500; Emergency Classification, EAL 8.C.2 (Hurricane Force Winds); Revision 8

#### Other:

- USAR Section 2.3.1.2; Severe Weather

### 1R04 Equipment Alignment

#### Procedures:

- DB-OP-6011; High Pressure Injection System; Revision 22
- DB-OP-6012; Decay Heat and Low Pressure Injection System Operating Procedure; Revision 40
- DB-OP-6225; Motor Driven Feedwater Pump Operating Procedure; Revision 13

#### Drawings:

- OS-3; Operational Schematic, High Pressure Injection System; Revision 31
- OS-4, Sheet 1; Operational Schematic, Decay Heat Removal/Low Pressure Injection System; Revision 45
- OS-12A; Operational Schematic, Main Feedwater System; Revision 23
- OS-17A; Operational Schematic, Auxiliary Feedwater System; Revision 20

### 1R05 Fire Protection

#### Condition Reports:

- 08-44886; Repeated Tripping Battery Room Exhaust Fan C54-2

#### Procedures:

- DB-PFP-AB-208; No. 1 Mechanical Penetration Room and Pipeway Area; Revision 5
- DB-PFP-AB-428; Low Voltage Switchgear Room F-Bus; Revision 3
- DB-PFP-AB-428A; Battery Room B; Revision 3
- DB-PFP-AB-429; Low Voltage Switchgear Room E-Bus; Revision 3
- DB-PFP-AB-429B; Battery Room A; Revision 3
- DB-PFP-AB-314; No. 4 Mechanical Penetration Room; Revision 7
- DB-PFP-AB-427; No. 2 Electrical Penetration Room; Revision 3

Drawings:

- A-221F; Fire Protection General Floor Plan El. 545'-0" and 555'; Revision 9
- A-222F; Fire Protection General Floor Plan El. 565'-0"; Revision 15
- A-223F; Fire Protection General Floor Plan El. 585'-0"; Revision 20
- A-224F; Fire Protection General Floor Plan El. 603'-0"; Revision 22
- A-230F; Fire Protection Intake Structure; Revision 9

Other:

- Davis-Besse Fire Hazards Analysis Report

1R11 Licensed Operator Regualification Program

Procedures:

- DB-OP-2504; Rapid Shutdown; Revision 13
- Norm-OP-1002; Conduct of Operations Handbook; Revision 0
- DBBP-Tran-17; Conduct of Simulator Training; Revision 4
- DBBP-Tran-502; Development and Conduct of Continuing Training Simulator Evaluations; Revision 5
- NT-OT-7001; Training and Qualification of Operations Personnel; Revision 10

Other:

- Simulator Guide ORQ-EPE-S237; Loss of All Makeup and C1 Bus Lockout; Revision 1

1R12 Maintenance Effectiveness

Condition Reports:

- 03-02716; Actuation of Main Xfmr and Seal Oil Room Deluge Systems
- 06-300; SFAS Module L244 Did Not Indicate Correctly During Sequencer Test
- 06-618; SFAS Channel 1 SW1399 Not Indicating Shutdown Bypass
- 06-1287; SFAS Channel 2 Connector Misaligned
- 06-6801; Spiking During SFAS Channel 1 Functional Testing
- 08-43180; Output Modules L122 and L124 Tripped HA5311 During SFAS Ch2 Functional
- 07-13589; DB-SC-3111, SFAS Channel 2 Functional Test, Improvement Opportunity
- 07-13995; Computer Points Not Received During SFAS Ch 4 Functional Test DB-SC-3113
- 08-41285; CREVS Train 1 Make-up Air Flow Exceeds Upper Limit
- 08-48956; Unexpected Actuation of Main Transformer Deluge
- 09-52666; Improvement Opportunity Not Implemented for Large Power Transformers
- 09-53112; CREVS Train 2 Continues to Pump Down
- 09-53427; Reliability Performance Criteria Tracking For The Maintenance Rule

Procedures:

- DBBP-OPS-3; On-line Risk Management Process; Revision 7
- DBBP-OPS-11; Protected Train Room Sign Posting; Revision 1
- DB-0138-2; Checklist for Protected Train Room Signs
- DB-SS-3710; Functional Test for Control Room Emergency Ventilation System Train 1; Revision 6
- NOP-ER-3004; FENOC Maintenance Rule Program; Revision 0
- NOP-LP-2001; Corrective Action Program; Revision 17 and 21
- NOP-OP-1007; Risk Determination; Revision 5

Drawings:

- OS-32B; Control Room Emergency Ventilation System; Revision 16

Work Orders:

- 200155585; DB-Sub048-01:Bench Check/Repair Modules
- 200217042; DB-C5755C:Repair Connectors, SFAS Channel
- 200233719; DB-C5762C; Replace CCAP to Eliminate Spiking
- 200298251; S33-1 Refrigerant Leak

Other:

- ECR 03-0196-00; Replace or Upgrade Safety Features Actuation System; Revision 0
- ECR 04-0158-00; Replace Existing BWST Level Transmitters; Revision 0
- Failure Report Summary; CREVS from January 2007 to March 2007; Generated March 16, 2009
- Maintenance Rule Program Manual; Revision 25
- Maintenance Rule (a)(1) Action Plan for Transformer Deluge System; Dated December 15, 2003
- Maintenance Rule (a)(1) Improvement Plan for Control Room Normal and Emergency HVAC; Fourth Quarter 2008
- Maintenance Rule (a)(1) Systems Status; dated January 12, 2004
- Maintenance Rule Expert Panel Meeting Minutes; Dated December 14, 2006; May 11, 2006; December 12, 2003; November 18, 2003; October 22, 2003; September 23, 2003; June 11, 2003
- Maintenance Rule Expert Panel Meeting Minutes; Dated February 22, 2008; April 10, 2008; August 7, 2008; October 9, 2008; and February 19, 2009
- Plant Health Report; Fourth Quarter 2008
- Safety Features Actuation System; Plant System Health Report; Third Quarter 2008 (No Date)
- SD-2; System Description for Safety Features Actuation (SFAS); Revision 4
- USAR Section 9.4.1; Control Room Ventilation System

1R13 Emergent Work

Condition Reports:

- 09-51973; Gas Void Downstream of MU208
- 09-52268; Monitoring Growth of Gas Void Downstream of MU208
- 09-55387; HD261A 1-6 HPFW Heater Emergency Drain Valve is Not Closed
- 09-55460; Unexpected Trip of RPS Channel 2
- 09-55440; F886 Unit Dilution Pump Flow May be Failing
- 09-55768; Caldon Computer Not Updating Plant Computer

Drawings:

- OS-002, Sheet 1; Make-up and Purification System; Revision 28
- OS-32B; Control Room Emergency Ventilation System; Revision 16

Work Orders:

- 200264729; PM 7714 UT Monitor HPI Test Line
- 200359368; HD261A Is Not Closed
- 200359370; Troubleshoot Trip of RPS Channel 2

Other:

- Maintenance Risk Summary; Week Starting January 12, 2009; Revision 0
- Maintenance Risk Summary; Week Starting January 19, 2009; Revision 0
- Maintenance Risk Summary; Week Starting February 2, 2009; Revision 0
- Maintenance Risk Summary; Week Starting February 9, 2009; Revisions 0, 1, and 2
- Maintenance Risk Summary; Week Starting March 16, 2009; Revisions 0 and 1
- Operations Evolution Order; Fill Void Downstream of MU208, Makeup Flow Test Line Iso.; dated 1/20/2009
- Operations Evolution Order; Check/Set EDG1 Mechanical Governor High and Low Stops; dated 2/19/2009.;

1R15 Operability Evaluations

Condition Reports:

- 05-04109; Areva EQ Test Report QR 03-11 Test Anomalies
- 06-03349; Areva EQ Test Report QR 03-11 Test Anomaly, NOA 1506-16, Seismic Contact Chatter
- 06-06562; Impact on Plant Systems of Contact Chatter During Seismic Qualification Testing
- 07-18107; Air Leak on Air Start Side 1 of Emergency Diesel Generator 1
- 07-29084; PCV2987 Air Leak
- 07-31398; Control Rod 5-8 Absolute Position Indication Erratic
- 07-31416; Control Rod 5-8 Position Indication Caused Asymmetric Fault
- 08-32948; 15RFO: Unusual Corrosion on Fuel Assembly NJ14FC
- 08-51210; Computer Point Z233 (Rod 5-8) Position Indication is Drifting
- 09-52197; Possible Rework Issue for Control Rod 5-8
- 08-51283; PMT Reveals Air Leak on PCV2987 for the DA30 Air Start Side of EDG #1
- 08-37109; Small Air Leak on DA2987 Piping Connection After Completion of 200293671
- 08-37004; PCV Inlet and Outlet Bushings Leaked When Replaced
- 09-53112; CREVS Train 2 Continues To Pump Down
- 09-54171; Motor Starter Contact Chatter During Seismic Event Concerns
- 09-53499; CREATCS Train 2 Did Not Pump Down As Expected During Monthly Surveillance Test

Work Orders:

- 200339667; Replace SV11187
- 200352633; Rod 5-8 API Troubleshooting
- 200354944; Troubleshoot CREVS 2 Compressor Shutdown Issue
- 200355545; Troubleshoot SV11187

Procedures:

- DB-OP-3006; Miscellaneous Instrument Shift Checks; Revision 29
- DB-OP-6316; Diesel Generator Operating Procedure; Revision 41
- DB-SS-3042; Control Room Emergency Ventilation System Train 2 Monthly Test; Revision 11

Other:

- Engineering Prepared "White" Paper on "Rod 5-8 API Drift;" January 28, 2009
- Regulatory Guide 1.23; Meteorological Programs in Support of Nuclear Power Plants; September 1980
- SQTS-01-GSQTP; SQRSTS Testing, Equipment Seismic Testing Summary Data Sheet; Revision 6
- Technical Requirements Manual Section 8.3.4; Meteorological Instrumentation

- USAR Section 3.7; Seismic Design
- USAR Section 8.3.1.1.4.1; Emergency Diesel Generators
- USAR Appendix 2C; Geology, Seismology, Subsurface Conditions and Geotechnical Design Criteria

#### 1R18 Plant Modification

##### Condition Reports:

- 09-53891; Incorrect Block Check on DIE ECP 09-0114, E21A

##### Work Orders:

- 2002356304; Remove and Dry and Clean BE2146
- 2002356305; TM Installation – ECP 09-0114-001 BE2146

##### Other:

- ECP 09-0114-000; Temporary Removal of BE2146 to Support Energization of E21A; Revision 0
- ECP 09-0114-001; TM Installation – Remove BE2146 to Support Operation of MCC E21A Following Water Intrusion; Revision 0
- ECP 09-0114-002; TM Restoration - Restore BE2146 Following Its Removal to Support Operation of MCC E21A Following Water Intrusion; Revision 0

#### 1R19 Post Maintenance Testing

##### Condition Reports:

- 09-51703; Missed Oil Sample During #2 HPI Pump Quarterly
- 09-51722; Problems During High Pressure Injection Pump 2 Test
- 09-54757; EDG 2 Mechanical Governor's Lower Control No Longer Functional

##### Procedures:

- DB-MM-9118; EDG Governor Removal, Installation, and Adjustment; Revision 8
- DB-OP-1001; Administrative Control of Containment Isolation Valves; Revision 3
- DB-OP-3071; Emergency Diesel Generator 2 Monthly Test; Revision 19
- DB-OP-6316; Diesel Generator Operating Procedure; Revision 41
- DB-OP-6505; Control Room Emergency Ventilation System Procedure; Revision 13
- DB-PF-3017; Service Water Pump 1 Testing; Revision 17
- DB-PF-3023; Service Water Pump 2 Testing; Revision 19
- DB-PF-3272; Post Maintenance Valve Test; Revision 6
- DB-PF-9301; Preventive Maintenance for Type SMB and SB Limitorque Operators; Revision 6
- DB-SP-3219; HPI Train 2 Pump and Valve Test; Revision 18
- DB-SS-3041; Control Room Emergency Ventilation System Train 1 Monthly Test; Revision 13
- DB-SS-3042; Control Room Emergency Ventilation System Train 2 Monthly Test; Revision 11

##### Drawings:

- OS-32B; Control Room Emergency Ventilation System; Revision 16

##### Work Orders:

- 200227732; PM 0925 Lubricate Service Water Strainer #1
- 200250238; PM 0932 MP3-2 Lubricate SW Pump
- 200252020; PM 6120 Service Water Pump 1 Motor Testing
- 200253279; PM 2044, MVDH63, Clean and Inspect

- 200253280; PM 2069, MVHP31, Clean and Inspect
- 200257246; Containment Hydrogen Analyzer 2 Discharge Valve
- 200267565; PM 6135 MP3-2 Motor Testing
- 200274754; Lube HPI Pump 1-2 AC Lube Oil Pump Motor
- 200339666; Replace SV11188
- 200339667; Replace SV11187
- 200340782; Minor Leak on CREVS #1 Condenser Inlet
- 200343002; Check/Set EDG2 Mechanical Governor High and Low Stops

## 1R22 Surveillance Testing

### Condition Reports:

- 08-38334; Decay Heat Pump 1 D-Axial Vibes are in the Alert Range
- 08-42957; DH Pump 1 Vibration in Alert Range
- 09-52400; LI-OSP9A6 Baragraph Missing a Bar (on SFRCS Actuation Channel 1)
- 09-52583; Oil Leak on SBODG Aux Turbocharger Oil Filter
- 09-52803; DA216 Found Out Of Position
- 09-55578; Decay Heat Pump #1 Vibrations

### Procedures:

- DB-MI-3245; Channel Functional Test and Device Calibration of SFRCS Steam Generator Level Inputs 83C-ISLSP9A6, A7, B8, and B9 to Actuation Channel 1; Revision 9
- DB-PF-3017; Service Water Pump 1 Testing; Revision 17
- DB-PF-6704; Pump Performance Curves; Revision 25
- DB-SP-3136; Decay Heat Train 1 Pump and Valve Test; Revision 23
- DB-SP-3376; Quarterly Makeup Pump 2 Inservice Test and Inspection; Revision 11
- DB-SP-4150; AFP 1 Monthly Test; Revision 10
- DB-SC-4271; SBODG Monthly Test; Revision 16
- DB-SS-4150; Main Turbine Stop Valve Test; Revision 10
- DB-SS-4151; Main Turbine Control Valve Test; Revision 8

### Drawings:

- OS-2, Sheet 1; Makeup and Purification System; Revision 28
- OS-2, Sheet 3; Makeup and Purification System; Revision 30
- OS-20, Sheet 1; Service Water System; Revision 78

### Work Orders:

- 200359649; SP 3136-008 05.009 DH 14B Stop Setting

### Other:

- Notification 600516809; Enhancement of Procedure DB-MI-3245
- Notification 600516811; Enhancement of Procedure DB-MI-3246

## 1EP6 Drill Evaluation

### Condition Reports:

- 09-55997; EP Drill—Missed NRC Performance Indicator Opportunity
- 09-55770; EP Drill—Failed Drill Objective
- 09-56032; EP Drill—Manning the 4-way Ringdown Phone in the EOF Prior to Turnover
- 09-56035; EP Drill—Providing a Release Pathway Diagram & Plume Exposure Footprint

- 09-56038; EP Drill—Completing a periodic Update After a General Emergency Notification
- 09-56080; EP Drill—Improvement Needed Regarding Aggressively Pursuing Off-Site Release

Other:

- Davis-Besse Emergency Preparedness Integrated Drill Manual; March 19, 2009
- Davis-Besse EP Integrated Drill CTRM Simulator Safety Brief; March 19, 2009
- NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 5

2PS2 Radioactive Material Processing and Transportation (71122.02)

Condition Reports:

- 08-34090; 15R Shipping Delays due to RP Inability to Support; dated January 23, 2008
- 08-40107; AFI-08-047; Equipment Crosses Contamination Boundaries not Taped to Boundary; dated May 5, 2008
- 08-47079; Radioactive Shipment of CC00203 Can Not be Shipped as Requested; dated September 30, 2008
- 09-52031; Boric Acid Found Coming from Conduit at Elevation 545 in the Auxiliary Building; dated January 14, 2009
- 09-52034; Elevation 545 area Radiation Monitor Green Light Blinking Intermittently; dated January 14, 2009

Procedures:

- CA-SA-8-44; Davis Besse AFI Assist Follow-Up; Snapshot Assessment; dated April 4, 2008
- DB-HP-1706; Vehicle and Material Release from Radiologically Restricted Areas and Restricted Area; Revision 08
- DB-OP-611; Miscellaneous Waste System; dated December 4, 2008
- DB-OP-6101; Clean Liquid Radwaste System; Revision 20
- DB-OP-6141; Primary Solid Radioactive Waste Disposal; Revision 10
- DB-OP-9009; Spent Fuel Pool Demineralizer Resin Removal and Replacement; Revision 07
- NG-DB-211; Radioactive Waste Management; Revision 04
- NOP-OP-5201; Shipment of Radioactive Material/Waste; Revision 0
- RWP 2009-1023; Spent Fuel Pool Demine Resin Sluice to Spent Resin Storage Tank: dated December 31, 2009

Other:

- 07-2019; Uniform Low-Level Radioactive Waste Manifest; Shipping Paper; dated December 12, 2007
- 08-47; Radioactive Material Control; Snapshot Assessment No. 08-047
- 08-1010; Uniform Low-Level Radioactive Waste Manifest; Shipping Paper; dated September 9, 2008
- 08-1004; Uniform Low-Level Radioactive Waste Manifest; Shipping Paper; dated January 18, 2008
- 08-1005; Uniform Low-Level Radioactive Waste Manifest; Shipping Paper; dated January 23, 2008
- 08-1009; Uniform Low-Level Radioactive Waste Manifest; Shipping Paper; dated May 2, 2008
- 08-1015; Uniform Low-Level Radioactive Waste Manifest; Shipping Paper; dated December 23, 2008
- 08-3010; Radioactive Material Manifest; Shipping Paper; dated January 28, 2008
- 09-3002; Radioactive Material Manifest; Shipping Paper; dated January 14, 2009
- GEL Laboratories, LLC, Analytical Results of Samples; dated March 09, 2007
- GEL Laboratories, LLC, Analytical Results of Samples; dated January 21, 2008

- GEL Laboratories, LLC, Analytical Results of Samples; dated December 19, 2008
- GEL Laboratories, LLC; 10 CFR Part 50/61 Certificate of Analysis; dated December 24, 2008
- System Description for Spent Resin Transfer System; dated October 25, 2005

#### 4OA1 Performance Indicator Verification

##### Other:

- Select Operator Logs covering the period of January 2008 through December 2008
- NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 5

#### 4OA2 Problem Identification and Resolution

##### Procedures:

- DB-CH-3041; Emergency Diesel Generator 2 Fuel Oil Day Tank Drain Sample; Revision 1
- DB-CH-4001; Post-Accident Sampling System Test; Revision 21
- DB-CH-6002; Sampling System Nuclear Areas; Revision 25
- NOBP-LP-2007; Condition Report Process Effectiveness Review; Revision 5
- NOBP-LP-2011; FENOC Cause Analysis; Revision 7
- NOBP-LP-2601; Procedure Use and Adherence; Revision 1
- NOBP-LP-2603; Event-Free Tools and Verification Practices; Revision 3
- NOBP-OP-4; Component Mispositioning; Revision 2
- NOP-LP-2001; Corrective Action Program; Revision 18
- NOP-OP-1014; Plant Status Control; Revision 0

##### Condition Reports:

- 08-44017; DB-SA-054: Chemistry IPA – Negative Trend in NOP Adherence
- 09-51770; Procedure Step Signed Off but Not Completed
- 09-51887; SW 4691B Found Out of Position
- 09-52485; DB-SA-09-007: Chemistry IPA – Negative Trend – Procedure Non-Compliance Category
- 09-55141; Chemistry Plant Status Control Standing Order Noncompliance

##### Other:

- Chemistry Standing Order 08-013; Verification Practices to Ensure Proper Plant Status Control; July 14, 2008
- Chemistry Standing Order 09-007; Verification Practices to Ensure Proper Plant Status Control; January 15, 2009
- Corrective Action Review Board Minutes; March 2, 2009
- WO 200347130; Surveillance: Emergency Diesel Generator 2 Fuel Oil Day Tank Sample
- WO 200251034; Periodic Test: Emergency Diesel Generator 1-2 Lubrication Oil and Water Jacket Sampling and Analysis
- WO 200253333; Surveillance: Emergency Diesel Generator 1-1 Fuel Oil Day Tank Drain Sample

#### 4OA3 Follow-Up of Events and Notices of Enforcement Discretion

##### Condition Reports:

- 09-51928; High Pressure Feedwater Trip During Tuning

#### 4OA5 Other Activities

##### Condition Reports:

- 09-51923; COIA-SC-2008 – ANA – Electrical Maintenance Low and Declined survey Ratings
- 09-51924; COIA-SC-2008 – ANA – I&C Maintenance Low and Declined Survey Ratings
- 08-51329; COIA-SC-2008 Other supply Chain Localized AFI

##### Procedures:

- NOP-LP-4007; Regulatory Agency Communications; Revision 3
- NOP-LP-4010; Regulatory Sensitivity Assessment; Revision 0
- NOBP-LP-4013; Regulatory Impact Assessment Process; Revision 0
- NOPL-LP-4002; Regulatory Communications; Revision 1
- NOPL-LP-4003; Regulatory Sensitivity; Revision 0
- NORM-LP-4003; Communication References; Revision 0
- NORM-LP-4009; FENOC Regulatory Interface Strategy; Revision

##### Calculations:

- C-EE-015.03, Revision 2, Addendum 1

##### Engineering Changes:

- ECP 06-0002-; Revision 0

##### Policy:

##### Business Practice:

##### Nuclear Operating Reference Material:

##### Other:

- FENOC Itr January 26, 2009, "Submittal of the 2008 Independent Assessment of the Davis-Besse Nuclear Power Station Nuclear Safety Culture and Safety Conscious Work Environment Report"

#### Power Uprate (71004)

##### Condition Reports Reviewed During NRC Inspection:

- 05-05808; Incorrect Design Temperature for Pipe Class EBD-11
- 07-16466; Caldon Main Feedwater Transducers Path Failure
- 07-20835; Main Feedwater Caldon Trouble Annunciator 10-4-A Received
- 07-23577; Adverse Trend in LEFM Reject Rate
- 07-25026; Adverse Trend in LEFM Meter 1 Path 2 Reject Rate
- 07-25074; Caldon System Trouble Alarm – 10-4-A
- 07-27067; LEFM Meter 1 – Path 1 Thru 4 Computer Point Signal Gain Oscillations
- 08-41596; PCS COR Steam Flows in Alarm after Uprate
- 08-41231; Dose Rate Alarm Due to Increased RAD Level at U2 VCT

##### Condition Reports Initiated as a Result of NRC Inspection:

- 09-52684; Pipe Support 35-HCC-18-H5
- 09-52701; Calculation VF11/B00-016 Does Not Consider Dynamic Amplification Factors
- 09-52705; NRC MUR Power Uprate Inspection: DB-NE-03230

Procedures:

- DB-MI-3005; Time Response Test of Reactor Protection System Channel 1; Revision 9
- DB-MI-3017; RPS Channel 1 Power/Imbalance/Flow Trip Setpoint Verification and Overpower Trip Setpoint Adjustment/Verification; Revision 8
- DB-NE-3230; RPS Daily Heat Balance Check; Revision 10
- DB-NE-4231; Verification of Computer Calculations; Revision 5
- DB-NE-6201; Reactor Operators Curve Book; Revision 11
- DB-NE-6202; Reactivity Balance Calculations; Revision 4
- DB-OP-2010; Alarm Procedure for Feedwater Alarm Panel 10 Annunciators; Revision 14
- DB-OP-2533; Control Room Emergency Ventilation System Load Shedding; Revision 11
- DB-OP-3006; Miscellaneous Instrument Shift Check; Revision 27
- DB-OP-3007; Miscellaneous Instrument Daily Checks; Revision 12
- DB-OP-6407; System Procedure for Non Nuclear Instrumentation System Operating Procedure; Revision 11
- DB-PF-4717; Circulating Water System; Revision 3

Calculations:

- Calculation No. 35-HCC-18-H5; Spent Fuel Pool Cooling System; Revision 0
- Calculation No. C-CSS-045.01-024; Mounting Detail for Cabinet C5757E; Revision 2
- Calculation No. C-CSS-045.01-024; Mounting Detail for Cabinet C5757E; Revision 2, Addendum A01
- Calculation No. C-ICE-058.01-008; RPS Reactor Power Related Field Trip Setpoints; Revision 4
- Calculation No. M-1147/H37; Steam Generator No. 1-2 Drain/Blowdown System; Revision 0
- Calculation No. VA01/B01-025; Aux. Bldg. Columns and Base Plate Design – Area 7; Revision 26
- Calculation No. VA03/B01-009; Structural Steel Framing At EL. 638' and 643'; Revision 7
- Calculation No. VF11/B00-016; FCR 78-126 Steam Generator Blowdown Line Pipe Whip Restraint R7; Revision 5

Drawings:

- Drawing No. C-272; Auxiliary Building Column Schedule and Details; Revision 13
- Drawing No. C-299A; Auxiliary Building Steam Generator Blowdown Line Whip Restraint R7; Revision O

Work Orders:

- WO 200312856; PM 6569 Inspect FW LEFM Cabinet C5757E; dated January 9, 2009

Other:

- 10 CFR Screening No. 01-00351; Mod 99-0047-01 Installation of Feedwater Flow Rate Caldon (LEFM) System; dated December 4, 2001
- 10 CFR Screening No. 03-00650; Revision of NDE Requirements Stated in Specification
- Areva Document No. 38-1290250-00; DES-11.01.01 HELB Programs SER; dated November 6, 2002
- Areva Document No. 51-5070034-000; D-B MUR Evaluation Report for HELB Program; dated June 7, 2006
- Areva Document No. 51-5070035-000; D-B MUR Evaluation Report for MELB Related Issues; dated May 25, 2006
- Areva Document No. 51-5070035-001; D-B MUR Evaluation Report for MELB Related Issues; dated June 7, 2006

- Areva Document No. 51-5071770-000; Safety Analysis Evaluation of the Davis-Besse MUR; dated July 27, 2006
- DB20080147; NSSDATA Report – Cycle Specific Input Data; Revision 5
- DB-PF-10141; Davis-Besse Measurement Uncertainty Recapture Power Uprate (Caldon); Revision 00
- DB20080152; Plant Network, Acquisition Network, Plant Process Computer and the Safety Parameter Display System; Version C16-7
- DB20010540; START Program; Revision 15
- DB20080108; RODCALC; Revision 02
- M-453Q for Critical Piping; dated March 25, 2003
- Mod 99-0047-01; Normal Modification (Mod) Install Feedwater Flow Rate Caldon (LEFM)+System, Supplement 01; Revision 0
- Mod DB-MI-03057; RPS Channel 1 Calibration of Overpower, Power/Imbalance/Flow, and Power/Pumps Trip Functions; Revision 24
- OE24634; Unexpected Circuit Gain Exhibited in Leading Edge Flow Meter (LEFM) System – Seabrook Station; dated April 23, 2007
- OE24741; Transducer Path Failure in Ultrasonic Leading Edge Flow Meter System; dated April 24, 2007
- OPS-IER-I062; Licensed Operator Continuing Training Cycle 06-02 Outline; Revision 0
- OPS-JIT-1081; Measurement Uncertainty Recapture Power Uprate; Revision 0
- Regulatory Applicability Determination No. 01-00351; Mod 99-0047-01 Installation of Feedwater Flow Rate Caldon (LEFM) System; dated December 4, 2001
- Regulatory Applicability Determination No. 03-00650; Revision of NDE Requirements Stated in Specification M-453Q or Critical Piping; dated March 25, 2003
- Regulatory Applicability Determination No. 08-01484; Reactor Protection System Power Related Setpoint (RPS) Changes for Measurement Uncertainty Recapture Power Uprate, Including Addition to Technical Requirements Manual (TRM); dated June 3, 2008
- SE No. 01-0017; Safety Evaluation for Mod 99-0047-00 and UCN 01-020 Installation of Feedwater Flow Rate Caldon (LEFM) System; dated July 9, 2001
- SER 3-04; Reactor Overpower Events Associated with Ultrasonic Feedwater Flow Measurement Systems; dated June 18, 2004
- SER 5-02; Lessons Learned from Power Uprates; dated August 21, 2002
- SWO 08-0038; Change ICS Module UL 4-1-1-1 on Simulator for the Power Uprate; dated July 1, 2008
- TNS-08-00009; Completed Training on LAR 05-0007 to all Licensed Operators; dated April 22, 2008
- Vendor Manual No. E-401-00002-03; Caldon Inc. Maintenance and Troubleshooting Manual for LEFM +2000FC Flow Measurement System; Revision 3

## LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AFI	Areas for Improvement
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DAF	Dynamic Amplification Factor
DFI	Demand For Information
DOT	Department of Transportation
EDG	Emergency Diesel Generator
FW	Feedwater
HELB	High Energy Line Break
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
LOCA	Loss of Coolant Accident
MRPM	Maintenance Rule Program Manual
MUR	Measurement Uncertainty Recapture
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OE	Operating Experience
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PM	Planned or Preventative Maintenance or Post Maintenance
PMT	Post-Maintenance Testing
RCS	Reactor Coolant System
RFO	Refueling Outage
RPS	Reactor Protection System
RWP	Radiation Work Permit
SC	Safety Culture
SCWE	Safety Conscious Work Environment
SDP	Significance Determination Process
SGBD	Steam Generator Blowdown
SSC	Structures, Systems, and Components
SV	Solenoid Valve
SW	Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
USAR	Updated Safety Analysis Report
WO	Work Order