



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

April 23, 2012

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

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION INTEGRATED INSPECTION  
REPORT 05000346/2012002**

Dear Mr. Allen:

On March 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Davis-Besse Nuclear Power Station. The enclosed report documents the results of this inspection, which were discussed on April 12, 2012, with the Director of Site Operations, Mr. Brian Boles, 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 of very low safety significance were identified. The findings also involved violations of NRC requirements. However, because of the 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 2.3.2 of the NRC Enforcement Policy. Additionally, two licensee-identified violations are listed in Section 4OA7 of this report.

If you contest the subject or severity of this NCV, 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 Inspectors' Office at the Davis-Besse Nuclear Power Station. In addition, if you disagree with the cross-cutting aspect assigned to the 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 at the Davis-Besse Nuclear Power Station.

B. Allen

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In accordance with 10 CFR Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website 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 and 72-014  
License No. NPF-3

Enclosure: Inspection Report 05000346/2012002  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000346/2012002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Dates: January 1, 2012, through March 31, 2012

Inspectors: D. Kimble, Senior Resident Inspector  
A. Wilson, Resident Inspector  
J. Beavers, Emergency Preparedness Inspector  
C. Brown, Reactor Inspector  
M. Holmberg, Senior Reactor Inspector  
R. Jones, Resident Inspector – Fermi Station  
M. Mitchell, Health Physicist  
J. Neurauter, Senior Reactor Inspector  
G. O'Dywer, Reactor Inspector  
P. Smagacz, Reactor Engineer

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

Enclosure

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## SUMMARY OF FINDINGS

Inspection Report 05000346/2012002; 1/1/2012-3/31/2012; Davis-Besse Nuclear Power Station; Correction of Emergency Preparedness Weaknesses and Deficiencies.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of NRC regulations. 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: Mitigating Systems**

- Green. The inspectors identified a finding, with two examples, of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to maintain the electrical separation of the redundant safety-related direct current (DC) systems in compliance to the design and licensing bases. The licensee initiated corrective actions including opening the breakers to the non-safety-related loads inside containment and setting the automatic transfer switches (ATSs) to prevent auto-transfer of loads.

The performance deficiency was determined to be more than minor because the issue was associated with the Mitigating Systems Cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to address the impact of high-impedance ground faults in non-safety equipment on safety-related DC sources and the failure to maintain compliance to RG1.6 when installing ATSs between redundant DC power sources impacted the reliability of the DC power system. The inspectors evaluated the finding to be of very low safety significance (Green) using IMC 0609, Appendix A, Attachment 1, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Using the Phase 1 SDP worksheet for the Mitigating Systems Cornerstone, the inspectors answered no to all five screening questions. Based on the date of occurrence of this violation (more than 20 years old), the inspectors did not identify a cross-cutting aspect as the finding was not representative of current performance. (Section 1R21.1)

#### **Cornerstone: Emergency Preparedness**

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.54(q) for failing to follow and maintain an emergency plan that meets the requirements of emergency planning standard 10 CFR 50.47(b)(4). Specifically, the licensee failed to maintain configuration control of seismic instrumentation necessary for the declaration of emergency events. The seismic instrumentation was out of service without the knowledge of the on-shift operating crew and no compensatory measures were in place. The licensee entered this performance

deficiency into their corrective action program (CAP) as condition report (CR) 2012-01950 and CR 2012-01984.

The inspectors determined that the issue was a performance deficiency as it was within the licensee's ability to foresee and correct. This finding was determined to be more than minor because it was associated with the emergency response organization (ERO) performance attribute of the Emergency Preparedness Cornerstone. This finding affected the cornerstone objective of ensuring the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance because it did not result in the loss or degradation of a risk significant planning standard. One Alert and one Notification of Unusual Event Emergency Action Level (EAL) initiating condition would have been rendered ineffective such that a seismic event would have been declared in a degraded manner. This finding was also associated with the cross-cutting area of human performance. Specifically, the licensee's work control process failed to appropriately control work on the seismic monitoring system. This resulted in a loss of configuration control and of instrumentation necessary to classify a seismic event without compensatory measures in place. (H.3(b)) (Section 1EP5.1)

**B. Licensee-Identified Violations**

Violations of very low safety significance that were identified by the licensee have been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's CAP. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

The unit began the inspection period operating at full power and, with the exception of several small power maneuvers (e.g., reductions of 10 percent power or less) to facilitate planned testing evolutions, remained operating at or near full power for the entire inspection period.

#### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignment (71111.04)

##### .1 Quarterly Partial System Alignment Verifications

##### a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems to verify proper system alignment:

- The station blackout diesel generator (SBODG) when emergency diesel generator (EDG) #1 was unavailable for testing during the week ending January 21, 2012;
- The motor-driven feedwater pump during a preventive maintenance outage on auxiliary feedwater (AFW) train 2 during the week ending February 4, 2012;
- AFW train 2 during a preventive maintenance outage on AFW train 1 during the week ending February 18, 2012; and
- High pressure injection (HPI) train 1 when HPI train 2 was unavailable for testing during the week ending March 31, 2012.

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, Updated Safety Analysis Report (USAR), Technical Specification (TS) requirements, outstanding work orders (WOs), Condition Reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the Corrective Action Program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted four partial system alignment verification samples as defined in Inspection Procedure (IP) 71111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Alignment Verification

a. Inspection Scope

During the period of February 20 through March 9, 2012, the inspectors performed a complete system alignment verification inspection of the Service Water (SW) System to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system alignment verification sample as defined in IP 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Quarterly Tours

a. Inspection Scope

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

- Emergency core cooling pump room 2 (Room 115, Fire Area A);
- Mechanical penetration room 2 and adjoining passageway (Room 236, Fire Area A; and Room 227, Fire Area G);
- Mechanical penetration room 3 (Room 303, Fire Area AB);
- SW intake structure (Rooms 50, 51, 52, and 54, Fire Areas BD, BE, and BF); and
- External warehouse 2 and the site's contingency firefighting equipment.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and 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 five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

During the period of February 13 – 24, 2012, the inspectors conducted an internal flooding review for the No. 1 Emergency Core Cooling System (ECCS) room during emergent maintenance on the No. 1 ECCS Room Cooler. The inspectors reviewed flood analyses and design documents, including the USAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of ECCS Room No. 1 to assess the adequacy of watertight boundaries/barriers and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments. Specific documents reviewed during this inspection are listed in the Attachment to this report.

The inspectors' review constituted a single internal flooding inspection sample as defined in IP 71111.06-05.

b. Findings

No findings were identified.

.2 Underground Bunkers/Manholes

a. Inspection Scope

During the period of February 13 – 24, 2012, the inspectors conducted a review of underground bunkers/manholes subject to flooding that contained electrical cables. The inspectors' reviews included the following underground bunkers/manholes subject to flooding:

- Manhole 3009;
- Manhole 3010; and
- Manhole 3101.

The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as sump pumps, the inspectors verified that the devices were functional and that any level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues to verify the adequacy of the corrective actions. Specific documents reviewed during this inspection are listed in the Attachment to this report.

The inspectors' reviews of these underground bunkers/manholes constituted a single inspection sample as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Resident Inspector Quarterly Review of Simulator Requalification Training

a. Inspection Scope

On February 7, 2012, 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 that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance;
- The clarity and formality of communications;
- The ability of the crew to take timely and conservative actions;
- The crew's prioritization, interpretation, and verification of annunciator alarms;
- The correct use and implementation of abnormal and emergency procedures by the crew;
- Control board manipulations;

- The oversight and direction provided by licensed senior reactor operators (SROs); and
- The ability of the crew 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 a single quarterly licensed operator requalification program sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Control Room Activities

a. Inspection Scope

During the course of the inspection period, the inspectors performed numerous observations of licensed operator performance in the plant's control room to verify that operator performance was adequate and that plant evolutions were being conducted in accordance with approved plant procedures. Specific activities observed that involved a heightened tempo of activities or periods of elevated risk included, but were not limited to:

- Plant power maneuvers needed to comply with TS 3.1.7 due to both channels of absolute position indication for control rod 7-3 being declared inoperable on January 26, 2012.

The inspectors evaluated the following areas during the course of the control room observations:

- Licensed operator performance;
- The clarity and formality of communications;
- The ability of the crew to take timely and conservative actions;
- The crew's prioritization, interpretation, and verification of annunciator alarms;
- The correct use and implementation of normal operating, annunciator alarm response, and abnormal operating procedures by the crew;
- Control board manipulations;
- The oversight and direction provided by on-watch SROs and plant management personnel; and
- The ability of the crew to identify and implement appropriate TS 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 a single quarterly observation sample of operator performance in the plant's control room as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Reactor Protection System; and
- Control Rod Drive (CRD) System Logic.

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

- Implementing appropriate work practices;
- Identifying and addressing common cause failures;
- Scoping of systems in accordance with 10 CFR 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.

These maintenance effectiveness reviews by the inspectors constituted two quarterly inspection samples as defined in IP 71111.12-05.

b. Findings

No findings were identified.

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

.1 Quarterly Maintenance Risk Assessments and Emergent Work Control Reviews

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:

- Emergent work during the week ending January 7, 2012, which included a lowering level indication in the EDG 2 Fuel Storage Tank and an unexpected reactor trip breaker opening when installing a reactor protection system test module;
- Emergent work during the week ending January 28, 2012, to correct degraded signals from both channels of absolute position indication for Control Rod No. 7-3;
- Planned work during the week ending February 25, 2012, to replace Station Battery Charger 2PN;
- Emergent work and elevated plant risk during the week ending March 24, 2012, following the unexpected loss of the Bayshore 345 kV transmission line; and
- Emergent work during the weeks ending March 17, 2012, and March 24, 2012, to troubleshoot and correct low SW flow supplied to No. 1 ECCS Room Cooler.

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 Part 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 engineer, 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. Specific documents reviewed during this inspection are listed in the Attachment to this report.

These maintenance risk assessment and emergent work control activity reviews by the inspectors constituted five inspection samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

.2 NRC Confirmatory Action Letter No. 3-11-001, Action No. 3 – Boroscopic Examination of Existing Shield Building Core Bore Locations; and NRC CAL No. 3-11-001, Action No. 4 – Boroscopic Examination of the Shield Building Crack Interface Area Via a New Core Bore

a. Inspection Scope

During a mid-cycle outage to replace the reactor vessel closure head in late 2011, the licensee identified laminar cracking in the safety-related shield building of the containment system while performing hydrodemolition operations to create a shield building maintenance access opening. Based on an evaluation of the licensee's extent-of-condition and technical analysis of the shield building laminar cracking, the NRC staff concluded that the licensee had provided reasonable assurance that the shield building was capable of performing its safety functions. In order to provide continued long-term confidence, the licensee agreed to several follow-on actions. On December 2, 2011, the NRC issued Confirmatory Action Letter (CAL) No. 3-11-001 (ADAMS Accession No. ML11336A355) to formally document the follow-on actions committed to by the licensee.

The inspectors reviewed the licensee's evaluation and management of plant risk for the subject maintenance work activities to verify that the appropriate risk assessments were performed prior to engaging in the work. The inspectors reviewed the scope of the work and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed applicable TS requirements and any restrictions on the work activities imposed by the licensee's engineering work package. The following work activities were directly observed by the inspectors:

- Setup and drilling of one new shield building core bore and the subsequent boroscopic inspection activities associated with that core bore location as they were conducted in the plant by the licensee's staff during the week ending February 18, 2012; and
- Boroscopic inspection activities of four existing shield building core bore locations as they were conducted in the plant by the licensee's staff during the week ending February 18, 2012.

The inspectors verified that the licensee's inspections were thorough and that the results and conclusions obtained by the licensee's staff were reasonable. Specific documents reviewed during this inspection are listed in the Attachment to this report.

The inspectors' review and observation of these maintenance activities constituted two inspection samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Quarterly Reviews of Operability and Functionality Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- The functionality of the CRD system after system engineering personnel identified that the CRD 15 volts direct current (Vdc) digital logic power supplies were unexpectedly cycling between the primary and the secondary redundant power supplies, as documented in CR 2012-00477;
- The functionality of the seismic monitoring system after several redundant instruments were unable to be adequately calibrated, as documented in CR 2012-01501;
- The operability of the absolute position indication for CRD 7-3 following noticeable degradation of the position signal for that control rod, as documented in CR 2012-02658;
- The functionality of the main turbine trip system following significant degradation noted during testing of Master Trip Solenoid Valve A, as documented in CR 2012-03090;
- The operability of ECCS Room Cooler No. 1 and the supported ECCS Train 1 equipment following noticeable degradation of the rated SW flow supply to that cooler, as documented in CR 2012-03201; and
- The operability of reactor coolant system pressure transmitters associated with the safety features actuation system following a 10 CFR Part 21 notification that revealed degradation to the accuracy specification of the transmitters during a high temperature accident condition, as documented in CR 2012-03670.

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 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 validated, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors 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.

These reviews by the inspectors constituted six operability and/or functionality assessment inspection samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the following permanent modification to the facility:

- 10-0490; Installation of Zinc Injection.

The inspectors reviewed the configuration changes and associated 10 CFR Part 50.59 safety evaluation documents against the design basis, the USAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of any safety-related systems, or systems important to safety. The inspectors observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-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. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

The inspectors' review of this permanent plant modification constituted a single inspection sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- EDG 2 idle start, fast start (184-day surveillance), and air start recycle testing during the week ending January 28, 2012, following various EDG maintenance activities that included replacement of air start motors and cleaning/inspection of the jacket water heat exchanger;
- Auxiliary Feedwater Pump 2 quarterly test during the week ending February 4, 2012, following maintenance activities associated with the steam generator level control valves and the turbine governor;
- EDG 1 operational testing following electrical relay maintenance during the week ending February 18, 2012; and

- Post-installation operational and load bank testing for Battery Charger 1PN after replacement of the entire battery charger during the week ending February 25, 2012.

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 (i.e., temporary modifications or jumpers required for test performance were properly removed after test completion, etc.); and test documentation was properly evaluated. The inspectors evaluated the activities against TSSs, the USAR, 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 PMTs 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.

The inspectors' reviews of these PMT activities constituted four PMT inspection samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R21 Component Design Bases Inspection (71111.21)

.1 (Closed) Unresolved Item 05000346/2007007-05 Concern Regarding Safety-Related Battery Electrical Isolation

a. Inspection Scope

During a 2007 Component Design Basis Inspection, the inspectors opened an unresolved issue (URI) 05000346/2007007-05) related to the design and current configuration of the station's 125/250 Vdc safety-related distribution system. Resolution to this issue required support from the Office of Nuclear Reactor Regulation (NRR). On July 26, 2011, the NRR staff issued the final response to Task Interface Agreement (TIA) 2011-001, "Davis Besse Nuclear Power Station Safety-Related Batteries Electrical Separation Design and Licensing Bases" (ADAMS Accession No. ML1193A203).

During this inspection, the inspectors communicated the results of the TIA and reviewed the licensee's actions in response to the TIA 2011-001 conclusions. This review did not represent an inspection sample. Specific documents reviewed are listed in the Attachment of this report.

b. Findings

Introduction: The inspectors identified a finding, with two examples, of very low safety significance (Green) and an associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to maintain the electrical separation of the redundant safety-related DC systems in compliance to the design and licensing bases.

Description: During a 2007 component design basis inspection, the inspectors reviewed the design and current configuration of the station's 125/250 Vdc safety-related distribution system. During the inspection, the inspectors identified a concern regarding the electrical separation of non-safety-related loads supplied by the station's 125/250 Vdc safety-related batteries. The inspectors postulated that the non-safety-related loads (reactor coolant back-up lift pumps and lighting panel L49E1) could become grounded in the environment following a high-energy-line break (HELB) or loss-of-coolant accident (LOCA). The equipment was postulated to be partially grounded, which was not sufficient to blow or trip the automatic protective device (i.e., fuse or breaker). Under this scenario, the non-class, grounded component would impart an additional load on the station batteries that was not considered within the station's calculation of record.

In addition, the inspectors also determined that six ATSS transfer their non-safety-related loads between non-safety-related inverters "YVA" and "YVB." The licensee stated that these switches were added in response to an industry operating experience (NRC IE Bulletin No. 79-27) after the operating license was issued. The non-class loads in question included the station annunciators, the plant computer, the non-nuclear instrumentation channels "X" and "Y," and the integrated control system channels "X" and "Y." Although these inverters are powered from the safety-related batteries, they are not safety-related and power other non-safety-related loads. Therefore, if a ground fault existed on the ATSS, the fault could result in an automatic transfer of loads from one DC power source to its redundant DC power source, potentially impacting the ability of both divisions of safety-related batteries to perform their safety function. The above concerns remain unresolved as an open item from the aforementioned inspection.

Subsequently, the inspectors requested assistance from NRR in determining the design and licensing basis of the safety-related batteries. On July 26, 2011, the NRR staff issued the final response to TIA 2011-001, "Davis Besse Nuclear Power Station Safety-Related Batteries Electrical Separation Design and Licensing Bases." The NRR staff reviewed the licensee's position on the design of the DC system including the installation of the ATSS to transfer loads from one battery power source to the redundant battery power source. Key points of the TIA are as follows:

- In its March 23, 2011, response to the staff's request for additional information, the licensee confirmed that Emergency Lighting Panel L49E1 has a potential to develop an electrical fault under a postulated environmental condition that may exist following a design basis event such as a LOCA or HELB. Panel L49E1 is not included in the station environmental qualification program and is located inside containment and is susceptible to moisture intrusion, which could result in an electrical fault. In its request for additional information (RAI) response, the licensee stated, "However, any fault that may occur as a result of the post-accident environment is expected to be cleared by the 80 ampere Class 1E supply fuses to ensure the associated safety-related equipment can continue to perform its required safety functions." The staff

did not find any licensee evaluation on an electrical fault with a fault current lower than the fuse rating of 80 amperes. Therefore, the ground may not be cleared by the fuse and may continue to exist in the circuit. Under such conditions, the associated safety-related battery would continue to supply power to the electrical fault as a load, potentially draining its capacity. If the safety-related battery is not sized to account for this additional load, the battery capacity and capability may not be adequate to operate the emergency loads. Therefore, the licensee must demonstrate that the battery has adequate capacity to account for the maximum possible current (without being cleared by the 80 ampere fuse).

The NRR staff found that the licensee had failed to address the impact of a ground fault in non-safety equipment, not significant enough to blow the supply fuse, on the ability of safety-related equipment to perform their intended safety functions. Specifically, the staff found that the licensee had not addressed the impact of this condition on the safety function of the safety-related batteries as described in UFSAR Section 3.11.1. This condition could challenge the adequacy of electrical separation between grounded non-safety-related equipment and safety-related equipment.

- UFSAR Section 3D.2.6 (Safety Guide 6, 1971) Regulatory Position D.4.b and D.4.c do not allow “automatic transfer” of loads to automatically connect redundant load groups or redundant power sources in any condition. As such, the licensee’s argument, that a ground on a non-safety-related component would blow the fuse on one power source and then would automatically transfer to the redundant power source and blow the fuse on the redundant power source, was contrary to the guidance provided in Safety Guide 6, Regulatory Position D.4.c.

The staff’s research of correspondence, letters, and documents related to Davis-Besse resulted in locating a safety evaluation attached to a letter (ADAMS Legacy Accession No. 8909150352, Micro Form Address 51246, Frames 295-308) pertaining to an audit performed by the NRC at Davis-Besse for verification of resolution of concerns related to NRC IE Bulletin No. 79-27, “Loss of Non-Class-1-E Instrumentation and Control Power System Bus During Operation.” The staff determined this safety evaluation was specifically written for the resolution of IE Bulletin 79-27 concerns related to losing power to safety and non-safety-related instrumentation and control systems and did not include an evaluation of other NRC requirements. In this safety evaluation, the staff found that the licensee’s modification to install ATs between redundant DC power sources was acceptable for complying with IE Bulletin 79-27 concerns only. The staff did not find any exemption to Safety Guide 6 as a result of its review.

Based on this and the lack of a licensee evaluation pertaining to the issue presented in TIA 2011-001, the NRR staff found that the licensee had failed to identify and resolve potential conflicts with Safety Guide 6 in resolving IE 79-27 concerns. Furthermore, the staff found that the licensee was required to evaluate the impact of the ATs on design basis commitments (e.g., Safety Guide 6) before installing them. Additionally, the NRR staff found that UFSAR Section 8.1.5 contained the design basis requirement for preventing propagation of ground faults (RG 1.6 (Safety Guide 6)). Specifically, UFSAR Section 8.1.5 references the licensee’s commitment to RG 1.6 (Safety Guide 6). Regulatory Position D.4.c of this Safety Guide states that no provision should exist for automatic transferring of loads between redundant

power sources. In addition, Regulatory Position D.4.b states that no provision should exist for automatically connecting one load group to another load group.

Based on this information, the NRR staff concluded the licensee was not meeting the design basis commitments for Davis-Besse.

On July 26, 2011, the licensee initiated CR 11-98223, "DC System Issues From NRC CDBI," to address the issue. The licensee also initiated licensee event report (LER) EN No. 47096, under 10 CFR 50.72(b)(3)(ii)(B) as a condition that results in the plant being in an unanalyzed condition that significantly degrades plant safety, and per 10 CFR 50.72(b)(3)(v)(A-D) as an event or condition that could have prevented fulfillment of a safety function. The licensee opened the breakers to the non-safety-related loads inside containment and set the ATs to prevent auto-transfer of loads.

Analysis: The inspectors determined that the failure to maintain the electrical separation of the redundant safety-related DC systems in compliance to the design and licensing bases was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. The performance deficiency was determined to be more than minor because the issue was associated with the Mitigating Systems Cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to address the impact of high-impedance ground faults in non-safety equipment on safety-related DC sources and the failure to maintain compliance to RG1.6 when installing ATs between redundant DC power sources impacted the reliability of the DC power system.

The inspectors determined the finding could be evaluated using the SDP in accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 0609.04, "Phase I - Initial Screening and Characterization of Findings," Table 4a for the Mitigating System Cornerstone. Using the Phase I SDP worksheet for the Mitigating Systems Cornerstone, the inspectors answered no to all five screening questions. Therefore, the finding screened as of very low safety significance (Green).

Based on the date of occurrence of the performance deficiency (more than 20 years ago), the inspectors did not identify a cross-cutting aspect associated with this finding. The finding was not representative of current performance.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control" requires, in part, that design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of suitable testing program.

Contrary to this requirement, as of July 26, 2011, the licensee's design control measures failed to ensure the adequacy of the design for the safety-related batteries and redundant DC systems. Specifically, the licensee's design control measures: (1) did not include the maximum possible fault current; and (2) would not prevent the installed automatic transfer switches to transfer a fault from one division to the other; possibly failing both divisions. Because this violation was of very low safety-significance and because the issues were entered into the licensee's CAP, as CR 11-98223, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000346/2012002-02, Safety-Related Battery Electrical Isolation).

## 1R22 Surveillance Testing (71111.22)

### .1 Quarterly Surveillance Test Reviews and Observations

#### 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-MI-03201; "Channel Functional Test and Calibration of SFRCS ACH 1 Pressure Inputs," during the week ending January 14, 2012 (routine);
- DB-SP-04150; "Auxiliary Feedwater Pump 1 Monthly Test," during the week ending January 21, 2012 (routine);
- DB-SC-03077; "Emergency Diesel Generator 2 184-Day Test," during the week ending January 28, 2012 (routine); and
- DB-SP-03338; "Containment Spray Train 2 Quarterly Pump and Valve Test," during the week ending February 25, 2012 (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.

These quarterly reviews by the inspectors constituted three routine surveillance testing inspection samples and a single inservice testing inspection sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors held discussions with Emergency Preparedness (EP) staff regarding the operation, maintenance, and periodic testing of the Alert and Notification System (ANS) in the plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and siren test failure records from May 2010 through February 2012. Information gathered during document reviews and interviews was used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This alert and notification system review by the inspectors constituted a single inspection sample as defined in IP 71114.02-05.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

.1 Emergency Response Organization Augmentation Testing

a. Inspection Scope

The inspectors reviewed and discussed with plant Emergency Preparedness staff the emergency plan commitments and procedures that addressed the primary and alternate methods of initiating an emergency response organization (ERO) activation to augment the on-shift ERO as well as the provisions for maintaining the plant's ERO emergency telephone book. The inspectors also reviewed reports and a sample of corrective action

program records of unannounced off hour augmentation tests, which were conducted between May 2010 and February 2012 to determine the adequacy of post drill critiques and associated corrective actions. The inspectors also reviewed a sample of the EP training records, approximately 15 records for ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment to this report.

This ERO augmentation testing review by the inspectors constituted a single inspection sample as defined in IP 71114.03-05.

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

.1 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspectors reviewed a sample of nuclear oversight staff's audits of the emergency preparedness (EP) program to determine that these independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed critique reports and samples of corrective action program records associated with the 2011 biennial exercise, as well as various EP drills conducted in order to determine that the licensee fulfilled its drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns identified during these activities.

The inspectors reviewed a sample of EP items and corrective actions related to the facility's EP program and activities between May 2010 and February 2012 to determine whether corrective actions were completed in accordance with the sites corrective action program. Documents reviewed are listed in the Attachment to this report.

This correction of EP weaknesses and deficiencies review by the inspectors constituted a single inspection sample as defined in IP 71114.05-05.

b. Findings

Introduction

The inspectors identified a finding of very low safety significance (Green), and an associated NCV of 10 CFR 50.54(q) for failing to follow and maintain an emergency plan that meets the requirements of emergency planning standard 10 CFR 50.47(b)(4). Specifically, the licensee failed to maintain configuration control of seismic instrumentation necessary for the declaration of emergency events. The seismic instrumentation was out-of-service without the knowledge of the on-shift operating crew and with no compensatory measures in place.

Description

On January 20, 2012, the Seismic Monitor System was declared non-functional to support WO 200490950. With the system out-of-service, compensatory actions were

required per plant procedure DBRM-EMER-5003, "Equipment Important to Emergency Response." The maintenance log entry was not carried forward into succeeding unit logs nor documented in the license requirements section of the SRO turnover sheet and resulted in the loss of both configuration control and the required compensatory actions for the seismic monitor system. On February 7, 2012, the NRC resident inspector questioned the control room operating crew as to why the system was out-of-service. The crew determined that the system had been out-of-service to support maintenance since January 20, 2012. Configuration control and appropriate compensatory actions were promptly implemented.

### Analysis

From January 20, 2012, to February 7, 2012, the licensee failed to maintain configuration control of seismic instrumentation necessary for the declaration of emergency events. The seismic instrumentation was out-of-service without the knowledge of the on-shift operating crew and with no compensatory measures in place. The inspectors determined that the issue was a performance deficiency, as it was reasonably within the licensee's ability to foresee and correct. This finding was determined to be of more than minor significance because it was associated with the ERO performance attribute of the EP Cornerstone. This finding affected the cornerstone objective of ensuring the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was evaluated in accordance with NRC IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," and determined to be of very low safety significance because it did not result in the loss or degradation of a risk significant planning standard. One Alert and one Notification of Unusual Event EAL initiating condition would have been rendered ineffective such that a seismic event would have been declared in a degraded manner. This finding was also associated with the cross-cutting area of human performance. Specifically, the licensee's work control process failed to appropriately control work on the seismic monitoring system. This resulted in a loss of configuration control and instrumentation necessary to classify a seismic event without compensatory measures in place. (H.3(b))

### Enforcement

Title 10 CFR 50.47(b)(4), states: "A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures." Contrary to the above, on January 20, 2012, until February 7, 2012, the seismic monitor system remained in an out-of-service condition without the required compensatory actions for classifying EALs HU3 and HA3. Because this violation was of very low safety significance and because it had been entered into the licensee's CAP as CR 2012-01950 and CR 2012-01984, the violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 5000346/2012002-01).

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on March 22, 2012, 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.

The inspectors' review of this EP drill constituted a single inspection sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstones: Occupational Radiation Safety and Public Radiation Safety**

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

The inspectors' reviews documented in this section constituted a single radioactive solid waste processing and radioactive material handling, storage, and transportation inspection sample as defined in IP 71124.08-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the USAR, the process control program, and the recent radiological effluent release report for information on the types, amounts, and processing of radioactive waste disposed.

The inspectors reviewed the scope of any quality assurance audits in this area since the last inspection to gain insights into the licensee's performance and inform the "smart sampling" inspection planning.

b. Findings

No findings were identified.

.2 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements," as appropriate.

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR 20, "Standards for Protection against Radiation." For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801, "Security of Stored Material," and 10 CFR 20.1802, "Control of Material Not in Storage," as appropriate.

The inspectors evaluated whether the licensee established a process for monitoring the impact of long-term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors selected containers of stored radioactive material, and assessed for signs of swelling, leakage, and deformation.

b. Findings

No findings were identified.

.3 Radioactive Waste System Walkdown (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in the USAR, Offsite Dose Calculation Manual, and process control program.

The inspectors reviewed administrative and/or physical controls (i.e., drainage and isolation of the system from other systems) to assess whether the equipment which is not in service or abandoned in place would not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the USAR were reviewed and documented in accordance with 10 CFR 50.59, as appropriate and to assess the impact on radiation doses to members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers and assessed whether the waste stream mixing, sampling procedures, and methodology for waste concentration averaging were consistent with the process control program, and provided representative samples of the waste product for the purposes of waste classification as described in 10 CFR 61.55, "Waste Classification."

For those systems that provide tank recirculation, the inspectors evaluated whether the tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's process control program correctly described the current methods and procedures for dewatering and waste stabilization (e.g., removal of freestanding liquid).

b. Findings

No findings were identified.

.4 Waste Characterization and Classification (02.04)

a. Inspection Scope

The inspectors selected the following radioactive waste streams for review:

- Dry active waste; and
- Spent Resins.

For the waste streams listed above, the inspectors assessed whether the licensee's radiochemical sample analysis results (i.e., "10 CFR Part 61" analysis) were sufficient to support radioactive waste characterization as required by 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The inspectors evaluated whether the licensee's use of scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analysis for the selected radioactive waste streams.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR Part 61 for the waste streams selected above.

The inspectors evaluated whether the licensee had established and maintained an adequate quality assurance program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56, "Waste Characteristics."

b. Findings

No findings were identified.

.5 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether the requirements of applicable transport cask certificate of compliance had been met. The inspectors evaluated whether the receiving licensee was authorized to receive the shipment packages. The inspectors evaluated whether the licensee's procedures for cask loading and closure procedures were consistent with the vendor's current approved procedures.

The inspectors observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation and receipt activities. The inspectors assessed whether the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to:

- The licensee's response to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979; and
- Title 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training."

Due to limited opportunities for direct observation, the inspectors reviewed the technical instructions presented to workers during routine training. The inspectors assessed whether the licensee's training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

b. Findings

No findings were identified.

.6 Shipping Records (02.06)

a. Inspection Scope

The inspectors evaluated whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number for the following radioactive shipments:

- 10-3028, Low Specific Activity (LSA-II) Shipment, April 5, 2010;
- 10-3080, Radioactive Material, Type A Shipment, October 21, 2010;
- 11-3012, Surface Contaminated Object (SCO-II) Shipment, March 16, 2011;
- 11-2036, Surface Contaminated Object (SCO-II) Shipment, September 29, 2011; and
- 11-4001, Low Specific Activity (LSA-I) Shipment, October 4, 2011.

Additionally, the inspectors assessed whether the shipment placarding was consistent with the information in the shipping documentation.

b. Findings

No findings were identified.

.7 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution in the licensee CAP. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

The inspectors reviewed results of selected audits performed since the last inspection of this program and evaluated the adequacy of the licensee's corrective actions for issues identified during those audits.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

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

4OA1 Performance Indicator (PI) 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 PI for the period from January 2011 through December 2011. 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 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

The inspectors' review of this PI constituted a single unplanned scrams per 7000 critical hours inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for the period from January 2011 through December 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period 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. Documents reviewed are listed in the Attachment to this report.

The inspectors' review of this PI constituted a single unplanned scrams with complications inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI for the period from January 2011 through December 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period 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. Documents reviewed are listed in the Attachment to this report.

The inspectors' review of this PI constituted a single unplanned transients per 7000 critical hours inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise PI for the period from the second quarter 2011 through fourth quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during predesignated control room simulator training sessions; performance during the 2011 biennial exercise; and performance during other drills. Documents reviewed are listed in the Attachment to this report.

The inspectors' review of this PI constituted a single drill/exercise performance inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the second quarter 2011 through fourth quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2011 biennial exercise and other drills; and revisions of the roster of personnel assigned to key ERO positions. Documents reviewed are listed in the Attachment to this report.

The inspectors' review of this PI constituted a single ERO drill participation inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.6 Alert and Notification System

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the second quarter 2011 through fourth quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; and results of periodic ANS operability tests. Documents reviewed are listed in the Attachment to this report.

The inspectors' review of this PI constituted a single alert and notification system inspection sample as defined in IP 71151-05.

b. Findings

No findings 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; 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 Attachment to this report.

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 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 were identified.

## .3 Selected Issue Follow-Up Inspection: Operability Process

### a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on the licensee's program for reviewing and documenting operability determinations for resolution of degraded and nonconforming conditions. The inspectors' review nominally considered issues documented during the current operating cycle, as well as long-standing degraded and nonconforming issues that are still open, dating back several years where the scope of the review was warranted.

The inspection consisted of a review of the licensee's processes and procedures for reviewing and dispositioning degraded and nonconforming conditions. The inspectors compared the licensee's operability determination process to the current NRC Technical Guidance contained in Part 9900, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," dated April 16, 2008. The inspectors review also evaluated the licensee's awareness of the current list of degraded and nonconforming conditions and verified that the licensee is complying with procedural guidance for issues requiring the use of prompt operability determinations (PODs). The inspectors sampled the CR database to verify the licensee was consistent with procedural guidance when using immediate operability determinations.

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

### b. Observations

#### (1) Operator Awareness of Degraded and Nonconforming Conditions

Degraded conditions and nonconforming conditions are specific terms defined in NRC Technical Guidance.

Degraded Condition: A degraded condition is one in which the qualification of an SSC or its functional capability is reduced. Examples of degraded conditions are failures, malfunctions, deficiencies, deviations, and defective material and equipment. Examples of conditions that can reduce the capability of a system are aging, erosion, corrosion, improper operation, and maintenance.

Nonconforming Condition: A nonconforming condition is a condition of an SSC that involves a failure to meet the current licensing basis (CLB) or a situation in which quality has been reduced because of factors such as improper design, testing, construction, or modification. The following are examples of nonconforming conditions:

- An SSC fails to conform to one or more applicable codes or standards (e.g., the CFR, operating license, TSs, USAR, and/or licensee commitments);
- An as-built or as-modified SSC does not meet the CLB;
- Operating experience or engineering reviews identify a design inadequacy; and
- Documentation required by NRC requirements such as 10 CFR Part 50.49 is unavailable or deficient.

At the beginning of the inspection, the inspectors requested a list of all current and open degraded or nonconforming conditions. In discussion with the operating shift crew, the inspectors determined that a documented list of operable but degraded or nonconforming conditions is not controlled by the on-shift operators. Operators were fully aware of the conditions of existing PODs, but could not immediately provide a status of all degraded or nonconforming conditions.

Part 9900 NRC Technical Guidance describes operator awareness and responsibilities. The guidance states, "...the operating shift crew must be aware of the operability and functionality of plant SSCs, and the status of degraded or nonconforming conditions that may affect plant operations." This is important because the SRO has the responsibility to make the declaration of whether an SSC is operable or inoperable. When an SRO makes an immediate operability determination they must have knowledge of all conditions affecting plant equipment and take into account the cumulative effect of all degraded or nonconforming conditions that currently exist for the SSC. Although the inspectors did not identify a performance deficiency associated with this issue during their limited CR search, a potential vulnerability exists because the licensee does not currently employ a method to track degraded and nonconforming conditions.

## (2) Ability to Track Degraded and Nonconforming Conditions

Because a list of degraded and nonconforming conditions was not already in use by operations, one was created for the inspectors by the licensee's regulatory compliance section. The list was produced using a search of the CR database for all CRs with open corrective actions for critical components. The inspectors reviewed the list provided and found several examples of conditions that were missing from the list. Among the examples of missing items included CR 2011-03346, documenting a nonconforming condition with the containment shield building, and CR 2011-01902, documenting a nonconformance with the station's DC battery system.

Additionally, during a review of selected CRs, the inspectors observed that when an SRO is evaluating a CR issue for operability, the SRO does not define conditions as either "degraded" or "nonconforming". Procedural guidance contained in licensee

reference material, NORM-OP-1009, "SRO Review of Condition Reports," step 3.1.5 states that "Defining the condition as a "Degraded" and/or "Nonconforming" condition may be necessary in some instances." The licensee's CR system does not include a field to mark conditions as either "degraded" or "nonconforming". Thus, the CR database does not contain a tracking mechanism for these conditions, and an efficient way to search for these conditions in the system does not exist.

(3) Timeliness of Corrective Actions to Resolve Degraded and Nonconforming Conditions

The inspectors reviewed the corrective actions associated with CR 2007-25931, which documented that the EDG room ventilation dampers may not be structurally adequate during a design basis tornado condition. The initial review of this condition required compensatory actions to maintain operability of the dampers. However, a subsequent calculation was performed by the licensee using a tornado differential pressure (d/p) value of 1.2 pounds per square inch differential (psid) as opposed to the USAR described value of 3.0 psid. The 1.2 psid value for tornado d/p is current, updated information based on Regulatory Guide 1.76, Revision 1. This calculation provided the licensee reasonable assurance for operability without the use of compensatory actions, although a nonconformance remained with respect to meeting the USAR design basis requirements. The corrective action associated with this condition was to restore qualification of the EDG room dampers or update the CLB to incorporate the site specific tornado differential parameter endorsed by the NRC via Regulatory Guide 1.76. This corrective action was originally scheduled with a due date of February 20, 2008. However, the corrective action was extended eight times with minimal progress made to resolve the issue. The inspectors discussed the issue with the licensee, which now has a goal to complete calculations to qualify the dampers to the design basis in a more practical timeframe.

In general, the failure to resolve degraded and nonconforming conditions in a timely manner inherently extends the exposure time of the condition. Therefore, a potential exists for increases in risk based upon the level of degradation and the extent of time that the SSC is affected. Resolving degraded and nonconforming conditions in a timely manner helps manage that risk.

(4) Use of Mode Hold Restraints

During refueling outages, the licensee assigns Mode Hold Restraints for all CR issues that affect the operability of an SSC. Mode hold restraints are tracked to ensure they are closed prior to entering a Mode in which the SSC is required to be operable. This ensures operability issues are resolved prior to entering a Mode where the SSC is required by TS. In accordance with licensee procedures, a POD is not required because at the time of discovery, the SSC is not required to be operable in the current mode. However, there is a significant decrease in the level of rigor applied to a mode hold restraint compared with a POD. For instance, the licensee has an existing business practice procedure that provides guidance for completion of the POD form. The form includes documentation of effect on the CLB and TS, a documentation of technical evaluation performed for the deviation, description of availability of redundant and backup equipment, identification of conservatism and margin, probability for needing the safety function, classification of the significance of the condition, identification of compensatory measures needed, and a review of active PODs, temporary modifications, etc., for any cumulative effect on functions. PODs are signed and approved by the

operations manager. In comparison, mode hold restraints are focused on SSC operability and may not be factoring in degraded and nonconforming conditions in their evaluation. Unlike a POD, a mode hold restraint does not contain formal guidance and documentation. Mode hold restraint evaluations only require shift manager approval to close.

(5) Summary

The inspectors identified potential deficiencies related to the licensee's awareness of degraded and nonconforming conditions, the ability to track degraded and nonconforming conditions, the ability to resolve degraded and nonconforming conditions in a timely matter, and the use of mode hold restraints during refueling outages. These observations represent potential vulnerabilities in the licensee's operability determination process. Other than minor issues documented in this section, the documents reviewed by the inspectors did not reveal an actual case where the operability of an SSC was misclassified. Therefore, based on the limited amount of CRs reviewed during this inspection, no findings of significance were identified.

c. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Event Notification 47670: Loss of Safety Parameter Display System Greater than Eight (8) Hours Due to Hard Drive Failure

a. Inspection Scope

On February 16, 2012, at approximately 0542 hours, the Safety Parameter Display System (SPDS) became non-functional, and therefore was not available in the Control Room or in the licensee's emergency response facilities. The licensee immediately began efforts to troubleshoot and repair the problem, but at 1342 hours those efforts had not been successful and the licensee reported the loss of the SPDS to the NRC Operations Center in accordance with 10 CFR 50.72(b)(3)(xiii).

Troubleshooting efforts eventually identified a corrupted system computer file, and the SPDS was restored by 2100 hours following successful replacement of the subject file. The inspectors reviewed the licensee's response to the condition, including the compensatory actions for the loss of the SPDS and the decision to make an 8-hour non-emergency notification. Additionally, the inspectors verified that the Emergency Response Data System that would provide site data to the NRC in the event of an emergency declaration had remained functional, that the station remained capable of performing dose assessment using manual inputs per site procedures, and that the Control Room maintained the capability to retrieve plant data inputs to assess plant conditions and perform core damage assessments via alternate means. Documents reviewed in this inspection are listed in the Attachment.

This event follow-up review by the inspectors constituted a single inspection sample as defined in IP 71153-05.

b. Findings

No findings were identified.

.2 (Closed) License Event Report 05000346/2011-004-00: Direct Current System Design Issues

On July 26, 2011, with Davis-Besse in Mode 1 at approximately 100 percent power, information was received from the NRC regarding design issues with the Director Current (DC) system. The first issue was that non-essential, non-environmentally qualified equipment, powered by the DC system and located in containment, could challenge the adequacy of the electrical separation between potentially grounded equipment and the safety-related batteries. The second was that automatic transfer switches supplying power to non-essential instrumentation could transfer a fault to the redundant power source, potentially impacting both safety-related DC power sources.

The licensee had entered this issue into their CAP as CR 11-98223. The inspectors' review of this event is detailed in Section 1R21.1 of this report. This LER is closed.

This Event follow-up review by the inspectors constituted one inspection sample as defined in IP 71153-05.

40A5 Other Activities

.1 Temporary Instruction 2515/182 - Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, Nuclear Energy Institute (NEI) 09-14, "Guideline for the Management of Buried Piping Integrity" (ADAMS Accession No. ML1030901420) to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122), with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued Temporary Instruction (TI)-2515/182 "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks" to gather information related to the industry's implementation of this initiative.

The inspectors reviewed the licensee's programs for buried pipe, underground piping and tanks in accordance with TI-2515/182 to determine if the program attributes and completion dates identified in Sections 3.3 A and 3.3 B of NEI 09-14 Revision 1 were contained in the licensee's program and implementing procedures. For the buried pipe and underground piping program attributes with completion dates that had passed, the inspectors reviewed records to determine if the attribute was in fact complete and to determine if the attribute was accomplished in a manner which reflected good or poor practices in program management.

Based upon the scope of the review described above, Phase I of TI-2515/182 was completed.

b. Observations

The licensee's buried and underground piping and tanks program was inspected in accordance with paragraphs 03.01.a through 03.01.c of TI-2515/182 and was found to meet all applicable aspects of NEI 09-14 Revision 1, as set forth in Table 1 of the TI.

c. Findings

No findings were identified.

.2 Reactor Vessel Head Replacement (IP 71007) – Modifications

a. Inspection Scope

On July 18, 2011, the inspectors initiated inspection activities to review the physical plant modifications associated with the reactor vessel head replacement to verify that licensee engineering evaluations and design changes were completed in conformance with the requirements of the facility license, applicable codes and standards, licensing commitments, and NRC regulations. The inspection elements included review of the engineering changes supporting the reactor vessel head replacement, the installation of a new integrated head assembly, the temporary opening and closure of the shield building construction opening, and the temporary opening and closure of the containment vessel construction opening.

Inspector follow-up activities related to the reactor vessel head replacement inspection remain ongoing. The inspectors' reviews will be continued during the next quarter's inspection activities.

Inspector follow-up activities related to shield building laminar concrete cracking identified during construction opening hydro-demolition activities also remain ongoing. Upon completion, the results of that inspection will be documented in a stand-alone inspection report (IR) 05000346/2012007).

b. Findings

No findings were identified.

.3 (Closed) Concern Regarding Safety-Related Battery Electrical Isolation (Unresolved Item 05000346/2007007-05)

This issue is described in Section 1R21 and was resolved to an NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 12, 2012, the inspectors presented the inspection results to the Director of Site Operations, Mr. Brian Boles, 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:

- The Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks (TI-2515/182) with the Site Vice President, Mr. Barry Allen, and other members of the licensee staff on January 11, 2012;
- The inspection results for the area of radioactive solid waste processing and radioactive material handling, storage, and transportation with the Director of Site Operations, Mr. Brian Boles, on January 13, 2012;
- The results of the EP program inspection with the Site Vice President, Mr. Barry Allen, and other members of the licensee staff on March 30, 2012; and
- The inspectors presented the inspection results for the concern regarding safety-related battery electrical isolation to Mr. D. Imlay and other members of the licensee staff on April 12, 2012.

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

## 40A7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

### .1 Additional Emergency Diesel Generator Inoperability Caused by Inadequate Maintenance Procedure Instructions

TS 5.4.1(a) requires the licensee to establish, implement, and maintain applicable written procedures for the safety-related systems and activities recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. Section 9.a, "Procedures for Performing Maintenance," of RG 1.33, Revision 2, Appendix A, further states, in part, that: "Maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances."

Contrary to this requirement, on January 26, 2012, licensee personnel failed to properly connect a strip chart recording device needed to support a planned TS surveillance on EDG No. 2. Specifically, the improper connection on the recording equipment caused test data essential to the completion of the TS surveillance to be lost, which resulted in the need to perform the surveillance a second time. This additional performance of the surveillance added significant time to the periods of inoperability and unavailability for EDG No. 2, and caused the licensee to make an unplanned entry into an elevated (i.e., Orange) plant risk awareness state. Upon investigation into the matter, the licensee identified that the applicable maintenance procedure controlling the connection of the strip chart recording equipment only contained detailed connection instructions for the test connections on the EDG itself; the proper configuration for the test connections on the recording equipment was not specified within the procedure, but instead was left to the skill and knowledge of the technician performing the equipment setup.

The objective of the Mitigating Systems Cornerstone of Reactor Safety is to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). A key attribute of this objective is human performance, and specifically, procedure quality. In accordance with NRC IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," the inspectors determined that the violation was of more than minor significance in that it had a direct impact on this cornerstone objective. The licensee's failure to provide technically adequate written procedures and instructions for the connection of the strip chart recording device needed for the EDG No. 2 TS surveillance resulted in the need to perform that surveillance a second time and added significant time to the periods of inoperability and unavailability for EDG No. 2. The licensee had entered this issue into their CAP as CR 2012-01367. Corrective actions planned or completed by the licensee include revision to the EDG TS surveillance procedure to provide enhanced details on the proper connection of the strip chart recording device.

.2 Inadequate Control of Locked High Radiation Area Key

TS 5.7.2(a)(1) requires that High Radiation Areas with dose rates greater than 1.0 rem/hour at 30 centimeters from the radiation source or from any surface penetrated by the radiation, but less than 500 rads/hour at 1 meter from the radiation source or from any surface penetrated by the radiation be provided with a locked or continuously guarded door, gate, or other barrier that prevents unauthorized entry, and in addition, that the door and/or gate keys to these areas be maintained under the administrative control of the shift supervisor, radiation protection manager, or his/her designee.

Contrary to this requirement, on February 15, 2012, licensee personnel failed to properly control the key to a Locked High Radiation Area vault storing a high integrity container loaded with primary resin. Specifically, a Radiation Protection (RP) technician checked out the subject key at the beginning of the work shift in order to access the Locked High Radiation Area vault for a planned evolution. At the end of the shift, the RP technician failed to return the key to the appropriate secure key storage cabinet, instead leaving it in an unsecured desk drawer. Several hours later when the key was identified as being missing, the RP technician, who had left the plant, was contacted and the key was recovered. At no point during the time the key was uncontrolled was the Locked High Radiation Area vault, which can only be accessed by the removal of a twenty-two ton cover, opened and improperly accessed.

The objective of the Occupational Radiation Safety Cornerstone of Radiation Safety is to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. A key attribute of this objective is human performance, and specifically, procedure use and adherence. In accordance with NRC IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," the inspectors determined that the violation was of more than minor significance in that it had a direct impact on this cornerstone objective. The licensee's failure to appropriately control the key to a Locked High Radiation Area vault storing a high integrity container loaded with primary resin per established plant procedures resulted in the potential for unauthorized access to a High Radiation Area with a dose rate greater than 1.0 rem/hour at 30 centimeters from the radiation source or from any surface penetrated by the radiation, but less than 500 rads/hour at 1 meter from the radiation source or from any surface penetrated by the radiation. The licensee had entered this issue into their CAP as CR 2012-02489. Corrective actions planned or

completed by the licensee include the performance of a formal apparent cause evaluation, enhancements to procedural controls for Locked High Radiation Area keys, and additional training for RP personnel.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

B. Allen, Site Vice President  
B. Boles, Director, Site Operations  
K. Byrd, Director, Site Engineering  
J. Dominy, Director, Site Maintenance  
T. Henline, Supervisor, Engineering Programs  
J. Hook, Manager, Design Engineering  
R. Hovland, Manager, Training  
D. Imlay, Director, Site Performance Improvement  
G. Kendrick, Manager, Site Outage Management  
P. McCloskey, Manager, Site Regulatory Compliance  
D. Noble, Manager, Radiation Protection  
W. O'Malley, Manager, Nuclear Oversight  
R. Oesterle, Superintendent, Nuclear Operations  
M. Parker, Manager, Site Protection  
R. Patrick, Manager, Site Work Management  
A. Percival, Acting Manager, Chemistry  
D. Petro, Manager, Steam Generator Replacement Project  
S. Plymale, Manager, Site Operations  
C. Price, Director, Special Projects  
M. Roelant, Manager, Site Projects  
D. Saltz, Manager, Site Maintenance  
C. Steenbergen, Superintendent, Operations Training  
J. Sturdavant, Regulatory Compliance  
T. Summers, Manager, Plant Engineering  
L. Thomas, Manager, Nuclear Supply Chain  
M. Travis, Superintendent, Radiation Protection  
J. Vetter, Manager, Emergency Response  
V. Wadsworth, Regulatory Compliance  
A. Wise, Manager, Technical Services  
G. Wolf, Supervisor, Regulatory Compliance  
K. Zellers, Supervisor, Reactor Engineering  
F. Zurvalec, Buried Pipe Program Owner

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000346/2012002-01	NCV	Seismic Instrumentation Unavailable for Emergency Event Classification (Section 1EP5.1)
05000346/2012002-02;	NCV	Failure to Maintain Safety-Related DC Systems Design Control (Section 1R21.1)

### Closed

05000346/2012002-01	NCV	Seismic Instrumentation Unavailable for Emergency Event Classification (Section 1EP5.1)
05000346/2012002-02	NCV	Failure to Maintain Safety-Related DC Systems Design Control (Section 1R21.1)
05000346/2007007-05;	URI	Concern Regarding Safety-Related Battery Electrical Isolation (Section 4OA5.1)
05000346/2011004-00;	LER	Direct Current System Design Issues (Section 4OA3.2)

### Discussed

05000346/-00	CAL	CAL 3-11-001, Action No. 3 – Boroscopic Examination of Existing Shield Building Core Bore Locations (Section 1R13.2)
05000346/-00	CAL	CAL 3-11-001, Action No. 4 – Boroscopic Examination of the Shield Building Crack Interface Area Via a New Core Bore (Section 1R13.2)

## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector 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.

### 1R04 Equipment Alignment

#### Condition Reports:

- 2012-03201; ECCS Cooler 1 Has Low Flow

#### Procedures:

- DB-OP-06334; Station Blackout Diesel Generator Operating Procedure; Revision 18
- DB-OP-06225; Motor Driven Feedwater Pump Operating Procedure; Revision 18
- DB-OP-06233; Auxiliary Feedwater System; Revision 31
- DB-OP-06261; Service Water System Operating Procedure; Revision 48
- DB-OP-06011; High Pressure Injection System Operating Procedure; Revision 27

#### Drawings:

- M-006C; Main Feedwater System; Revision 30
- M-006D; Auxiliary Feedwater System; Revision 55
- M-017D; Station Blackout Diesel Generator; Revision 14
- M-041A; Service Water Pumps and Secondary Service Water System; Revision 30
- M-041B; Primary Service Water System; Revision 68
- M-041C; Service Water System for Containment Air Coolers; Revision 41
- OS-017A, Sheet 1; Auxiliary Feedwater System; Revision 26
- OS-017B, Sheet 1; Auxiliary Feedwater Pumps and Turbines; Revision 25
- OS-41D; Station Blackout Diesel Generator Lube Oil and Jacket Water; Revision 13
- OS-41E; Station Blackout Diesel Generator Air Start System; Revision 13
- OS-41F; Station Blackout Diesel Generator Electrical Control and Fuel Oil System; Revision 4
- OS-003; High Pressure Injection System; Revision 34

#### Other:

- System Health Report 2011-4; System 09-01; Service Water & Intake Structure

### 1R05 Fire Protection

#### Procedures:

- DB-MI-04815; Supervisory and Functional Test of Accessible Detectors For Node 5 C2720; Revision 7
- DB-OP-02600; Operational Contingency Response Action Plan; Revision 12

#### Pre-Fire Plans:

- PFP-AB-115; ECCS Pump Room 1-2, Room 115, Fire Area A; Revision 5
- PFP-AB-236; No. 2 Mechanical Penetration Room, Room 236, Fire Area A; Revision 4
- PFP-AB-227; Passage, Room 227, Fire Area G; Revision 4
- PFP-AB-303; No. 3 Mechanical Penetration Room, Room 303, Fire Area AB; Revision 6
- PFP-IS-52; Service Water Pump Room, Room 52, Fire Area BF; Revision 3
- PFP-IS-51; Diesel Fire Pump Area, Room 51, Fire Area BE; Revision 3

- PFP-IS-50; Screen Wash Pump Room and Stairway, Rooms 50 and 54, Fire Area BD; Revision 4

Drawings:

- A-221F; Fire Protection General Floor Plan El. 545'-0"; Revision 9
- A-222F; Fire Protection General Floor Plan El. 565'-0"; Revision 23
- A-223F; Fire Protection General Floor Plan El. 585'-0"; Revision 21

Other:

- Fire Hazard Analysis Report

1R06 Flood Protection Measures

Condition Reports:

- 2012-03201; ECCS Cooler 1 Has Low Flow
- 2012-03836; Gasket that Divides the Supply and Return Side Found Out of Position
- 2012-03979; Manhole PM Found Several Cables Underwater and One Sump Pump Non-Functional

Procedures:

- RA-EP-02830; Flooding; Revision 2
- RA-EP-02880; Internal Flooding; Revision 3

Work Orders:

- 200380443; Inspection of Electrical Manholes

1R11 Licensed Operator Regualification Program and Licensed Operator Performance

Condition Reports:

- 2012-01332; API for Control Rod 7-3 Erratic
- 2012-01851; Abnormal Indications on Rod Control Panel
- 2012-01620; ODMI: Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition

Procedures:

- NT-OT-7001; Training and Qualification of Operations Personnel; Revision 12
- DB-OP-02005; Primary Instrumentation Alarm Panel 5 Annunciators; Revision 13
- DB-OP-02516; CRD Malfunctions; Revision 12
- DB-OP-06902; Power Operations; Revision 33

Work Orders:

- 200491742; Rod 7-3 Position Indication

Business Practices:

- DBBP-TRAN-0014; License Requirements for Licensed Operators; Revision 9
- DBBP-TRAN-0021; Simulator Configuration Control; Revision 3
- DBBP-TRAN-0502; Development of Continuing Training Simulator Evaluation; Revision 7
- NOBP-TR-1112; FENOC Conduct of Simulator Training and Evaluation; Revision 1

## 1R12 Maintenance Effectiveness

### Condition Reports:

- 2007-21986; Unexplained Trip of Reactor Protection System Channel 4
- 2009-55460; Unexpected Trip of RPS Channel 2
- 2009-66895; Power Pumps Bistable Tripped With One Trip Input From Field
- 2011-02146; RPS Channel 1 Reactor Trip Module Reactor Protective Module Switch A Degradation
- 2011-04499; RPS Channel 4 Function Generator Problem During MI-03060
- 2011-04579; RPS Channel 4 Test Trip Lamp Did Not Clear as Expected
- 2011-94628; System Monitoring Identified Trend with the RPS Ch 4 +15 Vdc Power Supply
- 2011-06493; RPS Channel 4 Tripped on an Overpower Trip
- 2012-00115; Tripped RTB C While Reinstalling RPS Ch 4 Intermediate Range Test Module
- 2012-00775; Removing Modules in RPS Channel 4 as Required by PM 1969 Appears to Have Caused Numerous Problems in RPS Ch. 4
- 2012-01015; Spurious Trip of RPS Channel 4 "Over Power" and "Power/Imbalance/Flow" Bistables
- 2012-01332; API for Control Rod 7-3 Erratic
- 2012-01851; Abnormal Indications on Rod Control Panel
- 2012-01620; ODMI: Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition
- 2012-02658; Control Rod 7-3 Absolute Position Indication Indicating Three Percent Less Than Group Average
- 2012-02873; ODMI: Revision 1 for Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition
- 2012-03415; Control Rod 7-3 Absolute Position Indication is Erratic

### Work Orders:

- 200488309; RPS4NI1304 Voltage Erratic – RPS Ch 4
- 200491742; Rod 7-3 Position Indication

### Other:

- MRPM; Maintenance Rule Program Manual; Revision 29
- Unit Operating Logs; January, 2010 through March, 2012
- System Health Report 2011-4; System 58-01; Reactor Protection System

## 1R13 Maintenance Risk Assessments and Emergent Work Control

### Condition Reports:

- 2011-05386; EDG 2 Storage Tank Level Low Indication Failure
- 2012-00050; RPS Ch 4 Module May Have Connector Problem
- 2012-00077; Lowering Level Indicated in T153-2, EDG Week Tank 2
- 2012-00115; Tripped RTB C While Reinstalling RPS Ch 4 Intermediate Range Test Module
- 2012-01332; API for Control Rod 7-3 Erratic
- 2012-01851; Abnormal Indications on Rod Control Panel
- 2012-01620; ODMI: Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition
- 2012-02390; Shield Building Core Samples Not Taken Per DB-MS-09005
- 2012-02658; Control Rod 7-3 Absolute Position Indication Indicating Three Percent Less Than Group Average
- 2012-02779; Battery Charger 2PN Mis-Drilled Anchor Bolt

- 2012-02873; ODMI: Revision 1 for Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition
- 2012-03201; ECCS Cooler 1 Has Low Flow
- 2012-03836; Gasket that Divides the Supply and Return Side Found Out of Position
- 2012-03415; Control Rod 7-3 Absolute Position Indication is Erratic
- 2012-04441: ACB 34561 and ACB 34562 Tripped Open

Procedures:

- NOP-OP-1007; Risk Management; Revision 13
- DB-OP-02005; Primary Instrumentation Alarm Panel 5 Annunciators; Revision 13
- DB-OP-02516; CRD Malfunctions; Revision 12
- DB-OP-06902; Power Operations; Revision 33
- DB-MS-09005; Core Bores and Cut Outs Through Barriers; Revision 4
- EN-DP-01142; Core Drill / Cut Out and Barrier Penetrations; Revision 1

Work Orders:

- 200389995; Replace Battery Charger 2PN
- 200479708; Core Bore Shield Building
- 200488309; RPS4NI1304 Voltage Erratic – RPS Ch 4
- 200491742; Rod 7-3 Position Indication

Business Practices:

- DBBP-OPS-0003; On-Line Risk Management Process; Revision 11
- DBBP-OPS-0011; Protected Equipment Posting; Revision 6

Engineering Change Packages:

- 10-0458-001; SGR-17M – Install Shield Building Construction Opening; Revision 1
- 11-0711-000; Shield Building Core Bores; Revision 1
- 11-0711-001; Shield Building Core Bores; Revision 3

1R15 Operability Determinations and Functionality Assessments

Condition Reports:

- 2011-01501; Prompt Functionality Assessment for Seismic Monitoring Triggers ZT2951 and ZT2952
- 2011-01840; ZT-2950 Found to Have Degraded Signal During Troubleshooting of ZT-2951 and ZT-2952
- 2011-01950; Inadequate Tracking of Seismic System Status
- 2011-01984; Concerns of External Oversight (NRC) Regarding Timely Declaration of EAL's for Seismic Events
- 2011-87660; Master Trip Solenoid Valve A Failure to Trip
- 2011-89838; Master Trip Solenoid Valve A Failure to Trip
- 2012-00477; Control Rod Drive 15 Vdc Logic Power is Unexpectedly Cycling Between Redundant Power Supplies
- 2012-01022; ODMI: CRD 15VDC Logic Power Supply Load Transferring Issue
- 2012-01001; Power Supplies From Warehouse Did Not Meet Tolerance
- 2012-01332; API for Control Rod 7-3 Erratic
- 2012-01457; 24 Vdc MTSV A Failed to Trip
- 2012-01620; ODMI: Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition
- 2012-01713; MTSV A Failed to Trip on First Attempt

- 2012-01851; Abnormal Indications on Rod Control Panel
- 2012-01896; Master Trip Solenoid Valve Test Trip A Failures: DB-SS-04159
- 2012-01983; ODMI: Master Trip Solenoid Valve (MTSV) Tripping Delay, Revision 1
- 2012-02092; Master Trip Solenoid Valve A Failed to Trip Immediately
- 2012-02266; 24 Vdc Master Trip Solenoid Valve Test DB-SS-04159, Test Trip A Took 6 Seconds. Worked on Second Attempt
- 2012-02339; Master Trip Solenoid Valve A Failed to Automatically Trip
- 2012-02492; Master Trip Solenoid Valve Test Trip A Light Failed to Go Out Instantly on First Attempt. Successful Test on Second Attempt
- 2012-02574; MTSV A Failed to Trip on First Test Attempt
- 2012-02628; MTSV A Failure to Trip Instantaneously on First Test Attempt
- 2012-02658; Control Rod 7-3 Absolute Position Indication Indicating Three Percent Less Than Group Average
- 2012-02663; MTSV A Failed to Trip on the First Test Attempt
- 2012-02699; Trending of the Result of ODMI for Master Trip Solenoid Valve (MSTV) Tripping Delay, Revision 1
- 2012-02701; ODMI: Master Trip Solenoid Valve (MTSV) Tripping Delay, Revision 2
- 2012-02728; MTSV, DB-SS-04159 Test Failure
- 2012-02771; MTSV A Failed to Reset Instantaneously on First Test Attempt
- 2012-02842; MTSV A Failed to Trip Instantly During Testing
- 2012-02873; ODMI: Revision 1 for Contingency for a Potential Control Rod 7-3 Asymmetric Position Indication Condition
- 2012-02899; MTSV A Failed to Trip on First Attempt
- 2012-02912; MTSV A Failed to Trip on First Attempt
- 2012-02966; 24 V MTSV A Failed to Trip on the First Test Attempt
- 2012-02971; MTSV A Failed to Trip Instantly on the First Attempt
- 2012-02995; MTSV A Failed to Trip on First Test Attempt
- 2012-02998; MTSV A Failed to Trip on First Test Attempt
- 2012-03090; ODMI: Master Trip Solenoid Valve (MTSV) Resetting and Tripping Delays
- 2012-03027; MTSV A Failed to Trip on First Test Attempt
- 2012-03076; MTSV A Failed to Trip on First Test Attempt
- 2012-03086; MTSV A Failed to Trip Instantly on the First Attempt
- 2012-03139; MTSV A Failed to Trip on First Attempt
- 2012-03153; MTSV A Failed to Trip on First Test Attempt
- 2012-03201; ECCS Cooler 1 Has Low Flow
- 2012-03225; MTSV A Failed to Trip on First Test Attempt
- 2012-03236; MTSV A Failed to Trip on the First Test Attempt
- 2012-03307; MTSV A Failed to Trip on First Attempt
- 2012-03322; MTSV A Failed to Trip on First Attempt
- 2012-03387; MTSV A Failed to Trip on First Test Attempt
- 2012-03392; MTSV A Failed to Trip on First Attempt
- 2012-03401; Master Trip Solenoid Valve A Failed to Trip Instantaneously on the First Attempt
- 2012-03414; MTSV A Failed to Trip on First Test Attempt
- 2012-03415; Control Rod 7-3 Absolute Position Indication is Erratic
- 2012-03425; 24 Vdc Master Trip Solenoid Valve A Test Failure
- 2012-03836; Gasket that Divides the Supply and Return Side Found Out of Position
- 2012-03670; Rosemount Part 21 for Resistance Change Affecting Accuracy Specification for 1154 Series H Transmitters Under Accident Conditions

Procedures:

- DB-SS-04159; 24 Volt DC Master Trip Solenoid Valves Test; Revision 5
- DB-OP-06414; Seismic Monitoring System; Revision 6
- DB-EMER-5003; Equipment Important to Emergency Response; Revision 5
- RA-EP-02820; Earthquake; Revision 8

Work Orders:

- 200491742; Rod 7-3 Position Indication
- 200490950; Simple Troubleshooting, Seismic Monitoring System

Calculations:

- C-ICE-064.02-004; RCS Hot Leg Low & Wide Range Pressure String Uncertainties; Revision 4
- C-NSA-064.02-028; 24 Month Pressure Temperature Curve Data; Revision 3

Other:

- Part 21 Report; Rosemount Pressure Transmitters with Nonzero Based Calibrations; February 23, 2012

1R18 Plant Modifications

Engineering Change Packages:

- 10-0490-000; Install Zinc Injection Assembly (Chemical Addition System Connection); Revision 1
- 10-0490-001; Install Zinc Injection Assembly; Revision 4
- 10-0490-002; Install Zinc Injection Assembly (Chemical Addition System Connection); Revision 5
- 10-0490-003; Modify Reactor Chemistry Program to Implement a Zinc Injection Program; Revision 0

1R19 Post Maintenance Testing

Condition Reports:

- 2012-01226; As-Found Condition of EDG Jacket Water Heat Exchanger #2
- 2012-01351; Air Leak Found During EDG 2 Start Up
- 2012-01347; EDG 2 Trouble Annunciator 1-1-K Is In Alarm Along With Red LED for Input 1 on 74X-1/Q400 Module in C3602, Cause Unknown
- 2012-01646; Lock Nut Found Loose On AFPT 2 Governor Linkage During 1/31/12 System Outage
- 2012-01844; Unauthorized Temporary Modification due to Pressure Gauge Left Installed Following Completion of Test Procedure
- 2012-01615; MS131 Cannot Be Verified Fully Closed
- 2012-01561; Foreign Material Found In New Oil
- 2012-01610; Complete Tech Spec Entries Not Made For AFW Outage

Procedures:

- DB-ME-03003; Station Battery Charger Test; Revision 12
- DB-SC-03070; Emergency Diesel Generator 1 Monthly Test; Revision 27
- DB-SC-03077; Emergency Diesel Generator 2 184 Day Test; Revision 24
- DB-SC-04336; Emergency Diesel Generator 2 Recrank Functional Test; Revision 0

- DB-SC-10022; Post-Modification Test for Battery Charger DBC1PN (ECP 02-0707); Revision 3
- DB-SP-03160; AFP 2 Quarterly Test; Revision 24
- DB-SP-03161; AFW Train 2 Level Control, Interlock, and Flow Transmitter Test; Revision 27

Work Orders:

- 200411864; PM 1863, Replace Air Start Motors
- 200386365; PM 6180, EDG Room 2 Vent Fan Motor Testing
- 200409641; PM 1349, EDG 2 4-Yr Maintenance
- 200353306; PM 8862, EDG 2 Jacket Cooling Water Heat Exchanger Clean & Inspect
- 200398381; PM 6976, Replace AFPT 2 Speed String Power Supply
- 200398471; PM 3993, SG Essential Level Control
- 200382751; PM 9206, Calibrate PSL4931, SG 1 to AFPT 2 Isolation Valve
- 200103103; PM 1702, Lube AFPT Governor

1R22 Surveillance Testing

Condition Reports:

- 2012-01367; Incorrect Inputs Used for EDG #2 Testing, Resulted in Missed Data Collection
- 2012-01347; EDG 2 Trouble Annunciator 1-1-K Is In Alarm Along With Red LED for Input 1 on 74X-1/Q400 Module in C3602, Cause Unknown

Procedures:

- DB-MI-03201; Channel Functional Test and Calibration of SFRCS ACH 1 Pressure Inputs; Revision 11
- DB-SC-03077; Emergency Diesel Generator 2 184 Day Test; Revision 24
- DB-SP-03338; Containment Spray Train 2 Quarterly Pump and Valve Test; Revision 21
- DB-SP-04150; Auxiliary Feedwater Pump 1 Monthly Test; Revision 11
- NOP-WM-5002; Control of Measuring and Test Equipment

Drawings:

- M-034; Emergency Core Cooling System Containment Spray and Core Flooding Systems; Revision 66

Other:

- System Health Report 2011-4; System 61-01; Containment Spray

1EP2 Alert and Notification System Testing

Procedures:

- RA-EP-00400; Prompt Notification System Maintenance; Revision 6
- RA-EP-04400; Prompt Notification System Test; Revision 11

Other:

- Davis Besse FEMA ANS Design Basis Report
- Siren Testing and Maintenance Data; May 2010 through February 2012
- 2012 Emergency Information Calendar

### 1EP3 Emergency Response Organization Augmentation

#### Self-Assessment Reports:

- SN-SA-10-281; August 19, 2010 Come-In Drill Self-Assessment
- SN-SA-10-360; November 10, 2010 Staff Augmentation Drill Self-Assessment
- SN-SA-10-369; November 18, 2010 Staff Augmentation Drill Self-Assessment
- SN-SA-11-023; December 9, 2010 Unannounced Drive in Drill Self-Assessment
- SN-SA-11-227; May 4, 2011 Augmentation Call In Drill Self-Assessment

#### Procedures:

- RA-EP-02220; Emergency Operations Facility Activation and Response; Revision 8
- RA-EP-02310; Technical Support Center Activation and Response; Revision 10
- RA-EP-02410; Operations Support Center Activation and Response; Revision 17

#### Other:

- Selected Station Emergency Response Personnel Training Records
- Davis-Besse Emergency Plan Telephone Directory; Revision 113

### 1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

#### Condition Reports:

- 2010-76659; Dose Assessment Program Limitation with Thyroid Dose Calculation during Primary to Secondary Leak
- 2010-78448; Elimination of Containment Atmosphere High Range Radiation Monitors
- 2011-00630; Met Tower Primary 100 M Wind Direction Meter Failure
- 2011-90836; Drill PAR DEP Question
- 2011-92550; Potential Site to State Dose Assessment Discrepancies Due to State Program Limitations
- 2011-96265; Hostile Action Based Drill On-Site Protective Actions
- 2012-01253; New EOF Response Time Assessment
- 2012-01950; Seismic Instrumentation Out of Service and Loss of Configuration Control
- 2012-01984; NRC Identification of Out of Service Seismic Monitor
- 2012-04733; Station Vent Flow Transmitter Temperature Accuracy Impact

#### Procedures:

- DBRM-EMER-1500A; Davis-Besse Action Level Basis Document; Revision 2
- NOP-LP-2001; Corrective Action Program; Revision 27
- NOPL-LP-2007; Corrective Action Program; Revision 0
- DBBP-EMER-0011; Emergency Response Condition Report Tracking and Trending; Revision 1
- RA-EP-02240; Offsite Dose Assessment; Revision 5
- DBRM-EMER-5003; Equipment Important to Emergency Response; Revision 6

#### Oversight Audit Reports:

- MS-C-10-11-24; Fleet Oversight Audit Report
- MS-C-11-11-24; Fleet Oversight Audit Report

#### Self-Assessment Reports:

- SN-SA-10-173; May 20, 2010 Integrated Drill Self-Assessment
- SN-SA-10-174; September 16, 2010 Integrated/Medical Drill Self-Assessment
- SN-SA-10-175; October 14, 2010 Integrated Drill Self-Assessment

- SN-SA-11-012; December 2, 2010 Offsite Personnel Monitoring Drill Self-Assessment
- SN-SA-11-013; February 10, 2011 Integrated Drill Self-Assessment
- SN-SA-11-014; March 10, 2011 Integrated Drill Self-Assessment
- SN-SA-11-015; April 5, 2011 Dry Run Self-Assessment
- SN-SA-11-016; May 10, 2011 Evaluated Exercise Self-Assessment
- SN-SA-11-017; June 9, 2011 Integrated/Medical Drill Self-Assessment
- SN-SA-11-024; February 22, 2011 Post Accident Sample Drill Self-Assessment
- SN-SA-11-107; January 19, 2011 Unusual Event Self-Assessment
- SN-SA-11-166; November 16, 2011 Alert Self-Assessment
- SN-SA-12-059; December 15, 2011 RMT Semi Annual Drill Self-Assessment

Other:

- DBNPS Emergency Plan; Revision 27

### 1EP6 Drill Evaluation

Condition Reports:

- 2012-04599; EP Drill – Emergency Organization Was Not Aware of Simulated Personnel Contamination of a Chemistry Technician During the March 22, 2012 Integrated Drill
- 2012-04545; EP Drill – TSC Operations Engineers Plant Experience
- 2012-04591; EP Drill – Missed Drill/Exercise (DEP) NRC Performance Indicator Opportunity for Release In Progress

Other:

- Emergency Preparedness Integrated Drill Manual, March 22, 2012; Revision 0

### 2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Condition Reports:

- 2011-94994; Leak in Duratec Sluice Hose
- 2011-00237; Radioactive Waste Shipment Checklist Deficiency
- 2011-01365; Waste Water System Can Not Process Spent Resin Storage Tank
- 2012-00501; NRC Inspection: Recommend a Review of NOP-OP-05201, for Ensuring All Boxes are Opened Prior to Shipment

Procedures:

- DB-HP-01502; Dewatering of Filter Media; Revision 6
- DB-HP-01510; Solid Radioactive Waste Processing and Handling; Revision 4
- DB-HP-01511; Low-Level Radioactive Waste Storage Facility; Revision 7
- DB-HP-01702; Transfer, Handling, and Storage of Radioactive Material; Revision 19
- DB-HP-0706; Vehicle, and Material Release from the Radiologically Controlled Area and the Restricted Area; Revision 9
- DB-HP-01712; 10 CFR Part 61, Sampling for Waste Classification; Revision 1
- DB-HP-03002; Dewatering Verification; Revision 2
- DB-HP-06120; Miscellaneous Liquid Waste Demineralizer Skid Operations; Revision 10
- DB-HP-10106; Processing Changes to the Process Control Program; Revision 2
- DB-OP-06018; Condensate Polishing Demineralizer Operations; Revision 8
- DB-OP-06101; Clean Liquid Radwaste System; Revision 23
- DB-OP-06141; Primary Solid Radioactive Waste Disposal; Revision 12
- DB-OP-06111; Miscellaneous Liquid Waste System; Revision 13

- DB-OP-06142; Secondary Solid Radioactive Waste Disposal; Revision 6
- NG-DB-00211; Radioactive Waste Management; Revision 4
- NG-DB-00244; Radioactive Material Control Program; Revision 5
- NOP-OP-5201; Shipment of Radioactive Material/Waste; Revision 2

Nuclear Oversight Reports:

- DB-PA-10-01; Davis-Besse Nuclear Power Station Fleet Oversight First Quarter 2010; May 12; 2010
- DB-PA-10-02; Davis-Besse Nuclear Power Station Fleet Oversight Second Quarter 2010; August 4, 2010
- DB-PA-10-03; Davis-Besse Nuclear Power Station Fleet Oversight Third Quarter 2010; November 11, 2010
- DB-PA-10-04; Davis-Besse Nuclear Power Station Fleet Oversight Fourth Quarter 2010; February 25; 2011
- DB-PA-11-01; Davis-Besse Nuclear Power Station Fleet Oversight First Trimester Report; June 23, 2011
- DB-PA-11-02; Davis-Besse Nuclear Power Station Fleet Oversight Second Trimester Report; October 31, 2011
- MS-C-11-08-03; Fleet Oversight Audit Report, Radwaste; September 15, 2011

Plant System Description Documents:

- SD-019; System Description for Boron Recovery System; February 10, 2005
- SD-020C; System Description for spent Resin Transfer System; October 26, 2005

Radioactive Material Shipping Documents:

- 10-3018; Surface Contaminated Object (SCO-II) Shipment, March 24, 2010
- 10-3028; Low Specific Activity (LSA-II) Shipment; April 5, 2010
- 10-3080; Radioactive Material, Type A Shipment; October 21, 2010
- 11-3012; Surface Contaminated Object (SCO-II) Shipment; March 16, 2011
- 11-2036; Surface Contaminated Object (SCO-II) Shipment; September 29, 2011
- 11-4001; Low Specific Activity (LSA-I) Shipment; October 4, 2011
- 11-4014; Low Specific Activity (LSA-I) Shipment; December 13, 2011

Engineering Change Packages:

- 10-0468-000; Engineering Change Package Design Report – Long Term Storage Facility; Revision 0

Plant Program Documents:

- Davis Besse Nuclear Power Station Process Control Program; Revision 9

40A1 Performance Indicator Verification

Forms:

- NOBP-LP-4012-44; Initiating Events Cornerstone Indicators; Completed Forms for January 2011 through December 2011

Business Plans:

- NOBP-LP-4012; NRC Performance Indicators; Revision 3
- DBBP-EMER-0002; NRC Performance Indicator for Emergency Response Organization (ERO) Drill Participation; Revision 8

- DBBP-EMER-0003; NRC Performance Indicator for Alert and Notification System (ANS Reliability); Revision 7
- DBBP-EMER-0004; NRC Performance Indicator for Drill/Exercise Performance; Revision 8

Procedures:

- RA-EP-01500; Emergency Classification; Revision 14
- RA-EP-02110; Emergency Notification; Revision 10

Other:

- NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 6
- Select Operator Logs covering the period of January 2011 through December 2011
- Maintenance Rule Unavailability Database covering the period of January 2011 through December 2011
- DEP Opportunities; April 2011 - December 2011
- ERO Personnel Participation; April 2011 - December 2011
- Siren System Availability Test Records; April 2011 - December 2011

40A2 Problem Identification and Resolution

Condition Reports:

- 2010-69971; Inadequate Corrective Actions for potential tornado missiles NCV
- 2011-90425; EDG exhaust missile barrier grating discrepancies
- 2011-85418; NCV: Inadequate Corrective Actions for potential tornado missiles
- 2011-89240; Existing tornado missile protection does not conform with licensing basis
- 2008-40528; Lack of a corrective action to track license amendment approval
- 2010-85617; Pressurizer htr bundle closure assembly fatigue analysis missing
- 2011-00422; Intake Canal Dike Does Not Meet Design Configuration Requirements
- 2002-04147; EDG-Missile Protection On Stacks About 6 Feet Short
- 2012-04748; Operability Determination Program NRC Resident Observations
- 2006-11269; CDBI – EDG Vent Dampers May Not be Structurally Adequate for Design Tornado D/P
- 2007-25931; EDG, LVSG, and CCW Ventilation Dampers Do Not Meet Design Basis Requirements
- 2007-27095; EDG 1 Exhaust Piping; UT Data Points Below Min Wall Thickness
- 2011-01902; Extent of Condition Concerns from CR 2011-98223
- 2011-02447; Non Safety DC Load In Containment
- 2012-03201; ECCS Cooler 1 Has Low Flow
- 2012-01501; Prompt Functionality Assessment for Seismic Monitoring Triggers ZT2951 and ZT2952

Procedures:

- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revision 3
- NORM-OP-1009; SRO Review of Condition Reports; Revision 1
- NOBP-OP-1009; Prompt Operability Determination and Functionality Assessment Preparation Guide; Revision 4
- NOP-LP-2001; Corrective Action Program; Revision 29

Other:

- Standing Order 09-0015; Interim Guidance for Emergency Diesel Week Tank Issues during an onsite tornado event; December 31, 2009

- NRC Inspection Manual, Part 9900 Technical Guidance; Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality; dated 4/16/2008
- List of Control Room Deficiencies, Work Arounds, and Burdens; dated March 6, 2012

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

##### Condition Reports:

- 2012-02555; Loss of Control Room SPDS and PI Data System

##### Reference Material Documents:

- DBRM-EMER-5003; Equipment Important to Emergency Response; Revision 6

#### 4OA5 Other Activities

##### Condition Reports:

- 2010-83147; Underground Piping and Tanks Integrity Initiative
- 2012-00471; NRC Observations on NOP-ER-2007
- 2012-00465; NRC Observation on Buried Pipe Program Basis Document

##### Procedures:

- NOP-ER-2007; Underground Piping and Tanks Integrity Program; Revision 2
- NOP-ER-2101; Engineering Program Management; Revision 4

##### Work Orders:

- Work Order 200378699; Cathodic Protection; April 26, 2011

##### Drawings:

- Drawing C-0053-16; Yard and Utilities Plan; Revision 0

##### Other:

- 3202.100-01; Davis-Besse Nuclear Power Station Buried Piping Program Basis Document; July 6, 2009
- Davis-Besse Underground Piping and Tanks Integrity Initiative Buried Piping Inspection Plan; Fall 2011
- Technical Services Engineering - Buried Piping Program and Components Quarterly Health Reports Nos. 2011-1, 2, 3, and 4; Revision 0
- SN-SA-2011-0177-001; Self-Assessment Implementation of NEI 09-14 Guidance for the Management of Underground Piping and Tank Integrity; January 3, 2012

#### 4OA7 Licensee-Identified Violations

##### Condition Reports:

- 2012-01367; Incorrect Inputs Used for EDG No. 2 Testing, Resulted in Missed Data Collection
- 2012-02489; Locked High Radiation Area Key Left Unattended

##### Procedures:

- NOP-OP-04101; Access Controls For Radiologically Controlled Areas; Revision 5
- DB-SC-03077; Emergency Diesel Generator 2 184-Day Test; Revision 24

Business Practices:

- DBBP-RP-0003, Radiation Protection Turnover; Revision 1
- DBBP-RP-1001, Locked High and Very High Radiation Area Key Authorization; Revision 12

## LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ANS	Alert and Notification System
ASME	American Society of Mechanical Engineers
ATS	Automatic Transfer Switch
CAP	Corrective Action Program
CDBI	Component Design Bases Inspection
CFR	Code of Federal Regulations
CLB	Current Licensing Basis
CR	Condition Report
CRD	Control Rod Drive
DC	Direct Current
d/p	Differential Pressure
DRP	Division of Reactor Projects
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
ERO	Emergency Response Organization
HELB	High Energy Line Break
HPI	High Pressure Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
kV	Kilovolt
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MTSV	Master Trip Solenoid Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NUMARC	Nuclear Management and Resources Council
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post-Maintenance Testing
POD	Prompt Operability Determination
psid	Pounds Per Square Inch Differential
RAI	Request for Additional Information
RFO	Refueling Outage
RG	Regulatory Guide
RP	Radiation Protection
RPS	Reactor Protection System
SBODG	Station Blackout Diesel Generator
SCO	Surface Contaminated Object
SDP	Significance Determination Process
SPDS	Safety Parameter Display System

SRO	Senior Reactor Operator
SSC	Structures, Systems, and Components
SW	Service Water
TI	Temporary Instruction
TIA	Task Interface Agreement
TS	Technical Specification
URI	Unresolved Item
USAR	Updated Safety Analysis Report
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
Vdc	Volts Direct Current
WO	Work Order

B. Allen

-2-

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Sincerely,

**/RA/**

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

Docket No. 50-346 and 72-014  
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REPORT 05000346/2012002

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