



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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March 23, 2017

Mr. Brian D. Boles  
Site Vice President  
FirstEnergy Nuclear Operating Co.  
Davis-Besse Nuclear Power Station  
5501 N. State Rte. 2, Mail Stop A-DB-3080  
Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 – U.S. NUCLEAR  
REGULATORY COMMISSION POST-APPROVAL SITE INSPECTION FOR  
LICENSE RENEWAL 05000346/2017009**

Dear Mr. Boles:

On February 10, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Davis-Besse Nuclear Power Station, Unit 1. The enclosed report documents the results of this inspection as discussed on February 10, 2017, with you, and other members of your staff.

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

Based on the sample selected for review, there were no findings of significance identified during this inspection.

We reviewed implementation of all 54 Commitment Items. The inspectors concluded that the actions associated with 47 out of 54 Commitment Items were properly identified, implemented, and completed. For the remaining 7 Commitment Items, the inspectors noted 7 baseline inspections had not been completed and many inspection activities are scheduled 7 years into the period of extended operation. Your actions to address these 7 Commitment Items will be reviewed during a subsequent inspection.

Although 7 Commitment Items remain open, the inspectors determined that you have adequately followed your commitment change process and have tracking mechanisms in place to ensure all actions are completed in a timely manner. On these bases and in consultation with the Division of License Renewal in the Office of Nuclear Reactor Regulation, operation into the period of extended operation is acceptable.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Mark T. Jeffers, Chief  
Engineering Branch 2  
Division of Reactor Safety

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

Enclosure:  
IR 05000346/2017009

cc: Distribution via LISTSERV®

Letter to Brian D. Boles from Mark T. Jeffers dated March 23, 2017

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 – U.S. NUCLEAR  
REGULATORY COMMISSION POST-APPROVAL SITE INSPECTION FOR  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 05000346  
License No: NPF-3

Report No: 05000346/2017009

Licensee: FirstEnergy Nuclear Operating Company

Facility: Davis-Besse Nuclear Power Station, Unit 1

Location: Oak Harbor, OH

Dates: January 23 – February 10, 2017

Inspectors: B. Jose, Senior Reactor Engineer (Lead)  
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Approved by: M. Jeffers, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

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## **SUMMARY**

Inspection Report 05000346/2017009; 1/23/2017 – 2/10/2017; Davis-Besse Nuclear Power Station, Unit 1; Post-Approval Site Inspection for License Renewal.

The report covers a team inspection conducted by region-based engineering inspectors. The inspectors concluded commitments, license conditions, and regulatory requirements associated with the issuance of the renewed operating license are being met. The U.S. Nuclear Regulatory Commission's program for overseeing the Safe Operation of Commercial Nuclear Power Reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6, dated July 2016.

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

No findings were identified.

### **Licensee-Identified Violations**

No violations were identified.

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA5 Other Activities

##### .1 Post-Approval Site Inspection for License Renewal (Phase II) – Inspection Procedure 71003

##### a. Inspection Scope

##### (1) Review of Newly Identified Structures, Systems, and Components

The inspectors discussed the identification of newly identified structures, systems, and components under the purview of Title 10 of the *Code of Federal Regulations* (CFR), Part 54.37(b), with the licensee staff. The licensee added the rubber coatings associated with the Component Cooling Water (CCW) butterfly valves to the service level III coatings and linings monitoring program.

##### (2) Review of Updated Final Safety Analysis Report and Commitment Change Process

As part of reviewing the Aging Management Programs (AMPs) associated with the commitments, the inspectors reviewed the associated Updated Final Safety Analysis Report (UFSAR) sections to confirm the implemented programs were consistent with the UFSAR descriptions.

The inspectors reviewed the licensee's procedures to ensure commitment revisions followed guidance provided in the Nuclear Energy Institute Document 99-04, "Guidelines for Managing NRC [U.S. Nuclear Regulatory Commission] Commitment Changes." The review included verifying the licensee appropriately eliminated commitments and properly evaluated, approved, and reported changes to license renewal commitments listed in the UFSAR, in accordance with 10 CFR 50.59. The inspectors reviewed each change associated with the commitment as described in the following sections. No disparities were identified with respect to implementation of the commitment change process. The inspectors concluded the licensee's commitment change actions were acceptable.

##### (3) Review of Commitment Items

The inspectors reviewed supporting documents including completed surveillance records, conducted interviews, and performed walkdowns to verify the licensee completed the necessary actions to comply with the license conditions that are a part of renewed operating license. The inspectors verified the licensee implemented the AMPs and time-limited aging analyses included in NUREG-2193, "Safety Evaluation Report [SER] Related to the License Renewal of the Davis-Besse Nuclear Power Station, Unit 1."

When changes to the commitments were identified, the inspectors reviewed the commitment change evaluation to verify the licensee followed the guidance in Nuclear Energy Institute Document 99-04 for license renewal commitment change process, including the elimination of commitments, and properly evaluated, reported, and approved where necessary, changes to license renewal commitments listed in the UFSAR, in accordance with 10 CFR 50.59.

The inspectors reviewed the commitments listed below, which are referenced in Appendix A of the SER. All 54 Commitment Items were selected for review. The inspectors concluded the licensee completed actions to allow closure of 47 commitments; however, the following Commitments Items will remain open pending a subsequent inspection: 12, 20, 21, 37, 42, 51, and 53.

Specific documents reviewed are listed in the Attachment to this report.

1. Enhance the Aboveground Steel Tanks Inspection Program, Commitment Item 1:

The Aboveground Steel Tanks Inspection Program is an existing program that will manage the effects of loss of material and cracking on the outside and inside surfaces of aboveground tanks constructed on concrete or soil.

Commitment Item 1 specified that the Aboveground Steel Tanks Inspection Program will be enhanced to include: volumetric examinations of tank bottoms, tank inspections, inspections of the Borated Water Storage Tank.

The inspectors reviewed program basis documents, implementing procedures, and examination reports. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 1.

2. Implement the Boral<sup>®</sup> Monitoring Program, Commitment Item 2:

The Boral<sup>®</sup> Monitoring Program is a new plant-specific program and will be implemented as described in License Renewal Application (LRA) Section B.2.5. The program will provide reasonable assurance that aging effects will be adequately detected such that the neutron absorber intended functions will be maintained for the period of extended operation. The program detects degradation of the Boral<sup>®</sup> neutron absorbers in the spent fuel storage racks with in-situ testing. Adverse conditions will be documented in the Corrective Action Program (CAP).

Commitment 2 specified the licensee would implement the Boral<sup>®</sup> Monitoring Program as described in LRA Section B.2.5.

The inspectors interviewed the program owner and reviewed implementing procedures, completed work orders (WOs), scheduled recurring tasks for the program, and in-situ Badger test results of the Boral<sup>®</sup> neutron absorbers.

The inspectors concluded that the effects of aging will be adequately managed so that the intended functions will remain consistent with the Current Licensing Basis (CLB) for the period of extended operation, as required by 10 CFR 54.21(a)(3). The inspectors also reviewed the Updated Safety Analysis Report (USAR) supplement for this AMP and concluded that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment 2.



3. Enhance the Buried Piping and Tanks Inspection Program, Commitment Item 3:

Commitment Item 3 specified that the existing Buried Pipe/Tank Inspection Program will be enhanced to include the attributes documented in LRA, Section B.2.7.

The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with Inspection Procedure (IP) 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee has completed Commitment Item 3.

4. Implement the Collection, Drainage and Treatment Components Inspection Program, Commitment Item 4:

The Collection, Draining, and Treatment Inspection Program is a new program that will ensure that existing environmental conditions are not causing material degradation that could result in loss of component intended function during the period of extended operation. Commitment Item 4 specified that a Collection, Draining, and Treatment Inspection Program will be established.

The inspectors reviewed program basis documents, implementing procedures, and examination reports. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 4.

5. Implement the Electrical Cables and Connections Program, Commitment Items 5, 6, 7, and 11:

The Electrical Cables and Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program that manages the aging of electrical cables and connections that are not required to be environmentally qualified but are within the scope of license renewal that are subject to adverse localized environments.

Commitment Item 5 specified that the Electrical Cable Connections not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program be established and be enhanced to include high-voltage connections.

Commitment Item 6 specified that accessible electrical cables and connections installed in adverse localized environments will be visually inspected for signs of accelerated age-related degradation such as embrittlement, discoloration, cracking, or surface contamination.

Commitment Item 7 specified that the Electrical Cables and Connection not Subject to Environmental Qualification used in Instrumentation Circuits Program be established to manage the potential loss of insulation resistance for high voltage, low current, sensitive instrument circuits that are subject to adverse localized environments.

Commitment Item 11 specified that the Inaccessible Power Cables not Subject to Environmental Qualification Program be established to manage the reduced insulation resistance of inaccessible or underground power cables that are exposed to significant moisture.

The inspectors reviewed program basis documents, implementing procedures, examination reports, and conducted interviews with the program owners. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 5, 6, 7, and 11.

6. Enhance the External Surfaces Monitoring Program, Commitment Item 8:

The External Surfaces Monitoring Program is a Condition Monitoring Program that consists of periodic visual inspections and surveillance activities of component external surfaces exposed to air-indoor uncontrolled and air-outdoor environments to manage cracking and loss of material. Inspections include both metallic surfaces as well as elastomers and polymers.

The visual and surveillance activities are conducted on a room by room basis with inspections performed on all components and structures in each room. Inspections in Containment are conducted each refueling outage. Outside Containment, inspections are performed on a 2-year (refueling) frequency.

Insulation is removed on 20 percent (25 – 1 foot locations) each 10 year interval during the period of extended operation on those insulated systems exposed to outdoor air or condensation. Opportunistic inspections of the insulated surfaces are also performed if insulation is removed during maintenance or surveillance activities.

The External Surfaces Monitoring Program includes inspection of the Control Room Emergency Ventilation System air-cooled condensing unit cooling coil tubes and fins and the Station Blackout Diesel Generator radiator tubes and fins for unacceptable indications of fouling (build up of dirt or other foreign material). These units are installed in an outdoor environment.

The External Surfaces Monitoring Program is a new AMP. It is effective upon entering the period of extended operation.

The inspectors reviewed program basis documents, implementing procedures, examination reports, and conducted interviews with the program owners. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 8.

7. Enhance the Fatigue Monitoring Program, Commitment Items 9 and 42:

The program manages fatigue of primary and secondary components; including the reactor vessel, reactor internals, pressurizer, and Steam Generators by tracking thermal cycles as required by Technical Specifications 5.5.5, "Component Cyclic or Transient Limit." The program uses the systematic counting of plant transient cycles to ensure that the design cycles are not exceeded, thereby ensuring that component fatigue usage limits are not exceeded. The program periodically updates the cycle counts and takes corrective action when the accumulated cycles approach the design cycles to ensure the analyzed number of cycles is not exceeded. Corrective

actions may include update of the fatigue usage calculation, such that any reanalysis will use the version of American Society of Mechanical Engineers (ASME) Code or an alternative (e.g., Code Case), as approved by the NRC, to determine a valid cumulative usage factor. The program also addressed the effects of the reactor coolant environment on component fatigue life by assessing the environmental impact on a sample of critical components identified in NUREG/CR-6260, in accordance with guidance from NUREG/CR-6583 and NUREG/CR-5704. When commitment 42 is completed, the program will address “additional plant-specific component locations in the reactor coolant pressure boundary that may be more limiting than those considered in NUREG/CR-6260”.

Commitment 9 specified the licensee would enhance the Fatigue Monitoring Program by performing the following prior to the period of extended operation to:

Provide for updates of the fatigue usage calculations on an as-needed basis if an allowable cycle limit is approached. When the number of accrued cycles is within 75 percent of the allowable cycle limit for any transient, a condition report (CR) will be generated. For any transient whose cycles are projected to exceed the allowable cycle limit by the end of the next plant operating cycle (Davis-Besse operating cycles are normally 2 years in duration), the program will require an update of the fatigue usage calculation for the affected component(s).

Establish an acceptance criterion for maintaining the cumulative fatigue usage below the Code design limit of 1.0 through the period of extended operation, including environmental effects where applicable.

The inspectors reviewed EN-DP-00355, “Determination of Allowable Operating Transient Cycles,” Revision 7. The inspectors verified that the procedure required the actions as committed to by commitment 9. Based on the timeliness and adequacy of the licensee’s actions, the inspectors determined the licensee met Commitment 9.

Commitment 42 committed the licensee to enhance the FMP to:

Evaluate additional plant-specific component locations in the reactor coolant pressure boundary that may be more limiting than those considered in NUREG/CR-6260. This evaluation will include identification of the most limiting fatigue location exposed to reactor coolant for each material type and that each bounding material/location will be evaluated for the effects of the reactor coolant environment on fatigue usage. Nickel-based alloy items will be evaluated using NUREG/CR-6909. Submit the evaluation to the NRC 1 year prior to the period of extended operation.

The inspectors verified that the licensee had submitted an evaluation to meet Commitment 42 before the committed date of April 22, 2016. However, the inspectors noted that the Office of Nuclear Reactor Regulation Division of Operating Reactor Licensing staff issued Requests for Additional Information (RAI) on this evaluation with the latest RAI (ML16364A279) on January 23, 2017 (during this inspection period), because the Office of Nuclear Reactor Regulation staff determined that additional information was required to complete its review of the FMP Evaluation submitted April 21, 2016. The cover letter of the latest RAI on the FMP Evaluation documented that the licensee predicted during the

January 11, 2017, discussion on the RAI that the licensee may need 12 weeks to fully respond to the RAI. Therefore, the licensee's RAI response will be after the issuance of this report and therefore Commitment 42 cannot be closed in this report.

The inspectors interviewed the program owner, reviewed implementing procedures, thermal cycle logs, trending data for applicable components, and licensing and program basis documents.

Inspectors found no deficiencies with any aspects of the program but because of the open RAI on the FMP Evaluation the inspectors determined that the licensee had not completed the evaluation required by Commitment 42. Therefore, this commitment remains open pending future review by regional inspectors to close this commitment.

8. Enhance the Fire Water Program, Commitment Item 10:

Commitment Item 10 specified that the existing Fire Water Program will be enhanced to include the attributes documented in LRA, Section B.2.18.

The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment Item 10.

9. Enhance the Masonry Wall Inspection Program, Commitment Item 12:

The Masonry Wall Inspection Program is an existing program that, with enhancements, is comparable to the program described in NUREG-1801, Section XI.S5, Masonry Wall Program. The program is implemented as part of the Structural Monitoring Program (SMP) and consists of inspection activities to detect age-related degradation for masonry walls within the scope of license renewal.

Commitment Item 12 specified enhancements briefly described as follows:

- Include and list the structures within the scope of license renewal
- Add requirement of 10 CFR 54.37, including submittal of records of structural evaluations to records management.
- Specify that for each masonry wall or steel edge supports degradations will be evaluated for the current evaluation basis and corrective action or development of new basis will be required if the evaluation basis is invalidated.
- Specify inspections at least once every 5 years, with provisions for more frequent inspections in degraded areas to ensure there is no loss of intended function between inspections.

The inspectors reviewed the licensing and program basis documents, implementing procedures, WOs, CRs; performed walkdowns; and interviewed the plant personnel responsible for the program. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects.

Inspectors noted that the licensee had not completed base line inspection and, at the time of inspection, did not have Periodic Maintenance (PM) tasks for inspection of all walls within the scope of license renewal. Commitment Item 20 for the SMP under which the masonry wall inspections were to be performed specified that the baseline inspections be complete prior to entering the period of extended operation. The inspectors determined that Commitment Item 12 would remain open pending completion of baseline inspections.

#### 10. Implement the One-Time Inspection Program, Commitment Item 13:

One-time inspections were performed to verify the effectiveness of the Fuel Oil Chemistry Program, the Lubricating Oil Analysis Program, and the Pressurized Water Reactor (PWR) Water Chemistry Program. One-time inspections are used to address situations where: (1) an aging effect is not expected to occur, but there is insufficient data to completely rule it out, or (2) an aging effect is expected to progress very slowly in the specified environment, and the local environment may be more adverse.

One-time inspections were performed on components within systems within the scope of license renewal. These components were categorized into populations based on the component material type and environment to which the material is exposed. The 20 percent to a maximum of 25 components within each material/environment category were visually examined for evidence of loss of material, loss of heat transfer, and cracking. These examinations were performed by qualified nondestructive examination (NDE) personnel.

The visual examinations confirmed that there is no apparent aging-related degradation mechanism occurring, or that the age-related degradation is so insignificant that an AMP is not warranted for these components.

In addition, ultrasonic thickness readings were taken of the bottoms of three fuel oil tanks. No loss of material was identified.

The one-time examinations confirmed that the Fuel Oil Chemistry, Lubricating Oil Analysis, and PWR Water Chemistry Programs are adequate to maintain the pressure boundary integrity of their monitored systems throughout the period of extended operation.

The inspectors reviewed program basis documents, implementing procedures, examination reports, and conducted interviews with the program owners. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 13.

11. Implement the Pressurized Water Reactor Vessel Internals Program, Commitment Items 14, 15, 52, 53 and 54:

The PWR Reactor Vessel Internals (RVIs) Program is used to manage the effects of age-related degradation mechanisms that are applicable in general to the PWR RVI components at Davis-Besse, a B&W designed plant. These aging effects include: (a) various forms of cracking, including stress corrosion cracking (SCC) , which also encompasses primary water SCC, irradiation-assisted SCC or cracking due to fatigue/cyclical loading; (b) loss of material induced by wear; (c) loss of fracture toughness due to either thermal aging or neutron irradiation embrittlement; and (d) loss of preload due to thermal and irradiation-enhanced stress relaxation or creep. In addition, the program includes management of the time-limited aging analysis identified in LRA Section 4.2.7 for reduction in fracture toughness of the RVIs.

The program applies the guidance in Materials Reliability Program (MRP)-227 for inspecting, evaluating, and, if applicable, dispositioning non-conforming RVI components at Davis-Besse. The examination performed by the program provide reasonable assurance that the effects of age-related degradation mechanisms will be managed during the period of extended operation. The program includes expanding periodic examinations and other inspections if the extent of the degradation effects exceeds the expected levels.

Commitment 14 requires the implementation of the PWR RVIs Program. This program is implemented by procedure NOP-CC-5004, "Pressurized Water Reactor Vessel Internals Program."

Commitment 15 required the submittal of MRP-227 plant specific action items for NRC review. This information was submitted by First Energy Nuclear Operating Company (FENOC) within letter L-15-214. This commitment was closed in Supplement 1 to the NRC License Renewal SER.

Commitment 52 requires the evaluation for MRP-227A Action Item 6 be sent to the NRC within 1 year of the detection of degradation exceeding the acceptance criteria of the linked MRP-227A primary component items leading to expansion. No Davis-Besse components exceeding the acceptance criteria of MPR-227A have been identified. Therefore, this commitment is closed.

Commitment 53 requires the evaluation for inspection of the MRP-227A Action Item 7 plant specific components be sent to the NRC within 1 year prior to the inspection of the applicable components. This is an on-going commitment which will remain open until the submittal is made. The MRP-227A inspection of the IMI guide tube spider castings is scheduled for the 21st refueling outage (2020). This plant-specific analysis will require submittal prior to Spring 2019.

Commitment 54 requires the evaluation for the period of extended operation regarding irradiation of the mechanical properties and deformation limits of RVIs as required by MRP-227A, Action Item 8 be submitted for NRC review and approval. The final evaluation was submitted in January 2017 and therefore, this commitment is closed.

The inspectors reviewed program basis documents, implementing procedures, examination reports, and conducted interviews with the program owners. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 14, 15, 52 and 54 and Commitment Item 53 remains open pending future review to verify completion activities.

12. Enhance the Reactor Head Closure Studs Program, Commitment Item 16:

The Reactor Head Closure Studs Program is an existing program that is consistent, with enhancement, with Generic Aging Lessons Learned (GALL) Report AMP XI.M3, "Reactor Head Closure Stud Bolting." The Program manages cracking and loss of material for the reactor head closure stud assemblies (studs, nuts, and washers), and it is a combination mitigative and Condition Monitoring Program. The Program also examines reactor vessel stud assemblies in accordance with the examination and inspection requirements specified in the ASME Code, Section XI, Subsection IWB, and approved ASME Code Cases, and the program includes visual examinations (VT-2) for leak detection performed during system pressure tests. The program inspections are implemented by the Inservice Inspection (ISI) Program, and the ISI Program complies with the requirements of ASME Code Section XI edition and addenda incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the inspection interval, subject to prior approval of the edition and addenda by the NRC.

Commitment 16 committed the licensee to enhance the Reactor Head Closure Studs Program as follows:

Select an alternate stable lubricant that is compatible with the fastener material and the environment. A specific precaution against the use of compounds containing sulfur (sulfide), including molybdenum disulfide (MoS<sub>2</sub>), as a lubricant for the reactor head closure stud assemblies will be included in the program.

Preclude the future use of replacement closure stud bolting fabricated from material with actual measured yield strength greater than or equal to 150 ksi except for use of the existing spare reactor head closure stud bolting.

The inspectors interviewed the program owner and other personnel associated with the program. The inspectors reviewed program basis documents, implementing procedures, and WOs. The inspectors identified that NG-EN-00555 Reactor Head Closure Studs AMP Procedure, Revision 0, clearly prohibited lubricants containing molybdenum disulfide but did not clearly prohibit all thread lubricants from containing any sulfur. Licensee initiated CR-2017-01405 that documented the need for clarification to specifically prohibit all sulfur-containing lubricants and recommended revising the procedure to prohibit all sulfur-containing lubricants. The licensee revised procedure NG-EN-00555 before the end of this inspection period to specifically prohibit all sulfur-containing thread lubricants.

The inspectors verified that the following documents preclude the future use of replacement closure stud bolting fabricated from material with actual measured yield strength greater than or equal to 150 ksi except for use of the existing spare reactor head closure stud bolting: Davis Besse Fourth Interval Inservice Inspection Plan,

Revision 1; the Reactor Head Closure Stud Program Procedure NG-EN-00555, Revision 1; QM Package No: 15000106, Revision 001; and QM Package No: 96781206, Revision 001.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment 16. The inspectors concluded that the effects of aging will be adequately managed by the AMP so that the intended functions will remain consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The inspectors also reviewed the UFSAR supplement for this AMP and concluded that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

13. Enhance the Reactor Vessel Surveillance Program, Commitment Item 17:

The Reactor Vessel Surveillance Program is an existing program that manages the reduction of fracture toughness of low alloy steel in the reactor vessel shell and welds in the beltline region. Commitment Item 17 specified that the Reactor Vessel Surveillance Program would be enhanced to require that surveillance capsule TE1-C be tested.

The inspectors reviewed program basis documents, implementing procedures, and examination reports. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 17.

14. Implement the Selective Leaching Inspection Program, Commitment Item 18:

The Selective Leaching Inspection is a new, one-time inspection to detect and characterize conditions on internal and external surfaces of subject components. The inspection provides direct evidence through visual inspection, hardness measurement, or other examinations of whether, and to what extent, loss of material due to selective leaching has occurred. Commitment Item 17 specified that all inspection activities would be conducted within the last 5 years prior to the Period of Extended Operation.

The inspectors reviewed program basis documents, implementing procedures, examination reports, and conducted interviews with the program owners. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 18.

15. Implement the Small Bore Class 1 Piping Inspection Program, Commitment Item 19:

Commitment Item 19 specified the licensee to perform a small bore Class 1 piping inspection as described in Section B.2.37. Specifically, the licensee performed volumetric or destructive examinations for a sampling of the approximate 179 Class 1 small-bore full penetration welds and 437 Class 1 small-bore socket welds consistent with the sampling guidance and recommendations in GALL Report AMP XI.M.35.



The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee has completed Commitment Item 19.

16. Enhance the Structures Monitoring Program, Commitment Item 20:

The SMP is an existing program that, with enhancements, is comparable to the program described in NUREG-1801, Section XI.S6, Structures Monitoring. The program consists of periodic walkdowns of plant structures to determine any adverse aging effects on the structures or structural components within the scope of the license renewal.

Commitment Item 20 specified enhancements briefly described as follows:

- Include and list structures within the scope of license renewal.
- Include aging effect terminology.
- Reference American Concrete Institute (ACI) 349.3R, ANSI/ASCE 11-90, and Electric Power Research Institute (EPRI) Report 1007933 as guidance documents.
- Clarify that a "structural component" for inspection includes each of the component types identified within the scope of license renewal as requiring aging management.
- Require review of site raw water chemistry test results prior to the inspections.
- Perform an inspection for loss of material for carbon steel structural components subject to aggressive groundwater.
- Specify opportunistic inspections of below-grade structures/components.
- Add requirement of 10 CFR 54.37, including submittal of records of structural evaluations to records management.
- Specify personnel qualification requirements for performing the structural inspections.
- Specify inspections at least once every 5 years.
- Conduct a baseline inspection prior to entering the period of extended operation.
- Monitor elastomeric vibration isolators and structural sealants for cracking, loss of material and hardening.

- Supplement visual inspection of elastomeric vibration isolation elements by feel to detect hardening if the vibration isolation function is suspect.
- Identify acceptance criteria for loose bolts and nuts, structural sealants, and elastomeric vibration isolation elements.
- Require monitoring of high strength (i.e., American Society for Testing Materials (ASTM) A540 Grade B23) structural bolts.
- Require current ASME Code Section XI, Appendix VIII, Supplement 8, endorsement for personnel performing ultrasonic testing (UT) examinations of structural bolts.
- Prevent future use of A540 bolting with measured yield strength equal to or exceeding 150 ksi.

The inspectors reviewed the licensing and program basis documents, implementing procedures, WOs, CRs, performed a walkdown, and interviewed the plant personnel responsible for the program. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects.

The inspectors identified two observations related the SMP, as documented in Sections 4OA5.1.b(1), and 4OA5.1.b(2). Additionally, inspectors noted that the licensee had not completed base line inspection and, at the time of inspection, did not have PMs for inspection of all structures within the scope of license renewal as required by Commitment Item 20. The inspectors therefore determined that Commitment Item 20 would remain open pending completion of baseline inspections for all structures and resolution of the observations noted above.

17. Enhance the Water Control Structures Inspection Program, Commitment Item 21:

The Water Control Structures Inspection Program is an existing program comparable, with exceptions and enhancements, to the program described in NUREG-1801, Section XI.S7, “RG [Regulatory Guide]1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants.” The program is implemented as part of the SMP and monitors age-related degradation of the intake structure, fore bay, service water discharge structure, and structural components within the structures.

Commitment Item 21 specified enhancements briefly described as follows:

- Include the Service Water Discharge Structure within the scope of license renewal.
- Include parameters in accordance with RG 1.127, Section C.2.
- Concrete condition description will conform to the ACI publication 201.
- Inspection documents will include photographs for comparison of previous and present conditions.

- Specify that periodic inspections will be performed at least once every 5 years.
- Add requirement of 10 CFR 54.37, including submittal of records of structural evaluations to records management.
- Add criteria for increased level of inspections and initiation of corrective actions. Also indicate ACI 349.3R as providing guidance in development of acceptance criteria.
- Conduct a baseline inspection prior to entering the period of extended operation.
- Specify engineering evaluation or corrective actions for acceptance of loose bolts, cracked high strength bolts, and degradation of piles and sheeting.

The inspectors reviewed the licensing and program basis documents, implementing procedures, WOs, CRs and interviewed the plant personnel responsible for the program. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine adequacy of the program in detecting and monitoring aging effects.

Commitment Item 21 for the Water Control specified that the baseline inspections be complete prior to entering the period of extended operation. Inspectors noted that the licensee had not completed base line inspection and, at the time of inspection, did not have PMs for inspection of all structures and components within the scope of license renewal. The inspectors therefore determined that Commitment Item 21 would remain open pending completion of baseline inspections.

18. Enclose or Otherwise Protect the Safety-Related Station Ventilation Radiation Monitors Located in the Turbine Building, Commitment Item 22:

Commitment 22 specified that FENOC committed to:

Enclose or otherwise protect the safety-related station ventilation radiation monitors located in the Turbine Building such that leakage and spray from surrounding piping systems does not adversely impact the intended function of the radiation monitors.

The inspectors reviewed Engineering Change Package (ECP) 15-0394-001; Revisions 1, 2, 3, 4 and 5 which designed a steel structure to enclose the safety-related station ventilation radiation monitors RE4598AA, RE4598AB, RE4598BA, and RE4598BB. The inspectors reviewed WO 200681870, which installed the steel structure around the radiation monitors and the inspectors walked down the finished installation. The inspectors identified no deficiencies and determined that the station ventilation radiation monitors were protected from leakage and spray from surrounding piping systems preventing age-related degradation that would prevent them from performing their intended functions. The inspectors determined that commitment 22 is closed.

19. Apply the Fatigue Monitoring Program to Evaluate the Environmental Effects and Manage Cumulative Fatigue for the Replacement High Pressure Injection Nozzle Safe Ends and Associated Welds, Commitment Item 23:

Commitment Item 23 specified that the FMP be applied to evaluate the environmental effects and manage cumulative fatigue for the replacement high-pressure injection safe ends and associated welds as documented in LRA Section A.2.3.4.2, and Section A.2.7.4.

The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment Item 23.

20. Apply the Elements of Corrective Actions, Confirmation Process, and Administrative Controls in the Quality Assurance Program Manual to the Credited Aging Management Program, Commitment 24:

Commitment Item 24 specified that the licensee apply specific elements of Corrective Actions, Confirmation Process, and administrative controls in the Quality Assurance Program Manual to the Credited AMP as documented in LRA Section A.1.

The inspectors reviewed program basis documents, implementing procedures, and sampling of CRs. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment Item 24.

21. Obtain and Evaluate for Degradation a Concrete Core Bore from Two Representative Inaccessible Concrete Components of an In-Scope Structure Subjected to Aggressive Groundwater Prior to Entering the Period of Extended Operation, Commitment Item 26:

Commitment Item 26, associated with the SMP, specified the following:

- Obtain and evaluate for degradation a concrete core bore from two representative inaccessible concrete components of an in-scope structure subjected to aggressive groundwater prior to entering the period of extended operation. Based on the results of the initial core bore sample, evaluate the need for collection and evaluation of representative concrete core bore samples at additional locations that may be identified during the period of extended operation as having aggressive groundwater infiltration. Select additional core bore sample locations based on the duration of observed aggressive groundwater infiltration. Document identified concrete or steel degradation in the FENOC CAP.

The inspectors reviewed the core drill reports and lab examination/test reports for the core samples, and interviewed the plant personnel responsible for the programs.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 26.

22. Enhancement to Surveillance Procedure DB-PF-03009, Revision 6, to Include Qualification Requirements for Visual Examiners, Commitment Item 27:

Commitment Item 27 stated:

Davis-Besse Surveillance Test Procedure DB-PF-03009, Revision 06, "Containment Vessel and Shielding Building Visual Inspection," Subsection 2.1.2, shall be enhanced to state, "Personnel who perform general visual examinations of the exterior surface of the Containment Vessel and the interior and exterior surfaces of the Shield Building shall meet the requirements for a general visual examiner in accordance with Nuclear Operating Procedure NOP-CC-5708, "Written Practice for the Qualification and Certification of Nondestructive Examination Personnel." These individuals shall be knowledgeable of the types of conditions which may be expected to be identified during the examinations."

Inspectors verified that Revision 7 of the procedure DB-PF-03009 incorporated requirements for a general visual examiner. Therefore, this commitment is closed.

23. Enhance the Fuel Oil Chemistry Program, Commitment Item 28:

Commitment Item 28 specified that the existing Fuel Oil Chemistry Program will be enhanced to include the attributes documented in LRA, Section B.2.20.

The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment Item 28.

24. Enhance the Cranes and Hoists Inspection Program, Commitment Item 29:

The Cranes and Hoists Inspection Program is a Condition Monitoring Program, which manages loss of material for the structural components of cranes (including bridge, trolley, rails, and girders), monorails, and hoists within the scope of license renewal. Periodic inspections of the cranes, monorails, and hoists are performed of the structural members for signs of corrosion and wear and bolted connections for loose bolting. Commitment Item 29 stated:

Enhance the Cranes and Hoists Inspection Program to include visual inspections for loose bolts and missing or loose nuts in crane, monorail and hoist inspection procedures at the same frequency as inspections of rails and structural components.

Commitment Item 29 is implemented by Davis-Besse procedure NG-EN-00389, "Cranes and Hoists Inspection Program," and its referenced inspection plans.

The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment Item 29.

25. Enhance the Leak Chase Monitoring Program, Commitment Item 30:

The Leak Chase Monitoring Program is an existing program consisting of observation and activities to detect leakage from the Spent Fuel Pool, Fuel Transfer Pit, and the Cask Pit stainless steel liners.

Commitment Item 30 specified enhancements briefly described as follows:

- Document all monitoring line leakages exceeding 15 ml/min in CAP for evaluation/corrective actions.
- Specify analysis of collected leak chase drainage for pH monthly and for iron every 6 months starting with initial acceptance criteria of 7.0 to 8.0 for pH. Monitor and trend results for iron. Develop an acceptance criterion for the iron analyses after 3 years of measurements.
- Perform leak chase inspection and cleaning recurring PM activity every 18 months.
- Inspect once per year for leakage migrating through the accessible outside walls and floor of the pool and pits. Document the inspection results and retain in plant records. Document leakage through the walls in CAP.

The inspectors reviewed program basis documents, implementing procedures, WOs, CRs and interviewed the plant personnel responsible for the programs. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 30.

26. Enhance Structural Bolting by Incorporating Various Specifications, Commitment Item 31:

Commitment Item 31, associated with various structural AMPs, required the licensee to incorporate reference to and the preventative actions of the Research Council for Structural Connections, "Specification for Structural Joints Using ASTM A325 or A490 Bolts," into the Davis-Besse specifications and implementing procedures that address Davis-Besse structural bolting within the scope of license renewal.

The inspectors reviewed the specifications and implementing procedures, and interviewed the plant personnel responsible for the programs.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 31.

27. Enhance the Closed Cooling Water Chemistry Program, Commitment Item 32:

The program is to mitigate damage due to loss of material, cracking, and reduction in heat transfer of components that contain treated water in a closed cooling water system or are served by or connected to a closed cooling water system. The program also stated that it controls these aging effects by monitoring and control of corrosion inhibitor concentrations consistent with the current EPRI water chemistry guidelines. The program also includes corrosion rate measurements at selected locations in the closed cooling water system.

Commitment Item 32 specified the licensee would enhance the program prior to the period of extended operation to enhance the Closed Cooling Water Chemistry program to:

Document the results of periodic inspections of opportunity, performed when components are opened for maintenance, repair, or surveillance.

Ensure that a representative sample of piping and components will be inspected on a 10-year interval, with the first inspection taking place prior to entering the period of extended operation.

Ensure that CCW radiochemistry is sampled on a weekly interval to verify the integrity of the letdown coolers and seal return coolers.

The inspectors reviewed individual implementing procedures, program-implementing procedures, and program basis documents for primary and secondary water chemistry control.

The inspectors identified that Section 4.10, "Component Cooling Water," of procedure DB-CH-06901, "Radiochemistry Test Requirements," Revision 12, failed to clearly require the frequency for radiochemistry testing of the CCW system as weekly. The licensee captured the inspectors' concern in CR-2017-01215. The licensee revised procedure DB-CH-06901 before the inspection team exit to clearly require radiochemistry testing of the CCW system as weekly.

The inspectors interviewed the program owner and reviewed implementing procedures, completed WOs, scheduled recurring tasks for the program, and completed inspections.

The inspectors concluded that the effects of aging will be adequately managed so that the intended functions will remain consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The inspectors also reviewed the UFSAR supplement for this AMP and concluded that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 32.

28. Reduce or Mitigate the Refueling Canal Leaks Inside Containment, Commitment Item 33:

The licensee implemented commitment 33 to address refueling canal leakage and to perform core bore inspections. Commitment 33 specified:

Phase 1

Perform the following actions to reduce or mitigate the refueling canal leaks inside containment:

1. Select and implement a leak detection method to locate the leakage area.
2. Evaluate temporary and permanent repair methods to stop or significantly reduce the leakage, and implement a repair plan.

Phase 2

Perform the following actions to evaluate the impact of refueling canal leaks on concrete and reinforcing steel structures. Discontinue core bores, testing and reinforcing steel inspections when indications of refueling canal leakage are no longer present:

1. Perform a core bore in the south wall of the east-west section of the core flood pipe tunnel.
  - a. Assess borated water degradation of the concrete by testing the core bore sample for compressive strength and by petrographic examination, and evaluate the results.
  - b. Conduct a visual examination of the concrete and reinforcing steel to identify aging effects (e.g., concrete degradation or steel corrosion). Enter identified aging effects into the FENOC CAP and evaluate in accordance with the requirements of the current licensing basis Maintenance Rule Program.
2. If leakage from the refueling canal has not been eliminated or resumes by the beginning of the period of extended operation, then evaluate the concrete structures in a manner similar to the way that they were evaluated under Phase 2, Action 1. However, use acceptance criteria from the ACI Report 349.3R for the evaluation.
3. If leakage from the refueling canal has not been eliminated or resumes during the period of extended operation, then evaluate the concrete structures again in a manner similar to the way that they were evaluated under Phase 2, Action 2. Perform evaluations every 10 years until the end of the period of extended operation.

The inspectors interviewed site staff and reviewed implementing procedures, samples of completed WOs, CRs, and scheduled recurring tasks for the program. Inspectors verified the licensee has complete the activities associated with Phase 1, Action 1 and Action 2; and Phase 2, Action 2.



Inspectors noted Phase 2, Action 2 has a due date of December 31, 2023. The inspectors verified the licensee has entered the commitment into the Fleet Licensing Tracking System.

Inspectors noted Commitment 33 Phase 2, Action 3, is an ongoing commitment which requires action if refueling canal leakage occurs. The inspectors verified the licensee has entered the commitment into the Fleet Licensing Tracking System.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 33.

29. Enhance the Bolting Integrity Program, Commitment Item 34:

The existing Bolting Integrity Program as described in LRA Section B.2.4 is consistent, with exceptions and enhancements, with GALL Report AMP XI.M18, "Bolting Integrity." The Bolting Integrity Program manages aging effects for bolting and bolting components of subject mechanical components and structural connections. The Bolting Integrity Program is a Condition Monitoring Program that includes periodic inspections of bolted closures and connections for aging effects such as leakage, loss of material due to corrosion, loss of preload, and cracking due to SCC. The Bolting Integrity Program includes preventive measures to minimize loss of preload and cracking. In addition, the licensee ensures that the inspections are implemented through other AMPs such as the ISI Program; ISI Program—IWE; ISI Program—IWF; Structures Monitoring Program; and External Surfaces Monitoring Program.

Commitment 34 specified that the Bolting Integrity Program would be enhanced to: "Select an alternate stable lubricant that is compatible with the fastener material and the environment. A specific precaution against the use of compounds containing sulfur (sulfide), including molybdenum disulfide (MoS<sub>2</sub>), as a lubricant will be included in the program."

The inspectors interviewed the program owner and other personnel associated with the program. The inspectors reviewed program basis documents, implementing procedures, and WOs. The inspectors identified that procedure NG-EN-00562, "Bolting Integrity Program," Revision 00, clearly prohibited lubricants containing molybdenum disulfide but did not clearly prohibit all thread lubricants from containing any sulfur. Licensee initiated on February 3, 2017, CR-2017-01215, that documented need for clarification and recommended revising the procedure. The inspectors verified that licensee revised procedure NG-EN-00562 to specifically prohibit all sulfur-containing lubricants before the end of this inspection period.

The inspectors verified that the following documents preclude the future use of all sulfur-containing thread lubricants: Davis Besse Fourth Interval ISI Plan, Revision 1; the Reactor Head Closure Stud Program Procedure NG-EN-00555, Revision 1; DB-MS-01007, Erection and Bolting of Structural Steel, Revision 02; NG-EN-00562, "Bolting Integrity Program", Revision 01; and DB-MM-09266, "Torqueing (sic)", Revision 10.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment 34. The inspectors concluded that the effects of aging will be adequately managed by the AMP so that the intended

functions will remain consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3). The inspectors also reviewed the UFSAR supplement for this AMP and concluded that it provides an adequate summary description of the program, as required by 10 CFR 54.21(d).

30. Phases 1 and 2 Containment Vessel Examinations in the Sand Pocket Region, Commitment Item 35:

The licensee implemented Commitment 35 for containment vessel sand pocket NDEs. Commitment 35 specified:

Perform the following actions for each of two examinations (Phase 1 and Phase 2) of the Containment Vessel in the sand pocket region:

- Perform NDE of the Containment Vessel from the outer surface at five areas of previously-identified groundwater in-leakage.
- Examine the vessel at a minimum of three vertical grid locations at 12 inches nominal horizontal spacing at each area. Examine the Containment Vessel at a minimum of 3 elevations:
  1. approximately 3 inches below the existing grout-to-vessel interface in the sand pocket region;
  2. at the existing grout-to-vessel interface level in the sand pocket region; and
  3. approximately 3 inches above the existing grout-to-vessel interface in the sand pocket region.
- Compare the UT thickness readings to minimum ASME Code vessel thickness requirements and to the results obtained during previous UT examinations of the Containment Vessel. Determine the need for maintenance or repair of the Containment Vessel based on the results and evaluation of the examinations.
- Document the results of each of the two examinations in the WO system. Document and evaluate adverse conditions in accordance with the FENOC CAP for an evaluation of potential degradation of the steel Containment Vessel thickness over the longer term.

The inspectors reviewed implementing procedures, samples of completed WOs, inspection summary reports, CRs, and scheduled recurring tasks for the program. Inspectors noted Phase 1 had completion date of prior to December 31, 2014; and Phase 2 has a completion date of prior to December 31, 2025. Inspectors determined the licensee completed all required actions under Phase 1 of the commitment. The licensee will maintain the commitment status as open until completion of Phase 2 activities.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 35.

31. Each Refueling Outage Examinations of Containment Vessel in the Sand Pocket Region, Commitment Item 36:

The licensee implemented Commitment 36 to perform containment vessel sand pocket inspections. Commitment 36 specified:

Perform the following actions related to the Containment Vessel sand pocket region each refueling outage:

- Perform visual inspection of 100 percent of the accessible areas of the wetted outer surface of the Containment Vessel in the sand pocket region.
- Perform visual inspection of accessible dry areas of the outer surface of the Containment Vessel in the sand pocket region and the areas above the grout-to-steel interface up to Elevation 566 feet + 3 inches, - 1 inch.
- Perform visual inspection for deterioration (e.g., missing or damaged grout) of accessible grout and the containment exterior moisture barrier in the sand pocket area.
- Perform opportunistic visual inspections of inaccessible areas of the Containment Vessel in the sand pocket region when such areas are made accessible.
- Perform opportunistic visual inspections for deterioration (e.g., missing or damaged grout) of inaccessible grout in the sand pocket region when such areas are made accessible. Inaccessible grout is the grout below the normally-exposed surface of the grout in the sand pocket area.
- Address issues of pitting or microbiologically influenced corrosion, and degraded grout, moisture barrier or sealant identified during the inspections using the FENOC CAP.
- Sample the water in the sand pocket region when sufficient volumes are available. The number of sampled water volumes will be determined by the number of water volumes observed and the size of those water volumes. Analyze the sample(s) for pH, chlorides, iron and sulfates. Treat or wash (or a combination thereof) the sand pocket area to reduce measured chloride concentrations to less than 250 parts per million (ppm) if the concentration of chlorides in a sample exceeds 250 ppm. Note: Water samples may be taken at different times during each outage. Engineering judgment may be used to determine the priority of the chemical analyses to be performed if sufficient water is not available in a given sample for all analyses.

The inspectors reviewed license renewal program documents, implementing procedures, WOs, inspection summary reports, notifications, CRs, and scheduled recurring maintenance plan activities. Inspectors noted this commitment implements ongoing activities to perform inspection of the Containment Sand Pocket region on a refueling outage frequency.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 36.

32. Core Bores for Impact of Spent Fuel Pool Leakage, Commitment Items 37, 38:

Commitment Item 37, associated with the SMP, required the licensee to perform and evaluate core bores of Emergency Core Cooling System Pump Room No. 1 and the Room 109 ceiling as follows:

- The core bores will be deep enough to expose reinforcing bar in the wall and ceiling. The core samples from the core bores will be examined for signs of corrosion or chemical effects of boric acid on the concrete or reinforcing bars. The examination will include a petrographic examination. The reinforcing steel that will be exposed for a visual inspection will have corrosion products collected for testing. Degradation identified from the samples will be entered into the FENOC CAP. The core bores will be performed in areas where leakage has been observed in the past.
- The first set of core bores will be performed prior to the end of 2014 (Phase 1).
- The second set of core bores will be performed prior to the end of 2020 (Phase 2).
- Further core bores will be conducted, if warranted, based on the evaluation of the results of the inspection and testing of the core bores or if spent fuel pool leakage through the wall or ceiling recurs after the second set of core bores is performed.
- If spent fuel pool leakage through another wall or ceiling is identified, then core bores will be performed in a manner similar to that stated for the emergency core cooling system Pump Room No. 1 wall and the Room 109 ceiling.

Commitment Item 38, associated with the SMP, required the licensee to evaluate the concrete cracking on the underside of the spent fuel pool for necessary repairs. Specifically, it states: A core bore of the Room 109 ceiling will be performed by the end of 2014 (see license renewal Commitment No. 37). Degradation identified from the samples will be entered into the FENOC CAP. The condition of the concrete and the reinforcing steel will be evaluated at that time to assist in determining what repairs, if any, need to be made to the underside of the spent fuel pool concrete. The criterion for determining the need to repair the cracking will be the continued capability of the structures to perform their intended functions during the period of extended operation.

The inspectors reviewed the core drill reports and lab examination/test reports and evaluations for the core samples, and interviewed the plant personnel responsible for the programs.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 38 and Phase 1 of Commitment Item 37. Inspectors noted the Phase 2 of the Commitment Item 37 remains open and is due prior to December 31, 2020.

33. Address the Potential for Borated Water Degradation of the Steel Containment Vessel, Commitment Item 39:

The licensee implemented Commitment 39 to address the potential for borated water degradation of the steel containment vessel.

Commitment 39 specified:

Address the potential for borated water degradation of the steel containment vessel through the following actions:

- Access the inside surface of the embedded steel containment at a vertical height no greater than 10 inches above bottom dead center. A core bore will be completed by the end of 2014 (Phase 1). If necessary, a second core bore will be completed by the end of 2020 (Phase 2). If there is evidence of the presence of borated water in contact with the steel containment vessel, conduct nondestructive testing to determine what effect, if any, the borated water has had on the steel containment vessel. Based on the results of nondestructive testing, perform a study to determine the effect through the period of extended operation of any identified loss of thickness in the steel containment due to exposure to borated water.

The inspectors reviewed license renewal program documents, implementing procedures, WOs, inspection summary reports, notifications, CRs, and scheduled recurring maintenance plan activities. The inspectors noted that the licensee completed phase 1 of the commitment as required prior to December 31, 2014. The licensee updated LRA Table A-1, in FENOC letter 14-206, to reflect the partial closure of this commitment. The licensee committed to implement Phase 2 of the commitment prior to December 31, 2020.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 39.

34. Implement the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Program, Commitment Item 40:

The Inspection of Internal Surfaces and Miscellaneous Piping and Ducting Program is a new plant specific program that will consist of inspections of the internal surfaces of aluminum, copper alloy (including copper alloy > 15 percent Zn), stainless steel, and steel (including gray cast iron) components exposed to air, condensation, diesel exhaust, lubricating oil or moist air, and external cooling coil surfaces.

Commitment 40 specified the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Program will be implemented prior to October 22, 2016. The program will manage loss of material and cracking; loss of material due to wear, hardening, and loss of strength of non-metallic, flexible (elastomeric) components; and reduction in heat transfer of cooling coil tubes and fins.

The inspectors reviewed program basis documents and implementing procedures. In addition, the inspectors reviewed the selected susceptible locations to be reviewed in the first 10 years of the period of extended operation.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment Item 40.

35. Establish a Preventive Maintenance Task to Periodically Replace the Flexible Connections Exposed to Fuel Oil in the Fuel Oil System, Commitment Item 41:

Commitment 41 specified that FENOC is committed to:

Establish a preventive maintenance task to periodically replace the flexible connections exposed to fuel oil in the Fuel Oil System.

The inspectors interviewed the program owner and other personnel associated with the program. The inspectors reviewed PM Task 11361 and Nuclear Power Plant Maintenance Plan 222605 and determined that these procedures specified that the two Diesel Fire Pump Fuel Oil flexible hoses will be periodically replaced. The inspectors reviewed WO 200606233 which replaced the two Fire Pump Fuel Oil flexible hoses on December 14, 2016, and also reviewed BOP-VT-16-198, "Visual Exam of the removed DFP 1-2 Fuel Oil Hose/Tubing," done on December 2, 2016, as a one-time inspection for license renewal.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment 41.

36. Ensure that the Current Station Operating Experience Review Process Includes Future Reviews of Plant-Specific and Industry Operating Experience, Commitment Item 43:

Commitment Item 43 stated:

Ensure that the current station operating experience review process includes future reviews of plant-specific and industry operating experience to confirm the effectiveness of the License Renewal AMPs, to determine the need for programs to be enhanced, or indicate a need to develop new AMPs.

The inspectors verified that the actions required by the commitment were addressed by Regulatory Commitments DB-L-12-015-01 through DB-L-12-015-04, which were created in response to NRC requests for additional information to address the specific activities necessary to enhance the operating experience process to align with current NRC guidance provided in License Renewal Interim Staff Guidance document LR-ISG-2011-05, "Ongoing Review of Operating Experience." Therefore, FENOC letter L-13-257, dated July 23, 2013, for commitments DB-L-12-015-01 through DB- L-015-04 provided the requisite justification for closure of commitment Item 43.

37. Cathodically Protect In-Scope Fuel Oil Storage Tanks and Service Water Buried Piping, Commitment Item 44:

Commitment Item 44 specified that Cathodic Protection would be installed on the Emergency Diesel Generator Fuel Oil Storage Tanks and In-Scope Fuel Oil and Service Water Buried Piping.

The inspectors reviewed program basis documents, implementing procedures, and commissioning reports. Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 44.

38. Implement the Nuclear Safety-Related Coatings Program, Commitment Item 45:

The Nuclear Safety-Related Coatings Program is an existing plant-specific Condition Monitoring Program, which monitors the performance of Service Level 1 coatings inside containment through periodic coating examinations, condition assessments,

and remedial actions, including repair or testing. In addition, the program defines roles, responsibilities, controls, and deliverables for monitoring the condition of coatings in containment. The Nuclear Safety-Related Protective Coatings Program ensures that the Design Basis Accident analysis limits with regard to coatings will not be exceeded for the Emergency Core Cooling System suction strainers per the response to NRC Generic Letter 98-04. The program consists of periodic visual inspections of the Service Level 1 coatings, looking for any visible defects, such as blistering, cracking, flaking, peeling, delamination, rusting and physical damage. The program was established in accordance with the guidance provided in ASTM D 5163-91, "Standard Guide for Establishing Procedures to Monitor the Performance of Safety Related Coatings in an Operating Nuclear Power Plant."

The qualification testing of Service Level 1 coatings used for new applications or used as maintenance coatings for repair and replacement activities inside containment is addressed in the applicant's revised response to NRC Generic Letter 98-04 for Davis-Besse. The applicant stated that the testing meets the applicable requirements contained in RG 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants," Revision 0.

Commitment 45 specified the Nuclear Safety-Related Coatings Program will be implemented as described in LRA Section B.2.42 prior to October 22, 2016. The inspectors interviewed the program owner and reviewed program basis documents, implementing procedures, and Repetitive Task notifications associated with the Nuclear Safety-Related Coatings Program.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 45.

**39. Implement the Shield Building Monitoring Program, Commitment Item 46:**

The Shield Building Monitoring Program is a new plant-specific program consisting of inspections of the shield building concrete and reinforcing steel (rebar). The program is implemented as part of the SMP and includes inspections to monitor aging effects on the shield building concrete and rebar. As a preventive measure, the program also monitors effectiveness of coating through inspections and reapplication.

Commitment Item 46 specified implementation of Shield Building Monitoring Program as described in the LRA Section B.2.43.

The inspectors reviewed program basis documents, implementing procedures, WOs, CRs, and interviewed the plant personnel responsible for the program. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 46.

**40. Enhance the Inservice Inspection Program, Commitment Items 47-IWE, and 50-IWF:**

Commitment Items 47 and 50 specified that the existing ISI Program will be enhanced to include the attributes documented in LRA, Sections B.2.22 and B.2.23.

The inspectors reviewed program basis documents, implementing procedures, WOs, and the associated UFSAR description. In addition to the commitment implementation review, the inspectors reviewed attributes of the AMP in accordance with IP 71002 to determine the adequacy of the program in detecting and monitoring aging effects.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee had completed Commitment Items 47 and 50.

41. Complete an investigation and Needed Repairs or Modification of the Degraded Portion of the Safety-Related Intake Canal Embankment, Commitment Item 48:

Commitment 48 required the licensee to: "Complete an investigation and needed repairs or modification of the degraded portion of the safety-related intake canal embankment."

Inspectors reviewed Revisions 0 and 1 of ECP 12-0764-001, which specified the repair of the degraded portions of the safety-related sections of the North Intake Canal Dike. Inspectors also reviewed WO 200556326, which documented the repair of the degraded safety-related portions of the North Intake Canal Dike. The inspectors reviewed the signatures in the WO documenting that the repair had been accomplished in accordance with the ECP. The inspectors also noted that the WO also documented that the degraded nonsafety-related portions of the intake canal embankment were also repaired per the ECP. The inspectors also performed visual inspections of the repaired sections of the North Intake Canal Dike and compared the repaired condition to photographs of the degraded Dike taken in 2011.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee completed Commitment 48.

42. Enhance the Nickel-Alloy Management Program, Commitment Item 49:

The Nickel-Alloy Management Program is an existing program. The program was enhanced to meet the GALL Report recommendation to have a plant-specific program for managing nickel-alloy materials. The Nickel-Alloy Management Program is a combined mitigative and Condition Monitoring Program which manages primary water SCC and SCC/intergranular attack for nickel-alloy pressure boundary components, other than the reactor vessel closure head nozzles and steam generator tubes, exposed to reactor coolant. This program is based on the requirements of ASME Code Cases N-722-1 and N-770-1 as amended by 10 CFR 50.55a.

Commitment 49 stated the following enhancement would be made to the Nickel-Alloy Management Program prior to October 22, 2016, to:

Provide for inspection of dissimilar metal butt welds in accordance with the requirements of ASME Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 Power Water Reactor Piping and Vessel Nozzle Butt Welds fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1," as modified by the 10 CFR 50.55a(g)(6)(ii)(F).

The inspectors reviewed program basis document, implementing procedures, and scheduled and completed inspection activities.



Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 49.

43. Implement the Service Level III Coatings and Linings Monitoring Program, Commitment Item 51:

The Service Level III Coatings and Linings Monitoring Program is a new plant specific Condition Monitoring Program which consists of periodic visual inspections of all Service Level III coatings and linings on the internal surfaces of piping, piping components, and tanks in mechanical fluid systems that are within the scope of license renewal. The program includes organic (e.g., elastomeric or polymeric) and inorganic (e.g., zinc-based) coatings and linings (e.g., rubber, cementitious). The program will manage loss of coating integrity due to blistering, cracking, flaking, peeling, delamination, or physical damage of coatings and linings to ensure that degradation does not result in loss of intended function due to unanticipated or accelerated corrosion or flow blockage of in-scope mechanical components.

Commitment 51 specified the Service Level III Coatings and Linings Monitoring Program will be implemented via baseline inspections prior to the period of extended operation, followed by subsequent periodic inspections on an interval based on baseline inspection results.

The inspectors reviewed the licensing and program basis documents, implementing procedures, WOs, CRs and interviewed the plant personnel responsible for the program.

The inspectors identified one observation related to the Service Level III Coatings and Linings Monitoring Program commitment which is documented in Section 4OA5.1.b(3). Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that Commitment 49 will remain open until further review by regional inspectors to ensure licensee completion of required actions.

44. Actions to Improve and Maintain the Fidelity of the Data in the Flow-Accelerated Corrosion Program, Commitment Item 55:

The Flow-Accelerated Corrosion (FAC) Program is an existing Condition Monitoring Program, which manages loss of material for steel piping and other components of systems that are susceptible to FAC, also called erosion-corrosion, when exposed to single-phase water above 190 degrees Fahrenheit or two phase steam at any temperature. This program will ensure that the integrity of piping systems susceptible to FAC is maintained by implementing the recommendations of NRC Generic Letter 89-08, Erosion/Corrosion – Induced Pipe Wall Thinning, and following the guidance and recommendations of EPRI NSAC-202L. Additionally, the program combines: (a) predictive analysis, (b) baseline inspections to determine the extent of thinning, and (c) follow-up inspections to confirm predictions or initiate repair or replacement of components as necessary.

Commitment 55 specified the FAC Program would be implemented prior to October 22, 2016. The licensee committed to implementing the following actions to improve and maintain the fidelity of the FAC Program:

- Perform a review of the CHECWORKS SFA model to determine which inputs are critical to the determination of fitness for service and which inputs are non-critical. This action will document the listing of all input fields within the software, and whether their accuracy affects the output of the model.
- Perform a validation of the data inputs into CHECWORKS SFA. This task will include the validation of any input which would have consequence, as used by the CHECWORKS SFA software in the determination of fitness for service of piping and components for the FAC Program. Data contained within the CHECWORKS SFA model that does not impact fitness for service will be annotated during this validation as being non-critical to the function of the software, while still attempting to validate it.
- Document the results of the validation of the CHECWORKS SFA database. This action will create a document (Reference Material, Program Manual, etc.) that will serve as a listing of inputs into the CHECWORKS SFA database and be maintained as a quality record.
- Revise the CHECWORKS SFA model to correct the restriction orifices' size/dimension for the orifice and flow elements identified in the Steam Line Failure Root Cause Evaluation.
- Establish a list of components for the site that meet the bulleted items within Section 4.4.4 of NSAC-202L, Revision 4.
- Compile the inspection history of the relevant components. Perform an evaluation for any components without inspection data, and add components requiring inspection to 19RFO scope. These locations are to specifically include:
  - Locations downstream of orifices, flow elements, venturis, thermowells, angle valves, flow control valves or level control valves.
  - Locations or lines known to contain backing rings or counterbore.
  - Field-fabricated tees and laterals.
  - Nozzles.
  - Complex geometric locations such as components located within two diameters of each other (e.g., an elbow welded to a tee).
  - Components downstream of replaced components (upstream if expander), and components that have been replaced in the past if not upgraded to resistant material.
  - Components (including straight pipe) immediately downstream of FAC-resistant components (e.g., containing chromium greater than 0.10 percent).
  - Locations immediately downstream of turning vanes.
  - Expansion joints.

- Revise the FAC Program procedure as follows:
- Add requirements to the procedure that would involve review and selection of examination scope based on recommendations from NSAC-202L, Revision 4, Section 4.4.4. This action requires documentation of the basis for selection or exclusion of the scope for the given outage. Documentation would be in the form of discussion in the Outage Technical Report (pre-outage) and Outage Summary Report (post-outage).
- Add a step that would require review, approval, and documentation of updates to the CHECWORKS SFA database. The scope of these changes would exclude data collected and evaluated during outages, but would be inclusive of all others (such as plant uprates, plant modifications, engineering change packages, etc.). Documentation for this step would be through an Engineering Evaluation Request.

The inspectors interviewed the program owner and reviewed implementing procedures, samples of completed WOs and outage summary reports, and scheduled recurring tasks for the program.

Based on review of the timeliness and adequacy of the licensee actions, the inspectors determined that the licensee met Commitment 55.

b. Findings and Observations:

The inspectors identified 3 observations.

(1) Structural Monitoring Program Components Omitted from Inspections (Commitment Item 20):

During review of the SMP implementing procedures and other documents, the inspectors noted that licensee's inspections did not cover all the structural components within the scope of SMP. As part of Commitment Item 20, one of the enhancements was to "clarify that each of a structural component for inspection includes each of the component types identified within the scope of license renewal as requiring aging management." Attachment 2 of the implementation procedure EN-DP-01511 listed all the component types requiring inspection but then indicated exclusion of many component types from the scope of SMP by delegating their inspections to system performance monitoring. As a result many component types such as piping, pipe supports; anchor bolts; battery racks; cable trays, conduits, and supports; expansion anchors; equipment supports; whip restraints; etc., were excluded from the SMP walkdowns. The licensee's investigation in response to inspector's comments indicated that the inspections under system performance monitoring did not meet the SMP requirements. The licensee captured the concern in the CAP as CR-2017-01377, and planned to revise the affected implementation documents. At the conclusion of this inspection, the licensee had not completed baseline inspections for the SMP and, as noted under Section 4OA5.1(3), the Commitment Item 20 remains open.

(2) Structural Monitoring Program Implementation Procedure Wording not Consistent with Commitment Item 20

During review of the SMP implementing procedure EN-DP-01511, the inspectors noted that the wording in Section 6.4.2 of the procedure along with the flow chart in Attachment 7 might exempt some structures from periodic inspections following the baseline inspection. This would be inconsistent with the part of Commitment No. 20 requiring inspections at least once every 5 years for the structures within the scope of license renewal. A different part of Commitment No. 20, allows the licensee to use the prioritization process described in the ACI 349.3R in selection of the representative sample areas for inspection. The manner in which the licensee incorporated the prioritization process in the flow chart resulted in some ambiguity that could result in exemption of certain structures entirely. Since the licensee had not completed the baseline inspections yet, there was no immediate adverse impact from this concern. The licensee initiated an action (Notification 601086886) to revise procedure EN-DP-01511 in order to remove the ambiguity and ensure inspection of each structure at least once every 5 years. At the conclusion of this inspection, the licensee had not completed baseline inspections for the SMP and, as noted under Section 4OA5.1(3), the Commitment Item 20 remains open.

(3) Baseline Inspections not Completed for Service Level III Coatings and Linings Monitoring Program, Commitment Item 51

During the review of the Service Level III Coatings and Linings Monitoring Program, the inspectors identified a concern related to the completion of baseline inspection activities required to meet the commitment prior to the period of extended operation.

The licensee's submitted Letter L-14-061, dated January 31, 2014, provided response to NRC RAI 3.0.3-3 and identified that certain Service Water System butterfly valves are lined with rubber or elastomer. The licensee states that:

"In describing the extent of examinations, and in alignment with the approved interim staff guidance, the RAI response stated that a representative sample of internally-coated piping and piping components consisting of 50 percent of the total length of each coating material and environmental combination will be inspected. Since piping components were not specifically addressed in the RAI response or the interim staff guidance, FENOC is including piping components in the same category as piping. Therefore, the description of the number of lined valves to be inspected is interpreted to mean that 50 percent of the service water butterfly valves which have a similar material and environmental combination require examination. The RAI response further requires that baseline examinations be completed prior to the period of extended operation."

The inspectors reviewed CR-2015-14434, titled, "Baseline inspection scope for the License Renewal Service Level III Coatings and Linings Monitoring Program is not clearly defined and scheduled," and noted that for the population of in-scope valves, the licensee determined that the majority had been replaced with no inspection of liner integrity recorded. Specifically, the licensee documented that:

"...there are 57 butterfly valves in the Service Water System with PM performed on these valves periodically. There are 26 butterfly valves downstream of heat exchangers, and these valves are not considered subject to Service Level III Coatings requirements, which leaves 31 valves subject to the inspection requirements. Through the PM

Program, 19 butterfly valves, or 61 percent of these valves, have been rebuilt, replaced, or inspected in the 10-year period prior to the Period of Extended Operation. Therefore, FENOC considers the 50 percent examination requirement prior to the Period of Extended Operation to have been met for the Service Water System butterfly valves.”

The inspectors determined the licensee improperly concluded that the replacement of valves meets the intent of “baseline inspection” recommendations of LR-ISG-2013-01, which states, “Baseline inspections are conducted in the 10-year period prior to the period of extended operation in order to establish the condition of coatings/linings prior to entering the period of extended operation. In addition, these baseline inspections provide input to the interval of subsequent inspections.”

The licensee documented the inspectors concerns in CR-2017-01485, and plans to conduct additional inspections on the remaining in scope Service Water valves in the next 3 outages to establish an inspection history that can be used to establish the inspection frequency for the Service Water butterfly valve population.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On February 10, 2017, the inspectors presented the inspection results to Mr. Brian Boles and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed some of the potential report input discussed was considered proprietary and will be handled appropriately.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

B. Boles, Site Vice President  
G. Michael, Design Engineering  
G. Wolf, Regulatory Assurance  
S. Dort, License Renewal  
G. Laird, Operations  
J. Cunnings, Maintenance  
K. Byrd, Engineering  
A. Wise, Fleet Engineering  
D. Schreiner, Programs Engineering  
G. Clark, Programs Engineering  
D. Imlay, Operations

#### U.S. Nuclear Regulatory Commission

D. Miles, Senior Resident Inspector

### **LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

#### Opened, Closed, and Discussed

None

## LIST OF DOCUMENTS REVIEWED

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

### 4OA5 Other Activities

#### **Condition Reports Generated as a Result of the Inspection**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
2017-00920	LR Commitment Closure Incorrectly Stated As Maintained Instead Of Closed	01/27/17
2017-01215	NRC-LR-PH2, Implementation Of Commitment 34 – Bolting Integrity	02/03/17
2017-00870	Minor Surface Corrosion On Service Water Pump Motor Supports	01/26/17
2017-01046	Inadequate Coating On Service Water Pump Strainer 1-1 Supports	01/31/17
2017-00843	Crs Not Generated For Diesel Oil Storage Tank Fuel Oil Chemistry Parameters	01/26/17
2017-00857	Diesel Fuel Oil Tank Sampling Procedure Revisions For Documentation Of Accumulated Water	01/26/17
2017-01392	Implementation Of Commitment 32-CCW Radiochemistry	02/08/17
2017-01405	Implementation Of Commitment 16-Reactor Vessel Closure Studs	02/08/17
2017-01346	Thermography Inspection Acceptance Criteria Action Levels Do Not Agree With The Component Monitoring Plan	02/07/17
2017-01377	Procedure EN-DP-01511 Does Not Adequately Incorporate LR Requirements	02/07/17
2017-01453	Groundwater Leakage And Baseplate Corrosion	02/09/17
2017-01485	Implementation Of Commitment 51-Service Level III Coatings And Linings Monitoring Program	02/09/17

#### **Condition Reports Reviewed During the Inspection**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
CR-2011-92658	Loose Or Degraded Diode Termination In The Main Generator #2 Rectifier	04/11/11
CR-2010-77765	16RFO – Minor Indication Found During CHAR Testing On NI-4, GM CH.2 And NI-8	06/04/10
CR-2016-13846	Diesel Fire Pump Bowl Submerged Bolting Failed License Renewal Visual Exam	11/30/16
CR-2015-00927	Selective Leaching Aging Management Program Examination For DB-FP127	01/22/15

**Condition Reports Reviewed During the Inspection (continued)**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
CR-2015-00928	Selective Leeching Aging Management Program Examination For DB-FP51	01/22/15
CR-2015-05153	Standing Water Present In MH3001	04/13/15
CR-2011-92658	Loose Or Degraded Diode Termination In The Main Generators #2 Rectifier	05/11/11
CR-2014-18123	Abnormal Thermal Condition Associated With Metering/Relaying For AC201	12/09/14
CR-2016-00167	Blockage On SF-99J	01/06/16
CR-2016-09710	Spent Fuel Pool Leakage Sample Results	08/10/16
CR-2016-11834	BACC – Active Boric Acid Leakage Was Discovered Coming From The South Wall And Ceiling Of Room 105	10/04/16
CR-2016-11860	BACC – Leakage From East Wall Of The Cask Washdown Area, Room 300A	10/04/16
CR-2016-11865	BACC – Leakage From The West Wall Of Passage To Mech Pen 2, Room 227	10/04/16
CR-2016-11840	2016 Shield Building Inspection Summary	10/04/16
CR-2016-08594	Shield Building Bore S13-633.0-11 Inspection Findings	07/08/16
CR-2011-04096	Ineffective Refueling Canal Repair	10/21/11
CR-2014-03916	Annulus Location #4 Ultrasonic (Ut) Examination Results	02/26/14
CR-2014-04009	Annulus Locations #1, 2, 3, And 5 Ultrasonic (UT) Examination Results	02/27/14
CR-2014-01734	Standing Water Identified In The Annulus Sand Pocket	02/01/14
CR-2014-01738	Broken Roof Drain In Annulus	03/03/14
CR-2016-05256	Structures Monitoring - Analysis Of Water In Annulus Sand Pocket	04/14/16
CR-2014-04538	18 RFO Annulus Water Sample Results	03/07/14
CR-2016-05051	1r19: En-Dp-01508 Coating Condition Assessment: Area 565-8	04/11/16
CR 2015-06691	Manual Reactor Trip Due To Steam Leak	05/09/15

**Commitment No. 1**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
NG-EN-00561	Above Ground Steel Tanks Inspection Program	1
BOP-PT-16-085	Liquid Penetrant Examination	09/29/16
BOP-UT-16-048	Ut Erosion/Corrosion Examination	09/28/16
BOP-VT-16-184	Visual Examination Of Equipment And Components (VT-1)	09/28/16
NUC2016118	Ultrasonic Thickness Examination Of Borated Water Storage Tank (BWST) Floor	04/19/16



**Commitment No. 1 (continued)**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
	API 653 Out-Of-Service Inspection Report Tank T31-1 Condensate Storage Tank	04/10/16
	API 653 Out-Of-Service Inspection Report Tank T31-2 Condensate Storage Tank	04/10/16
	Api 653 In-Service Inspection Report Tank Dost T-45	04/08/16

**Commitment No. 2**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
LRPD-05, attachment 3.9	Amp Evaluation Results - Boral Monitoring Program	2
NOP-NF-3201	Spent Fuel Storage Rack Neutron Absorbing Monitoring Program	1
Notification 601061380	Vendor Technical Information Review Form For Net-28078- 000-01, Badger Test Results Review	09/26/16
NET-28078-000-01	Badger Test Campaign Results At The Davis-Besse Nuclear Power Station	0

**Commitment No. 3**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
LRPD-05	Aging Management Program Evaluation Results – Buried And Underground Piping And Tanks Program	5
WO 200452994	High Pressure Injection Piping Uts	04/08/13
MIN 249406	Clean And Inspect Cathodic Protection Systems	0
MIN 348694	Diesel Generator Vent Pipe And Manway Tube Uts	0
NOP-ER-2007	Underground Piping And Tanks Integrity Program	6
NOP-WM-1001	Attachment 5: Special Planning Considerations	23
WO 200642485	T153-1 UT Thickness Of Buried Portion Of Vent Piping	07/26/16
WO 200642485	T153-1 UT Thickness Of Buried Portion Of Manway Tube Enclosure	09/28/15
WO 200642484	T153-2 UT Thickness Of Buried Portion Of Vent Piping	05/19/16
WO 200642484	T153-2 UT Thickness Of Buried Portion Of Manway Tube Enclosure	05/18/16
WO 200452994	Bwst Tunnel Ut Piping Exam	04/09/13
Report BOP-VT- 16-002	VT-3 Of DH And BW Piping/Supports In BWST Trench (Pit)	01/16/17

**Commitment No. 4**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
N-EN-00554	Collection, Drainage, And Treatment Components Inspection Program	0
BOP-VT-15-122	Visual Examination Of Pumps And Valves (Vt-1)	08/12/15
BOP-VT-15-130	Visual Examination Of Pumps And Valves (Vt-1)	08/21/15
BOP-VT-16-197	Visual Examination Of Pumps And Valves (Vt-1)	12/02/16
BOP-VT-15-141	Visual Examination Of Pumps And Valves (Vt-1)	09/08/15

**Commitment No. 5**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
NOBP-ER-3104	Electrical Cable Connections not Subject To 10 Cfr 50.49 Environmental Qualification Requirements One-Time	1
NE-13-39-3	Electrical Cable Connections not Subject To 10 Cfr 50.49 Environmental Qualification Requirements Inspection	0

**Commitment No. 6**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
NOBP-ER-3103	Plant Walkdown For Inspection Of Potential Adverse Localized Environments For Electrical Cables And Connections	0
NOBP-ER-3100	Cable Aging Management Program	0
NE-13-39-3	Inspection Summary Report For Electrical Cables And Connections not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program	1

**Commitment No. 7**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EN-DP-01520	Non-EQ Electrical Cables And Connections Used In Instrumentation Circuits Program	0
NE-13-39-2	Electrical Cables And Connections not Subject To 10 CFR 50.49 Environmental Qualification Requirements Used In Instrumentation Circuits Program Review	0
CSR8360	Characterization Testing Of Nuclear Instrumentation At Davis-Besse Nuclear Power Station	05/28/10

**Commitment No. 8**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
NG-EN-00390	External Surfaces Monitoring Program	0
DB-SP-04457	External Surfaces Monitoring Inspections	0

**Commitment No. 9 and 42**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
EN-DP-00355	Determination Of Allowable Operating Transient Cycles	7
EN-DP-00355 Attachment 2	Completed Aotc Event Log	Cycle 19
EN-DP-00355 Attachment 3	Completed Aotc Status Log	05/15/16

**Commitment No. 10**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
LRPD-05	Aging Management Program Evaluation Results – Buried And Underground Piping And Tanks Program	5
WO 200452994	High Pressure Injection Piping Uts	04/08/13
MIN 249406	Clean And Inspect Cathodic Protection Systems	0
MIN 348694	Diesel Generator Vent Pipe And Manway Tube Uts	0
NOP-ER-2007	Underground Piping And Tanks Integrity Program	6
NOP-WM-1001	Attachment 5: Special Planning Considerations	23
MIN 119965	Fire Storage Tank 1-1 Preventative Maintenance/Inspection	10/19/16
Reference Number 32346	UL Testing For 20 Fire Sprinklers	01/10/17
WO 200643757	Fire Suppression-Sprinkler Selective Leaking Inspection	06/23/16
WO 200501279	Fire Water Storage Tank 1-1 License Renewal Inspection	07/31/15
WO 200688996	Fire Suppression-Sprinkler System Testing	11/14/16

**Commitment No. 11**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NOP-ER-4002	Medium Voltage Shielded Cable Testing And Diagnostics	0
EN-DP-01521	Inaccessible Power Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements	0
NE-13-39-5	Inaccessible Power Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program Summary	0

**Commitment No. 12, 20, 21**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
EN-DP-01511	Structural Monitoring	6
M-452Q	Specification For Procurement Of Pipe, Tubing, Fitting, Bolting, Bars And Plates	4
NOP-WM-4007	Excavation And Trenching Controls	3
356651	Maintenance Plan Item – RT11885 Sample- Analyze RAW Water	
601057512	Notification, Nop-Wm-4007: Below Grade Inspections	08/18/16

**Commitment No. 13**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NG-EN-00552	One-Time Inspections	0
DBRM-ER-0001	One-Time Inspection Program Components	1
NA-QC-05560	Visual Examination Procedure	11
NOP-CC-5708	Written Practice For The Qualification And Certification Of NDE Personnel	8

**Commitment Nos.14, 15, 52, 53 and 54**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
ANP-3290	Reactor Vessel Internals Inspection Plan For The Davis-Besse Nuclear Power Plant Unit No. 1	1
L-15-139	Letter Submitting Reactor Vessel Internals Inspection Plan	04/21/15
NOP-CC-5004	Pressurized Water Reactor Vessel Internals Program	4
51-9217903-001	Davis Besse Reactor Internals Clamping Task	01/30/14
51-9170869-000	Lower And Upper Core Barrel Bolting Ultrasonic Inspection Report	10/18/10
51-9170867-000	10 Year Reactor Vessel Inservice Inspection	10/18/10
LRPD-05; Attachment 1.4	Aging Management Program Evaluation Results For Reactor Vessel Internals Program	4
L-17-026	TLAA Regarding Reactor Vessel Internals Loss Of Ductility At 60 Years	01/23/17

**Commitment No. 16**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
17-VT-183	Closure Head Nut (Hole No. 49) Mk 26	10/13/11
17-VT-179	Closure Head Washers (Hole No. 49) Mk 14/27	10/13/11
17-UT-038	Closure Head Stud (Hole No. 49) Mk 25	10/20/11
NG-EN-00555	Reactor Head Closure Studs Program	01
LRPD-05, attachment 1.5	Amp Evaluation Results - Reactor Head Closure Studs Program	5
QM Package No: 15000106	Procurement Package: Stud - Special Purpose Closure Reactor Head	001
QM Package No: 96781206	Procurement Package: Stud Assembly - Special Purpose Rv Closure Reactor Head 1156 Asme	001

**Commitment No. 17**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NG-EN-00558	Reactor Vessel Surveillance Program	0
ANP-3339	Davis-Besse Unit 1 Reactor Vessel Material Surveillance Program: Analysis Of Capsule Te1-C	0

**Commitment No.18**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NG-EN-00388	Selective Leaching Of Materials Examination Program	0

**Commitment No. 19**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
LRPD-05 Attachment 1.7	Small Bore Class 1 Piping Inspection Results	3
NG-EN-00556	Small Bore Class 1 Piping Inspection Program	0
WO 200534113	HP-33C-CCA-2-42A-FW10 2.5 " Elbow To Safe End Weld Exam	02/19/14
WO 200629210	Numerous Small Bore Class 1 Piping Weld Exams	04/08/16
WO 200427658	Numerous Small Bore Class 1 Piping Weld Exams	10/12/11
WO 200629207	Numerous Small Bore Examinations	04/09/16
CR 2014-12467	Indications Identified During Destructive Examination Of Small Bore Piping Removed During 18R	07/31/14

**Commitment No. 22**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
ECP 15-0394-001	Design A Steel Enclosure Around The Safety-Related Ventilation Radiation Monitors RE4598AA, RE4598AB, RE4598BA, And RE4598BB	5
WO 200681870	Install Steel Enclosure Around The Safety-Related Ventilation Radiation Monitors RE4598AA, RE4598AB, RE4598BA, And RE4598BB	10/06/16

**Commitment No. 23**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
LRPD-05 Attachment 1.3	Nickel-Alloy Reactor Vessel Closure Head Nozzles Program	3
ASME Code Case N-729-1	Alternative Examination Requirements For PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1	03/28/06
DB-PF-00108	Alloy 600/690 Management Program	10
NOP-ER-2003	Alloy 600/690 Management Program	04
Report 20014-021	Reactor Vessel Upper And Lower Head Bare Metal Visual Examination Final Report For First Energy's Davis Besse Unit 1	01/30/14
NR Registration Number 2016- 0067	HPI 1-1 Nozzle Modification – Certification Of Inspection	04/19/16

**Commitment No. 23 (continued)**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
NR Registration Number 2016-0069	HPI 1-1 Nozzle Modification – Certification Of Inspection	05/07/16
NR Registration Number 2016-0070	HPI 2-1 Nozzle Modification – Certification Of Inspection	05/07/16
NR Registration Number 2016-0071	HPI 2-2 Nozzle Modification – Certification Of Inspection	05/09/16
Notification Number 600760573	Davis Besse Unit 1 High Pressure Injection/Makeup Nozzle Repair Analysis	08/01/15
Notification Number 600760573	DB-1 High Pressure Injection And Makeup Nozzle EAF Analysis For License Renewal	08/02/15

**Commitment No. 24**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NOP-LP-2001	Corrective Action Program	38

**Commitment No. 26**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
1-4556	Core Drill / Cutout Report	07/16/14
1-4565	Core Drill / Cutout Report	10/03/14
1-4569	Core Drill / Cutout Report	10/16/14
1-4564	Core Drill / Cutout Report	10/03/14
CLT Project No. 262713	Petrographic Examination Of Concrete Core For Core Drill Cutout No. 1-4556	12/15/14
CLT Project No. 262713	Examination Of Reinforcing Bar Corrosion For Core Drill Cutout No. 1-4565	12/10/14
CLT Project No. 262713	Concrete Compressive Strength Test For Core Drill Cutout No. 1-4556	11/25/14
CLT Project No. 262713	Petrographic Examination Of Concrete Core For Core Drill Cutout No. 1-4569	12/15/14
CLT Project No. 262713	Examination Of Reinforcing Bar Corrosion For Core Drill Cutout No. 1-4564	12/10/14
CLT Project No. 262713	Concrete Compressive Strength Test For Core Drill Cutout No. 1-4569	11/25/14

**Commitment No. 27**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
DB-PF-03009	Containment Vessel And Shield Building Visual Inspection	7

**Commitment No. 28**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
DB-CH-00008	Diesel Fuel Oil Program	14
CR-2015-10809	Station Blackout Diesel Fuel Chemistry Parameter Above Initiate Action Level	08/13/15
CR-2014-05897	Water Unexpectedly Discovered In T47 Diesel Fire Pump Day Tank	03/29/14
CR-2016-05823	4/12/2016 Fuel Oil Above Particulate Limit	04/12/16
CR-2015-15640	Station Blackout Diesel Fuel Chemistry Parameter Above Initiate Action Level	11/17/15
LRPD-05 Attachment 2.6c	Aging Management Program Evaluation Results – Fuel Oil Chemistry Program	3
DB-CH-03023	Emergency Diesel Generator Fuel Oil Storage Tank 2 Analysis	15
DB-CH-03024	Emergency Diesel Generator Fuel Oil Storage Tank 1 Analysis	15
DB-CH-03040	Emergency Diesel Generator 1 Fuel Oil Day Tank Drain Sample	2
DB-CH-03041	Emergency Diesel Generator 2 Fuel Oil Day Tank Drain Sample	4
DB-CH-04020	Fire Pump Diesel Day Tank Drain Sample	9
DB-CH-04024	Diesel Oil Storage Tank Drain Sample	4
WO 200608591	Edg2 Fost Oil Analysis	02/16/15
WO 200581553	Edg Day Tank Oil Analysis	10/27/15
WO 200608765	Edg Fuel Oil Storage Tank 1-1 Drain Sample	10/14/15
WO 200582656	Fire Pump Diesel 1-1 Day Tank Drain Sample	11/06/15
WO 200557093	Station Blackout Diesel Fuel Oil Day Tank Quarterly Test	03/23/15
WO 200536139	Edg Fuel Oil Storage Tank Internal Visual Inspection	09/27/14
Report #11771	In-Service Internal Bottom Ut Inspection Report	07/27/11
WO 2001936632	SBO Diesel Generator Day Tank Cleaning And Internal Inspection	10/09/06

**Commitment No. 29**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NG-EN-00389	Cranes And Hoists Inspection Program	1

**Commitment No. 30**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
NG-EN-00387	Leak Chase Monitoring Program	1
DB-SP-04400	Periodic Test Procedure – Spent Fuel Pool, Fuel Transfer Pit And Cask Pit Leak Detection System Test	6
DB-SP-04456	Periodic Test Procedure – Spent Fuel Pool, Fuel Transfer Pit And Cask Pit Visual Examination Test	0
293031	Maintenance Plan Item No (Plan No. 147861)	

**Commitment No. 30 (continued)**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date</u></b>
200646441	Maintenance Work Order, PM10982	01/06/16
200670037	Maintenance Work Order – Db-Sf99j	02/29/16
200615343	Work Order, SP4400-001 Leak Test	08/16/16
200690118	Work Order, Sp4456-001 Visual Examination	10/17/16

**Commitment No. 31**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
12501-C-303N	Technical Specification For Operational Phase For Purchase Of Structural Steel And Miscellaneous Metal	2
12501-C-303Q	Technical Specification For Operational Phase For Purchase Of Structural Steel And Miscellaneous Metal	2
12501-C-403N	Technical Specification For Operational Phase For Erecting Structural Steel And Miscellaneous Metal	2
12501-C-403Q	Technical Specification For Operational Phase For Erecting Structural Steel And Miscellaneous Metal	3
DB-MS-01007	Erection And Bolting Of Structural Steel	2

**Commitment No. 32**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
NG-EN-00557	Closed Cooling Water Chemistry Inspection Program	00
DB-CH-06901	Radiochemistry Test Requirements	12 and 13
BOP-VT-15-203	Cc-113 (Component Cooling Line 1 Corrosion Test Coupon Vent)	10/12/15
BOP-VT-16-046	Cc-108 Crd Cooler Outlet Isolation	04/04/16
BOP-VT-16-056	Cc-14070 Ccw Penetration 4 Check Isolation Inspection	04/04/16
BOP-VT-16-057	Cc-80 Seal Return Cooler 2 Ccw Drain	04/05/16
BOP-VT-15-242	VT-1/3 Of P42-1 Decay Heat #1 Oil Cooler Shell CCW-Side Internal Surfaces	11/17/15
BOP-VT-15-260	S328 Chilled Water Pump P92-1 Strainer	12/11/15
BOP-VT-16-070	VT-1 And 3 Of RCP 1-2-2 Internal Surfaces	04/11/16
BOP-VT-15-073	VT-1, EVT-1, VT-3 Of SBO DG JW Cooler Tubes' Internal Surfaces	07/17/15
BOP-VT-15-225	VT-1 And 3 Of EDG 1-2 Engine Aftercoolers Internal/External Surfaces	11/09/16
BOP-VT-16-068	VT-1 Of E26-1 Seal Return Cooler Internal Surfaces	04/08/16
WO 200353299	EDG Hx (DB-E10-1) CCW Side Flange Bolting Replacement With Inspection	10/27/10
NG-EN-00557	Closed Cooling Water Chemistry Inspection Program	00
LRPD-05, attachment 2.6b	Closed Cooling Water Chemistry Program - Aging Management Program Evaluation Results	4



**Commitment No. 33**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
ECP-0488-001	Davis Besse Refueling Canal Leak Mitigation With Areva Sealant	2
Notification 600891216	Vendor Document Title Petrographic Examination Of Concrete Core Sample Ew Tunnel No. 1 From Core Flood Pipe Tunnel License Renewal Project, 18rfo Core Bore Inspection I Analysis	04/14/14
Notification 600891220	Vendor Document Title South Wall, East-West Section Of The Core Flood Pipe Tunnel, Davis-Besse Nuclear Cores For Compressive Strength	04/10/14
Notification 600891221	Examination Of Rebar Extracted From Core Sample Ew Tunnel No. 1	04/14/14
WO 200533946	Refueling Canal And Fuel Transfer Tube	04/23/14

**Commitment No. 34**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
NG-EN-00562	Bolting Integrity Program	01
DB-MS-01007	Erection And Bolting Of Structural Steel	02
DB-MM-09266	Torquing (Sic)	10

**Commitment No. 35**

<u>Number</u>	<u>Description or Title</u>	<u>Date</u>
WO 200533921	18RFO, Perform NDE Of The Containment Vessel In The Annulus Sand Pocket Region	05/05/14

**Commitment No. 36**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EN-DP-01511	Structures Monitoring	4
Maintenance Item 341272	Maintenance Plan: Containment Vessel And Penetrations Visual Inspection	0
Notification 601034460	Certificate Of Analysis Report For Davis Besse Nuclear Power Station (PO55121481)	04/14/16
WO 200508311	Rework Belzona Moisture Barrier In The Annulus Sand Pocket	04/30/16
WO 200533921	Perform NDE Of The Containment Vessel In The Annulus Sand Pocket Region Per EER 600838115	05/05/14
WO 200620128	Water Sampling Cleaning Annulus	05/05/16

**Commitment No. 37 and 38**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
1-4553	Core Drill / Cutout Report	07/16/14
1-4566	Core Drill / Cutout Report	10/03/14
1-4567	Core Drill / Cutout Report	10/3/14
1-4568	Core Drill / Cutout Report	10/15/14
600938287	VTI Report For Petrographic Examination Of Concrete Core Product Extracted From Core Drill Cutout No. 1-4568	12/15/14
600938233	VTI Report For Examination Of Reinforcing Bar Corrosion For Core Drill Cutout No. 1-4566	12/10/14
600938286	VTI Report For Concrete Compressive Strength Test For Core Drill Cutout No. 1-4568	11/25/14
600938305	VTI Report For Petrographic Examination Of Concrete Core For Core Drill Cutout No. 1-4553	12/15/14
600938291	VTI Report For Examination Of Reinforcing Bar Corrosion For Core Drill Cutout No. 1-4567	12/10/14
600938304	VTI Report For Concrete Compressive Strength Test For Core Drill Cutout No. 1-4553	11/25/14
EER 601065227	Evaluate The Concrete Cracking On The Underside Of Spent Fuel Pool	10/10/16
NG-EG-00387	Leak Chase Monitoring Program	0

**Commitment No. 39**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
Drawing C-104	Containment Vessel Plan And Section	8
Letter L-14-206	License Renewal Application Amendment No. 50 - Annual Update (TAC Nos. ME4640 And ME4613)	06/23/14
Notification. 600891395	Commitment 39 Samples Cores For Compressive Strength	04/14/14
Notification. 600891991	Examination Of Rebar Extracted From Core Sample 1A	04/18/14
Notification. 600892786	Petrographic Examination Of Concrete Core	04/24/14
WO 200556805	Sump Core Bore, Lr Commitment 39	04/25/14

**Commitment No. 40**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
DBRM-ER-0005	Internal Surfaces Examination Program Scope	00
LRPD-05 Attachment 2.14	Aging Management Program Evaluation Results - Inspection Of Internal Surfaces In Miscellaneous Piping And Ducting Program	3
NG-EN-00560	Inspection Of Internal Surfaces In Miscellaneous Piping And Ducting Program	00
NOP-CC-5708	Written Practice For The Qualification And Certification Of Nondestructive Examination Personnel	8
NOP-WM-1001	Order Planning Process	23

**Commitment No. 41**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
WO 200606233	Replaced DFP FO Flexible Hoses And Performed LR One-Time Inspection Of Removed Hoses.	12/14/16
BOP-VT-16-198	VT-1 Inspection Of Removed DFP 1-2 FO Hose/Tubing	12/20/16
PM 11361	Preventive Maintenance Task To Periodically Replace The Two DFP Fuel Oil Flexible Hoses	N/A
222605	Plant Maintenance Plan To Periodically Replace The Two DFP Fuel Oil Flexible Hoses	N/A
LR-M017C	P & ID Fuel Oil System In License Renewal Scope	2

**Commitment No. 43**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
NOBP-LP-2100	Fenoc Operating Experience Process	13
NOP-ER-2101	Engineering Program Management	8
NOP-LP-2001	Corrective Action Program	37

**Commitment No. 44**

<u>Number</u>	<u>Description or Title</u>	<u>Date</u>
340101186	Cathodic Protection System Commissioning Survey For The Upgraded DFO Cathodic Protection System Installed At The Davis-Besse Nuclear Power Station Located In Oak Harbor, Ohio	04/10/12
0310400104507	Cathodic Protection System Commissioning Survey Report For The Underground Coated Steel And Ductile Iron Pipelines East Yard Cathodic Protection Phase II At The Davis-Besse Nuclear Power Station Oak Harbor, Ohio	02/18/11
	Resurvey Of The Cathodic Protection Systems Installed On Various Underground Coated Steel And Ductile Iron Pipelines At The Davis-Besse Nuclear Power Station Located In Oak Harbor, Ohio	09/30/13

**Commitment No. 45**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
EN-DP-01508	Containment Protective Coating Condition Assessment Inspections	3
LRPD-05 Att. 3.10	Aging Management Program Evaluation Results - Nuclear Safety-Related Protective Coatings Program	1
NG-EN-00360	Nuclear Safety Related Protective Coating Program	2

**Commitment No. 46**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EN-DP-01511	Structural Monitoring	6
317739	Maintenance Plan Item, Apply Protective Coating To Shield Building	
200686362	Order, Pm 11829: Inspect Shield Bldg Laminar Cracks	07/06/16
200670668-0100	Boroscope Examination Log	07/08/16
200670668-0240	Boroscope Examination Log	07/18/16
200670669	Order, Pm 11829: Inspect Shield Bldg Laminar Cracks	03/28/16

**Commitment No. 47**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
ISIP-4	Davis-Besse Nuclear Power Station Inservice Inspection Program 4 <sup>th</sup> Interval Plan	2
DB-PF-00104	Inservice Inspection Program	3
WO 200616038	VT-3 Inspections For Pipe Hangers, Support, And Restraints	03/31/16

**Commitment No. 48**

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
ECP 12-0764-001	Intake Canal Dike Repair Of Inboard Slope	1
WO 200556326	Repair North Intake Canal Dike Per ECP 12-0764	12/12/14

**Commitment No. 49**

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
DB-PF-00108	Alloy 600/690 Management Program	10
LRPD-05 Att. 1.2	Aging · Management Program Evaluation Results - Nickel Alloy Management Program	3
NG-EN-00551	Service Level III Coatings And Linings Monitoring Program	00
NOP-ER-2003	Alloy 600/690 Management Program	4

**Commitment No. 50**

<u>Number</u>	<u>Description or Title</u>	<u>Date</u>
WO 200616038	VT-3 Inspections For Pipe Hangers, Support, And Restraints	03/31/16
WO 200534113	VT-3 Inspections For Pipe Hangers, Support, And Restraints	02/10/14
LRPD-05 Attachment 3.4	Aging Management Program Evaluation Results – Inservice Inspection Program	08/20/13

**Commitment No. 51**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
EN-DP-01515	Service Level III Protective Coating And Linings Condition Assessment Inspection	00
LRPD-05 Att. 2.16	Aging Management Program Evaluation Results – Service Level III Coatings And Linings Monitoring Program	1
NG-EN-00551	Service Level III Coatings And Linings Monitoring Program	00

**Commitment No. 55**

<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Revision</u></b>
EN-DP-01301	Flow-Accelerated Corrosion Program (Fac)	8
EPRI NSAC-202L	Recommendations For An Effective Flow-Accelerated Corrosion Program	3
EPRI NSAC-202L	Recommendations For An Effective Flow-Accelerated Corrosion Program	4
LRPD-05 Att. 2.9	Aging Management Program Evaluation Results – Flow-Accelerated Corrosion Program	3
NOP-ER-2005	Flow Accelerated Corrosion Management Program	2
Technical Report No. 06-0675-TR-006	Davis Besse Piping And Instrumentation Diagram List	0

## LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
AMP	Aging Management Program
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
CCW	Component Cooling Water
CFR	<i>Code of Federal Regulations</i>
CLB	Current Licensing Basis
EPRI	Electric Power Research Institute
FENOC	First Energy Nuclear Operating Company
FMP	Fatigue Monitoring Program
GALL	Generic Aging Lessons Learned
IP	Inspection Procedure
LRA	License Renewal Application
MRP	Materials Reliability Program
NDE	Non-Destructive Examination
NRC	U.S. Nuclear Regulatory Commission
PWR	Pressurized Water Reactor
RAI	Request for Additional Information
RVI	Reactor Vessel Internals
SER	Safety Evaluation Report
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
VT	Visual Testing
WO	Work Order