UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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June 27, 2011

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

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION NRC LICENSE RENEWAL SCOPING, SCREENING, AND AGING MANAGEMENT INSPECTION REPORT 05000346/2011010

Dear Mr. Allen:

On May 13, 2011, the U. S. Nuclear Regulatory Commission (NRC) completed a License Renewal inspection at your Davis-Besse Nuclear Power Station. The enclosed report documents the inspection results, which were discussed on May 13, 2011, with you and members of your staff in an exit meeting.

The purpose of this inspection was to examine activities that support the application for renewed license for Davis-Besse. The inspection addressed the processes of scoping and screening plant equipment to select equipment subject to an aging management review, and development and implementation of aging management programs to support a period of extended operation. As part of the inspection, the NRC examined procedures and representative records, interviewed personnel, and visually examined accessible portions of various systems, structures or components, to verify license renewal boundaries, and to observe any effects of equipment aging. The visual examination of systems, structures, and components also included some areas not normally accessible, including manholes.

The inspection concluded the scoping and screening were generally conducted as described in the License Renewal Application, as supplemented through your responses to Requests for Additional Information (RAIs) from the NRC. The inspection also concluded documentation supporting the application was generally in an auditable and retrievable form.

With respect to the aging-management programs, the inspectors were not able to complete the inspection objectives. Since the submittal of your application, the NRC issued Revision 2 of NUREG-1801, “Generic Aging Lessons Learned (GALL) Report.” The Office of Nuclear Reactor Regulation (NRR) is addressing the differences between Revision 1, the revision used in your application, and Revision 2 through the use of RAIs. Although the inspectors were able to assess many programs, we anticipate changes in your application for several programs as a result of the RAIs. Therefore, the inspectors will conduct another inspection in August 2011 to verify changes made in responses to the RAIs.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000346/2011010
w/Attachments: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-346
License Nos:	NPF-3
Report No:	05000346/2011010
Licensee:	FirstEnergy Nuclear Operating Company
Facility:	Davis-Besse Nuclear Power Station
Location:	Oak Harbor, OH
Dates:	April 25 through May 13, 2011
Inspectors:	B. Jose, Senior Engineering Inspector (Lead) S. Sheldon, Senior Engineering Inspector M. Holmberg, Senior Engineering Inspector J. Bozga, Engineering Inspector J. Gilliam, Engineering Inspector
Approved by:	Ann Marie Stone, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000346/2011010; 04/25/2011 – 05/13/2011; Davis-Besse Nuclear Power Station; License Renewal Inspection

This inspection of the applicant's license renewal scoping, screening, and aging management processes was performed by five regional office inspectors. The inspectors used NRC Manual Chapter 2516 and NRC Inspection Procedure 71002 as guidance for performing this inspection. No "findings" as defined in NRC Manual Chapter 0612 were identified.

The inspectors were unable to complete the inspection as scheduled because several programs required additional reviews to ensure reasonable assurance that the intended functions of vital plant system s structures and components will be maintained through the period of extended operation. Since the submittal of the application, the NRC issued Revision 2 of the NUREG-1801, Generic Aging Lessons Learned (GALL) Report." The Office of Nuclear Reactor Regulation will be addressing the differences between Revision 1, the revision used in the application, and Revision 2 through the use of Requests for Additional Information. As a result, the agency anticipates changes to the application for several programs. Based on the results of the inspection, the inspectors concluded a follow up inspection will be conducted in August 2011.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

1. INSPECTION SCOPE

This inspection was conducted by NRC Region III inspectors. The inspection was performed in accordance with NRC Manual Chapter 2516 and NRC Inspection Procedure 71002, "License Renewal Inspection," dated February 18, 2005.

This inspection looked at both the applicant's scoping and screening methodology and aging management programs, as described in the license renewal application (LRA), submitted to the NRC on August 27, 2010 and supplemental correspondences.

The attachments to this report list the applicant personnel contacted, the documents reviewed, and the acronyms used.

2. VISUAL OBSERVATION OF PLANT EQUIPMENT

During this inspection, the inspectors performed walkdown inspections of portions of many of the plant systems, structures, and components (SSCs). The walkdowns were intended to determine the acceptability of the scoping boundaries, to observe the current condition of the SSCs, and to assess the likelihood that a proposed aging management program would successfully manage any aging effects. Specific comments on the walkdown results are presented in the sections below.

Portions of the following systems were walked down:

- Component Cooling Water System;
- Aboveground Tanks;
- Fuel Oil System;
- Demineralizer systems used for the moisture separator reheater drains and condensate systems;
- Cathodic Protection System for Emergency Diesel Generator (EDG) Fuel Oil Supply;
- Fire Protection System;
- Fire Water System;
- Station and Instrument Air System; and
- Electric Power Distribution System;

The following structures were walked down:

- Spent fuel pool;
- Auxiliary building (portions near shield building, EDGs and containment drains)
- Turbine Building (portions)

- Intake Structure (portions)
- Intake Gantry Crane (portions)
- Buried Cable Manholes;
- Block Walls (selected walls);
- 4.16 kV Switchgear Rooms; and
- Switchyard

3. REVIEW OF SCOPING AND SCREENING METHODOLOGY

a. Regulated Events (RE)

The inspectors reviewed the five regulated events specified for inclusion in 10 CFR 54.4(a)(3) including Fire Protection (FP), Environmental Qualification (EQ), Station Blackout (SBO), Pressurized Thermal Shock (PTS) and Anticipated Transient Without Scram (ATWS). The inspectors' review of license renewal (LR) boundary drawings, the application, the scoping/screening reports, and the Updated Safety Analysis Report (USAR) concluded the applicant had performed scoping and screening for the five regulated events in accordance with the methodology described in the LRA and the rule. The specific observations for these events are discussed below.

.1 Fire Protection (FP)

The inspectors reviewed the applicants scoping documentation to verify components relied up on for fire protection activities were included in scope.

.2 Environmental Qualification (EQ)

The inspectors reviewed the applicants scoping documentation to verify equipment requiring environmental qualification was included in scope.

.3 Station Blackout (SBO)

The inspectors reviewed the applicants scoping documentation to verify equipment and components relied up on for coping with SBO and SBO recovery were included in scope.

.4 Pressurized Thermal Shock (PTS)

The inspectors reviewed the applicant's basis documents for the reactor vessel beltline weld chemistry parameters (copper and nickel) used to evaluate the limiting beltline welds for compliance with the NRC requirements for a postulated PTS event (10 CFR 50.61 "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events"). The inspectors noted the existing weld chemistry values for limiting beltline welds contained in USAR Table 5.2-15 differed from the LRA table 4.2.3. The applicant stated USAR Table 5.2-15 was historical data and the current copper and nickel percentage values for the limiting reactor vessel weld WF-182-1 in the LRA were correct. The applicant issued Condition Report (CR) 11-93791 to document the need for updating or clarifying the USAR information.

.5 Anticipated Transients Without Scram (ATWS)

The inspectors reviewed the applicants scoping documentation to verify equipment associated with ATWS mitigation was included in scope.

b. Non Safety-Related Systems affecting Safety-Related Systems

In order to assess the applicant's scoping and screening methodology, the inspectors concentrated on those non-safety-related systems whose failure could prevent safety related SSCs from accomplishing a safety function, in accordance with 10 CFR 54.4(a)(2). To verify non-safety-related SSCs were correctly captured within or omitted from the scope of license renewal (LR), the inspectors reviewed LR documents, interviewed personnel, and walked down the selected SSCs. The following out of scope SSCs were reviewed:

.1 Turbine Generator and Auxiliaries

The Main Turbine and Auxiliaries System were noted as not in scope in Table 2.2-1, "License Renewal Scoping Results for Mechanical Systems" in the Davis-Besse License Renewal Application. Although this equipment is not safety-related, the inspectors were concerned with the spatial interaction with safety-related equipment in the turbine building. This concern is the subject of Request for Additional Information (RAI) 2.1-1 and will be resolved through the RAI process.

.2 Control Rod Drive System

The Control Rod Drive System was noted as not in scope in Table 2.2-1, "License Renewal Scoping Results for Mechanical Systems" in the Davis-Besse License Renewal Application. Noting the Control Rod Drives have a pressure boundary component and portions of the Control Rod Drive System are safety related the inspectors reviewed further to verify these components were properly scoped. The applicant issued Open Item Number (OIN) 362 to update the LRA to include clarifying instructions for all out of scope systems.

The inspectors reviewed the Control Rod Drive System Description, LR boundary drawings, the application, the scoping and screening reports and the USAR, and interviewed personnel responsible for the system. The applicant had captured the Control Rod Drive System electrical components as electrical commodities in scope in LRA Table 2.2-2. The reactor coolant pressure boundary function provided by the Control Rod Drive Mechanism (CRDM) Motor Tube Assembly had been captured in scope on boundary drawing LRM-040A and included in Table 3.1.2-3, "Aging Management Review Results – Reactor Coolant System and Reactor Coolant Pressure Boundary".

Based on this review, the inspectors concluded the applicant had performed scoping and screening for the Control Rod Drive System in accordance with the methodology described in the LRA and the rule.

.3 Containment Leak Detection System

The Containment Leak Detection System was identified as out-of scope for LR in the LRA Table 2.2-1. This humidity detection system is installed to detect evidence of leakage from beneath the Reactor Vessel. This system consisted of electrical equipment and humidity detectors installed below the vessel. The system was not described in the USAR and did not perform a maintenance rule function.

The inspectors reviewed the LR boundary drawings, the application, the scoping and screening reports and the USAR, and interviewed personnel responsible for the system. The inspectors concluded the applicant had performed scoping and screening for the Containment Leak Detection system in accordance with the methodology described in the LRA and the rule. However, the inspectors concluded the LRA Table 2.2-1 lacked sufficient instructions or reference to site documents to clarify the intended scope of this system. The applicant issued Open Item Number (OIN) 362 to update the LRA to include clarifying instructions for all out of scope systems.

.4 Demineralizer System

The Demineralizer System was identified as out-of scope for LR in the LRA Table 2.2-1. The applicant stated this system was intended to include only the Condensate and Moisture Separator Reheater Drain Demineralizer System. This system consisted of piping and resin beds and associated electrical equipment and was not described in the USAR and did not perform a maintenance rule function.

The inspectors reviewed the LR boundary drawings, the application, the scoping and screening reports and the USAR; performed walkdowns of accessible portions of the system contained within the Turbine Building and interviewed personnel responsible for the system. The inspectors concluded the applicant had performed scoping and screening for the Demineralizer system in accordance with the methodology described in the LRA and the rule. However, the inspectors concluded the LRA Table 2.2-1 lacked sufficient instructions or reference to site documents to clarify the intended scope of this system. The applicant issued OIN- 362 to update the LRA to include clarifying instructions for all out of scope systems.

.5 Reactor Vessel Head Lifting Lugs

Although the Reactor Vessel Head Lifting Lugs were included in license renewal scope, the inspectors identified no Aging Management Program (AMP) was credited for managing its aging effects. The applicant indicated this was an oversight as loss of function could potentially impact safety-related equipment functions. The applicant issued OIN-369 to update the LRA and assign an aging management program for the reactor vessel head lifting lugs. The inspectors also identified the environment and aging mechanisms affecting the exterior containment vessel surface were not explicitly defined in the LRA or in NUREG-1801. The applicant issued OIN-363 to track an update of the LRA to identify the 10 CFR 50 Appendix J Program for management of both internal and external containment vessel surfaces.

.6 Fire Water Storage Tank Pump House

The fire water storage tank pump house is a building which does not house the fire water system pumps and is used by onsite facility group for storage. The fire water storage tank pump house is excluded from the scope and is not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The inspectors reviewed the design drawings, the application, the scoping and screening reports and the USAR, and interviewed personnel responsible for the system. The inspectors also performed system walkdowns of accessible portions of the pump house. The inspectors concluded the applicant had performed scoping and screening for the fire water storage tank pump house in accordance with the methodology described in the LRA and the rule.

.7 Carbon Dioxide Storage Tank Pad

The carbon dioxide storage tank pad provides support to the storage unit and uses carbon dioxide to purge the turbine generator. The carbon dioxide storage tank pad is excluded from LR scope and is not relied on in the safety analyses or in the plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

The inspectors reviewed the design drawings, the application, the scoping and screening reports and the USAR, and interviewed personnel responsible for the system. The inspectors also performed system walkdowns of accessible portions of the pad. The inspectors concluded the applicant had performed scoping and screening for the carbon dioxide storage tank pad in accordance with the methodology described in the LRA and the rule.

.8 Electrical Power Distribution System

The electrical power distribution system consists of the transformers, switchgears, and other electrical components necessary to transform 345 kV power to various voltage levels used by the internal plant equipment. The Station Blackout (SBO) recovery requires the applicant to include in license renewal scope components in the 345 kV switchyard that are in the SBO recovery path. The 345 kV switchyard system has no safety-related function, but has components in-scope of LR per 10 CFR 54.4(a)(3) requirements for SBO.

The inspectors reviewed the SBO electrical boundary drawings, the application, and the applicable USAR sections and interviewed personnel responsible for the electrical power distribution system and the LR program. The inspectors also performed a walkdown of the switchyard with the system engineer to verify proper scoping of SBO recovery components. The inspectors concluded the applicant had performed scoping and screening for the electrical power distribution components for SBO recovery in accordance with the methodology described in the LRA and the rule.

4. REVIEW OF AGING MANAGEMENT PROGRAMS

The inspection assessed the adequacy of current implementation of existing aging management programs (AMPs) credited in the applicant's LRA. This included verification that current AMPs would ensure aging effects would be managed so there was reasonable assurance that an SSC's intended function would be maintained throughout the period of extended operation. For those programs indicated by the applicant as being consistent with NUREG 1801, "Generic Aging Lessons Learned (GALL) Report," the inspectors confirmed the applicant's program included the GALL attributes. For those programs, which the applicant indicated was new or being enhanced, the inspectors confirmed commitments existed and were sufficient to support future implementation. For those programs, where the applicant indicated they intended to take exception to the GALL, the inspectors reviewed the exceptions against the GALL recommendations and evaluated the acceptability of the applicant's proposal.

The inspection also consisted of walkdowns of selected in-scope SSCs to assess how plant equipment was being maintained under the current operating license and to visually observe examples of non-safety-related equipment determined to be in scope due to their proximity to safety-related equipment and their potential for failure due to aging effects.

Since the submittal of the application, the NRC issued Revision 2 of the NUREG-1801, Generic Aging Lessons Learned (GALL) Report." The Office of Nuclear Reactor Regulation (NRR) will be addressing the differences between Revision 1, the revision used in the application, and Revision 2 through the use of Requests for Additional Information (RAI). As a result and as noted below, the inspectors anticipate changes to the application for several programs; therefore, could not reach a conclusion regarding the effectiveness of the proposed programs.

.1 Aboveground Steel Tanks Inspection Program (B.2.2)

The Aboveground Steel Tanks Inspection Program is an existing program, which with enhancement, will be consistent with NUREG-1801, Section XI.M29, "Aboveground Steel Tanks." Revision 2 of NUREG-1801 changed Section XI.M29 to "Aboveground Metallic Tanks." The Aboveground Steel Tanks Inspection Program manages the effects of corrosion on the external surfaces and inaccessible locations of the steel fire water storage tank and diesel oil storage tank.

During the application review, the NRR staff raised concerns related to the frequency of tank bottom inspections, scoping of the Borated Water Storage Tank, inspections of sealant or caulking, and management of identified corrosion. The concerns were documented in RAIs B.2.2-1, 2, 3, and 4.

The inspectors reviewed LR program basis documentation, aging management review documents, corrective action documents, and existing procedures and surveillances. The inspectors also interviewed the program owners for each of the tanks and verified the procedures used for periodic inspections addressed condition of the paint or coating on the tanks.

With the exception of the concerns raised in RAIs B.2.2-1, 2, 3, and 4, the inspectors had no further concerns. Resolution of the RAIs will be necessary to complete the assessment of the Aboveground Steel Tanks Inspection Program.

.2 Air Quality Monitoring Program (B.2.3)

The Air Quality Monitoring Program is an existing plant specific program that was evaluated against the 10 elements described in Appendix A.1, Section A.1.2.3 of NUREG-1800, the Standard Review Plan for License Renewal (SRP-LR). The Air Quality Monitoring program ensures the Instrument Air System remains dry and free of contaminants and there are no aging effects requiring management. The program periodically samples the compressed air within components of the Instrument Air System for hydrocarbons, dew point, and particulates to verify proper air quality and to ensure the intended function of the system is maintained.

The inspectors reviewed the applicable program basis documentation, interviewed the responsible systems engineer, conducted a system walkdown, reviewed corrective action documentation related to Instrument Air Systems, reviewed applicable procedures, reviewed commitments and implementing documents. The inspectors searched the applicant's corrective action database for relevant condition reports.

With the exception of the concerns raised in RAIs submitted by NRR, the inspectors had no further concerns. Resolution of the RAIs will be necessary to complete the assessment of the Air Quality Monitoring Program.

.3 Boral® Monitoring Program (B.2.5)

The Boral® Monitoring (BM) Program is a new program, and no corresponding Aging Management Program (AMP) exists in Revision 1 of NUREG-1801. The BM Program is credited for detecting loss of material aging effects of the Boral® neutron absorbers in the spent fuel racks. The program consists of periodic visual inspections and measurements as appropriate to determine and assess the extent of degradation in Boral® before there is a loss of intended function. Boral® is a cermet consisting of a core of aluminum and boron carbide powder sandwiched between sheets of aluminum (Type 1100 alloy). Boral refers to patented Aluminum-Boron master alloys; these alloys can contain up to 10% boron as AlB12 intermetallics. The boron carbide material is physically stable and chemically inert. However, the aluminum cladding is subject to corrosion and industry experience has shown blisters can form in the aluminum cladding. The neutron absorbing capability of the Boral® is not affected by this corrosion process and thus the Boral® materials used in the spent fuel racks are acceptable to the NRC staff.

Because no corresponding AMP is described in Revision 1 of NUREG-1801, the inspectors reviewed the applicant's BM Program to assess conformance with the AMP XI.M40 "Monitoring of Neutron-Absorbing Materials Other Than Boraflex" as described in Revision 2 of NUREG-1801. Specifically, this monitoring program is implemented to assure degradation of the neutron-absorbing material used in spent fuel pools that could compromise the criticality analysis will be detected. The X1.M40 AMP relies on periodic inspection, testing, monitoring, and analysis of the criticality design to assure the required 5% sub-criticality margin is maintained during the period of license renewal.

The inspectors reviewed the applicant's BM Program documentation, aging management review documents, applicable drawings and interviewed personnel responsible for the program to evaluate consistency with the AMP XI.M40. The inspectors concluded the BM Program was not consistent with AMP X1.M40 of NUREG 1801. Specifically, the BM Program did not: limit the maximum length of time for in-situ

testing for Boral to 10 years; commit to specific physical Boral® tests (areal density, measurement of geometric changes in the material); and relate visual examination results to the acceptance criteria (e.g. 5% sub-criticality margin). Additionally, the Boral® material in the Davis-Besse fuel racks was enclosed in stainless steel sheathing, such that the applicant's proposed visual examination for detection of Boral® material degradation was not viable. The applicant stated the BM Program would be revised and issued. The applicant initiated OINs 358, 359, 360 and 361, which stated each of these issues would be addressed in response to NRC RAI B.2.5-1.

The inspectors concluded the BM Program as described by the applicant was not adequate to manage aging effects of the Boral® neutron absorbers in the spent fuel racks during the period of extended operation. On May 5, 2011, the applicant responded to NRC RAI B.2.5-1 and committed to a new Boral Monitoring program which does not have the limitations identified above. Because the proposed substantive changes occurred after completion of the onsite BM Program review, the inspectors were not able to reach a final determination on the acceptability of the revised BM Program.

.4 Buried Piping and Tanks Inspection Program (B.2.7)

The Buried Piping and Tanks Inspection (BPTI) Program is an existing program that manages the aging effects on the external surfaces of piping, tanks and associated bolting exposed to a buried (soil) environment. Condition monitoring of buried pipe or tanks consists of opportunistic inspections of buried components and buried gray cast iron subject to selective leaching is managed by the Selective Leaching Inspection Program. Preventive measures consist of preventive coatings and/or wraps on buried components. The applicant stated the BPTI Program with enhancements will be consistent with NUREG-1801, Section XI.M34, "Buried Piping and Tanks Inspection." The first enhancement expanded the program scope to include emergency diesel fuel oil storage tanks and bolting for buried Fire Protection System piping. As a second enhancement, the applicant intends to perform a VT-3 visual examination of a sample of buried components within 10 years prior to and once every 10 years subsequent to the start of the period of extended operation. The components subjected to this VT-3 visual examination will include: coated and wrapped buried pipe or tanks; uncoated cast iron piping; and Fire Protection System bolting.

The inspectors reviewed program documentation, station procedures, condition reports, aging management review documents, and interviewed personnel responsible for the program to assess consistency with Revision 2 of NUREG-1801 AMP XI. M41, "Buried and Underground Piping and Tank Inspections." Although the applicant described conformance with Revision 1 of NUREG 1801, the NRC staff had reviewed the applicants BPTIP to assess differences in program requirements with operating experience that was incorporated into Revision 2 of NUREG-1801 AMP XI. M41, "Buried and Underground Piping and Tank Inspections." A number of differences had been previously identified and subject of the existing NRC review (reference NRC RAI B.2.7-1). The inspectors noted station procedures had not been updated to reflect the BPTIP Program enhancements discussed above. Specifically, the current BPTIP procedure NOP-ER-2007 "Underground Piping and Tank Integrity Program" did not include buried tanks within the scope of the program. The applicant stated the diesel fuel oil storage tanks would be added to the program procedures prior to the period of extended operation.

The applicant had recently excavated portions of the in-scope buried diesel fuel oil supply piping and documented the results in report Eawus830LINS080919-1 "External Corrosion Direct Assessment Indirect Survey, Direct Examination and Post Assessment Davis-Besse Nuclear Station DFO-1 and DFO-2 Pipelines." In this report, the applicant's vendor documented the mainline coating was in good condition, but minor pitting and coating damage was identified at elbows. Based on the measured pipe degradation and projected corrosion rates for the excavated pipe segments, the vendor estimated no pipe leakage for the next165 years. The inspectors' independent search of corrective actions did not identify any issues related to external corrosion damage on buried components that were not already identified in the applicant's operating experience section of the BPTI Program.

Because the issues identified by the NRC in RAI- B.2.7-1 have the potential to substantially change the BPTI Program, the inspectors were not able to reach a final determination on the acceptability of the BPTI Program.

.5 Closed-Cycle Cooling Water Chemistry Program (B.2.8)

The Closed-Cycle Cooling Water (CCCW) Chemistry Program is an existing program, which is generally comparable to NUREG-1801, Section XI.M21, "Closed-Cycle Cooling Water System." However, the applicant identified an exception to the GALL Program. The program does not include performance or functional testing for aging management. Based on the applicant's operating experience, the applicant determined the program was effective in maintaining the intended functions of subject components in closed cooling water systems without the use of performance monitoring or functional testing. However, it does include measurement of corrosion rates in select locations, via corrosion coupons, and inspections of opportunity when systems are open for maintenance. The corrosion coupons are periodically replaced and evaluated to provide information on the effectiveness of the chemical treatment program and corrosion rate data. The CCCW Chemistry Program manages the relevant conditions that could lead to the onset and propagation of a loss of material, cracking, or reduction in heat transfer through proper monitoring and control of corrosion inhibitor concentrations consistent with current Electric Power Research Institute (EPRI) water chemistry guidelines.

The inspectors reviewed LR program basis documentation, aging management review documents, historical chemistry parameter trends, corrective action documents, and existing procedures and surveillances. The inspectors also interviewed the program owner, interviewed the CCW system engineer, and conducted walkdowns to assess the external condition of CCW systems within the plant. The inspectors verified the applicant performed adequate historic reviews of plant specific experience to determine aging effects specified in the LRA are consistent with current industry practice.

One question concerning how the applicant will inspect the internal condition of closed cooling water systems is the subject of RAI B.2.8-1 and will be resolved by staff through the RAI process.

With the exception of the concerns raised in RAI B.2.8-1, the inspectors had no further concerns. Resolution of the RAI will be necessary to complete the assessment of the Closed-Cycle Cooling Water Chemistry Program.

.6 Inspection of Collection, Drainage and Treatment Components Program (B.2.9)

The Inspection of Collection Drainage and Treatment Inspection Program is a new program, and no corresponding Aging Management Program (AMP) exists in Revision 2 of NUREG 1801. The program will perform visual inspections of the surfaces of the in-scope steel or other metal components exposed to raw (untreated) water, that are not covered by other aging management programs, for evidence of loss of material, as well as cracking or reduction in heat transfer capability. Opportunistic inspections, when surfaces are accessible during maintenance, repair, or surveillance, will be performed to ensure the existing environmental conditions in collection, drainage, and treatment service are not causing material degradation that could result in a loss of the component's intended function during the period of extended operation.

Because no corresponding AMP is described in Revision 2 of NUREG 1801, the inspectors reviewed the applicant's Collection Drainage and Treatment Inspection Program to assess conformance with the ten elements described in Appendix A of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants", Revision 2.

The inspectors reviewed LR program basis documentation, interviewed the program owner, and reviewed the applicant's commitment to develop and implement a collection, drainage and treatment inspection program before the period of extended operation. The inspectors reviewed condition reports to verify indentified concerns are being addressed through the applicant's corrective action program.

The NRC staff identified in RAI B.2.9-1, a VT-3 or equivalent method may be satisfactory to detect general corrosion, but is not necessarily an acceptable method to detect crevice or pitting corrosion. Therefore, it is not clear how the VT-3 or equivalent inspection method will detect pitting and crevice corrosion. RAI B.2.9-2 requested the basis for the acceptance criteria associated with this program. RAI 3.3.1.68-1 requested the technical justification to manage loss of material for associated components, given the program only includes opportunistic visual inspections.

RAI B.2.9-3 requested bases for the opportunistic inspection frequency to ensure it is adequate to detect the aging effects before a loss of intended structural or component function. RAI B.2.9-5 requested whether or not the inspection program includes measurement of wall thickness and detection and sizing of cracks and periodic heat balance calculations.

With the exception of the concerns raised in RAIs B.2.9-1, 2, 3, 5 and RAI 3.3.1.68-1, the inspectors had no further concerns. Resolution of the RAIs will be necessary to complete the assessment of the Collection Drainage and Treatment Components Inspection Program.

.7 Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Program (B.2.10)

The Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Program is an existing program which manages aging effects of general corrosion on rails and other structural components of heavy load handling, components within the scope of NUREG-0612, and the light load handling components related to

refueling activities. The program provides for periodic visual inspection of the components. The program is primarily concerned with structural components that make up the bridge and trolley.

The inspectors reviewed this program to assess consistency with Revision 2 of NUREG-1801 AMP XI.M23, "Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems." The inspectors reviewed the applicable license renewal program basis documentation, and existing overhead crane inspection procedures. The inspectors also interviewed personnel responsible for the program, reviewed recent inspection reports and condition reports to verify identified crane structural concerns are being addressed through the applicant's corrective action program. The inspectors also performed walkdowns of portions of the intake gantry crane.

The NRC staff identified in RAI B.2.10-2 none of the AMR line items addressed a loss of preload of bolted connections for overhead cranes and hoists. Therefore, it is not clear how the loss of preload of bolted connections will be managed for overhead cranes and hoists. RAI 3.3.1.74-1 requested the justification as to why the loss of material due to wear is not a concern.

The inspectors found during the last spent cask crane preventative maintenance inspection, the rail hold clips were degraded but no engineering calculation was performed to demonstrate compliance. The applicant initiated Condition Report (CR) 11-94003 to investigate this issue.

With the exception of the concerns raised in RAIs B.2.10-2, 3.3.1.74-1 and CR 11-94003, the inspectors had no further concerns. Resolution of the RAIs and the CR will be necessary to complete the assessment of the Crane and Hoists Inspection Program.

.8 Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.11)

The Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program that the applicant will implement prior to the period of extended operation. This program will be consistent with the program described in NUREG-1801, Section XI.E6, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." It is a one-time inspection program that tests a sample size of 20% or maximum of 25 cable connections based upon factors such as connection type, circuit application (medium, or low voltage), circuit loading (high load), and physical location (e.g., vibration, high temperature/ humidity). Cable connections terminating within an active or passive device/enclosure from external sources are in scope of this program. Cable/wiring connections terminating within an active or passive device/enclosure from internal sources are not in scope of this program. Thermography augmented by the optional uses of contact resistance testing will be used to detect loose or degraded connections due to thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed the applicant had a commitment in place to implement the program prior to the period of extended operation. The inspectors also interviewed the program owner to determine how and when the testing requirements will be implemented. The inspectors verified the applicant

performed adequate historic reviews of plant specific and industry experience to determine aging effects.

With the exception of the concerns raised in RAIs submitted by NRR, the inspectors had no further concerns. Resolution of the RAIs will be necessary to complete the assessment of the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program.

.9 Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.12)

The Non-Environmentally Qualified (Non-EQ) Insulated Cables and Connections Program is a new program that the applicant will implement prior to the period of extended operation. This program will be consistent with the program described in NUREG-1801, Section XI.E1, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The Non-EQ insulated cables and connections program will apply to accessible insulated cables and connections installed in structures within the scope of license renewal and prone to adverse localized environments.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed the applicant had a commitment in place to implement the program prior to the start of the period of extended operation. The inspectors also interviewed the Non-EQ insulated cables and connections program owner to determine how and when the testing and monitoring requirements for this aging management program will be developed and implemented. The inspectors verified the applicant performed adequate historic reviews of plant specific and industry experience to determine aging effects.

Although the applicant described conformance with Revision 1 of NUREG 1801, the inspectors reviewed the applicant's conformance with the AMP XI.EI "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements" from Revision 2 of NUREG-1801. During the review, the inspectors identified a difference in the inspection parameters. The applicant's LRA section B.2.12 states the program "provides for a visual inspection of a representative sample of accessible electrical cables and connections located in adverse localized environments". The NUREG- 1801 Rev. 2 states "The applicant should determine and inspect the adverse localized conditions for each of the most limiting temperature, radiation, or moisture conditions for the accessible cables and connections that are within the scope of license renewal. The inspectors discussed this difference with NRR and were informed, during the NRR audit, the applicant made a commitment to inspect all the cables and connections in scope as documented in NRR audit report dated June 1, 2011 (ML 11122A014).

With the exception of the concerns raised in RAIs submitted by NRR, the inspectors had no further concerns. Resolution of the RAIs will be necessary to complete the assessment of the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program.

.10 Electrical Cables and Connections Not Subject to 10CFR50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program (B.2.13)

The Electrical Cables and Connections Not Subject to 10CFR50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program is a new program, that will be implemented consistent with NUREG-1801, Section XI.E2, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits." This program will manage the aging of the low current instrumentation cables and connections that are not required to be environmentally qualified but are within the license renewal scope.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed the applicant had a commitment in place to implement the program prior to the period of extended operation. The inspectors also interviewed the program owner to understand site specific operating experience.

The inspectors concluded the Electrical Cables and Connections Not Subject to 10CFR50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program, when implemented as described, will effectively manage aging effects, since it will incorporate appropriate testing techniques. Implementation of this program will provide reasonable assurance that the effects of aging will be managed such that components within the scope of the program will perform their intended functions consistent with the current licensing basis for the period of extended operation.

.11 Environmental Qualifications (EQ) of Electric Components (B.2.14)

The Environmental Qualification of Electric Components Program is an existing program. It is consistent with the program described in NUREG-1801, Section X.E1, "Environmental Qualification (EQ) of Electric Components." This program manages component thermal, radiation, and cyclical aging through the use of aging evaluations based on 10 CFR 50.49(f) qualification methods. As required by 10 CFR 50.49, EQ components not qualified for the current license term are to be refurbished or replaced, or have their qualification extended prior to reaching the aging limits established in the evaluation. Aging evaluations for EQ components that specify a qualification of at least 40 years are considered time-limited aging analyses for license renewal.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures to confirm the applicant has been successful in effectively managing the aging effects of EQ electric components. The inspectors also interviewed EQ Program owner to confirm the applicant will continue to carry out the EQ Program for the duration of the extended operation. The inspectors verified the applicant performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors noted the applicant's existing EQ Program has been subject to periodic internal and external assessments to facilitate continuous improvement. Continued implementation of this program provides reasonable assurance that components within the scope of the program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

.12 External Surfaces Monitoring Program (B.2.15)

The External Surfaces Monitoring Program is an existing program which, with the enhancements, will be comparable to NUREG-1801, Section XI.M36, "External Surfaces Monitoring." The program manages aging effects by performing visual inspections of external surfaces for evidence of degradation such as corrosion, cracking or leakage. This program is implemented largely through system engineer walkdown checklists.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures. The inspectors interviewed the program owner and discussed the requirements with system engineers during walkdowns.

The inspectors identified several concerns with the program. Specifically, (1) procedures lacked specific requirements for periodically inspecting accessible components; (2) the walkdown checklists lacked specific acceptance criteria for the engineers to use in identifying aging effects; (3) the walkdown checklists did not include all applicable aging effects; and (4) the walkdown checklists did not have retention requirements which would document the inspections had been completed. The applicant agreed to enhance the program to (1) inspect accessible components at least once per fuel cycle; (2) include specific acceptance criteria in the checklist; (3) revise the procedures to include other applicable aging effects; and (4) strengthen the retention requirements to allow for subsequent retrieval and audit of the checklists. These actions are being tracked by the applicant in OIN- 352.

One question concerning how the applicant will inspect elastomeric components is the subject of RAI 3.3.2.2.5-1.

With the exception of the concerns raised in RAI 3.3.2.2.5-1 and OIN-352, the inspectors had no further concerns. Resolution of the RAI and the OIN will be necessary to complete the assessment of the External Surfaces Monitoring Program.

.13 Fatigue Monitoring Program (B.2.16)

The fatigue monitoring program is an existing program which, when enhanced, will be comparable to Section X.M1, "Fatigue Monitoring" of the GALL Report. The fatigue monitoring program manages fatigue of select primary and secondary components, including the reactor vessel, reactor internals, pressurizer, and steam generators by tracking thermal cycles. The program provides an analytical basis for confirming the actual number of cycles does not exceed the number of cycles used in the design analysis and the cumulative usage is maintained below the allowable limit, or appropriate corrective actions are taken to maintain component cumulative fatigue usage below the allowable limit during the period of extended operation. Enhancements include the incorporation, review and analyses of fatigue sensitive locations, including those identified, in NUREG/CR-6260, that are projected to exceed a cumulative usage factor of 1.0.

The inspectors reviewed the applicable LR program basis documentation for the fatigue monitoring program and also interviewed applicant's staff to assess their knowledge of fatigue management.

A number of Requests for Additional Information (RAIs) have been issued by NRR asking for clarification on the different elements of the program. Based on the possible changes to the program following NRC review and acceptance of the RAIs, the inspectors could not reach a conclusion on whether the Fatigue Monitoring Program would effectively manage aging effects.

.14 Fire Protection (B.2.17)

The Fire Protection Program is an existing program that manages the aging effects for components in the scope of license renewal that have a fire barrier function, including fire damper framing, fire-rated penetration seals, fire wraps, fire proofing, fire doors, and fire barrier walls, ceilings and floors. In addition, the Fire Protection Program supplements the Fuel Oil Chemistry Program through performance monitoring of the diesel fire pump. The Fire Protection Program is a combination condition and performance monitoring program, comprised of tests and inspections in accordance with the applicable National Fire Protection Association (NFPA) recommendations. The fire protection (FP) program with the proposed two exceptions will be comparable to Section XI.M26, "Fire Protection," of the GALL Report. The two exceptions are:

- Fixed halon or carbon dioxide suppression systems are not installed within the protected area at Davis-Besse, as described in the Fire Hazards Analysis Report (FHAR) and corresponding Safety Evaluation Reports (SER). Therefore, the associated portions of the NUREG-1801, XI.M26 program are not applicable to the Fire Protection Program for Davis-Besse.

- The Fire Protection Program does not include specific confirmation of "no corrosion in the fuel oil supply line for the diesel-driven fire pump." Rather, the Fire Protection Program includes periodic performance testing of the diesel fire pump. Degradation noted for the fuel oil supply line during these periodic tests, if any, is evaluated prior to loss of intended function. In addition, the One-Time Inspection characterizes the internal surface condition of the fuel oil supply line (tubing) for confirmation of the effectiveness of the Fuel Oil Chemistry Program.

The fire protection program is credited for detecting and managing age related degradation of FP system components and structures. The FP program includes fire barrier visual inspections, motor and diesel-driven fire pump tests and inspections. Periodic testing and inspection of the diesel driven fire pump is performed to ensure an adequate flow of fire water is supplied and there is no degradation of the diesel fuel supply lines. Fire barrier inspections will be performed, consisting of periodic visual inspection of fire barrier penetration seals, fire dampers, fire barrier walls, ceilings and floors; and periodic visual inspection and functional tests of fire-rated doors to ensure their operability is maintained.

The inspectors reviewed fire protection aging management program related documentation, condition reports, self assessments, procedures and implementing documents. The inspectors interviewed applicant engineers to confirm the continuation of the existing program. In addition, the inspectors verified the applicant performed

adequate historic reviews of plant specific and industry experience to determine aging effects and the exceptions to NUREG 1801 specified in the LRA are consistent with current industry practice. The inspectors also conducted field walkdowns of the fire protection system

The inspectors concluded the fire protection program, in general, effectively manages aging effects. Continued implementation of the fire protection program will provide reasonable assurance that the aging effects will be managed so the fire protection system components will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

.15 Fire Water System (B.2.18)

The Fire Water (FW) System Program is an existing program which, with the proposed enhancements, will be comparable to NUREG-1801, Section XI.M27, "Fire Water System." The fire water system program is a condition monitoring program that conducts inspections and performance tests of the water-based fire protection systems are in accordance with the National Fire Protection Association (NFPA) codes and standards. These activities include sprinkler system inspections, pipe wall thickness testing, hydrant inspections, fire main flushes, and flow tests. The components include sprinklers, nozzles, fittings, valves, hydrants, hose stations, standpipes, and above-ground and underground piping and components.

The inspectors reviewed fire water system aging management program related documentation, condition reports, existing procedures, required enhancements, and implementing documents. Program enhancements include adding program requirements to:

- perform periodic ultrasonic testing for wall thickness of representative above-ground water suppression piping that is not periodically flow tested but contains, or has contained, stagnant water. The ultrasonic testing will be performed prior to the period of extended operation and at appropriate intervals thereafter, based on engineering evaluation of the initial results.

- perform at least one opportunistic or focused visual inspection of the internal surface of buried fire water piping and of similar aboveground fire water piping, within the five-year period prior to the period of extended operation, to confirm whether conditions on the internal surface of above-ground fire water piping can be extrapolated to be indicative of conditions on the internal surface of buried fire water piping.

- perform representative sprinkler head sampling (laboratory field service testing) or replacement prior to 50 years in-service (installed), and at 10-year intervals thereafter, in accordance with NFPA 25, or until there are no untested sprinkler heads that will see 50 years of service through the end of the period of extended operation.

- perform, if certain conditions are met, opportunistic fire water supply and water-based suppression system internal inspections each time a fire water supply or water-based suppression system (including fire pumps) is breached for repair or maintenance. To be considered acceptable, these internal visual inspections must

be demonstrated to be: a) representative of water supply and water-based suppression locations, b) performed on a reasonable basis (frequency), and c) capable of evaluating wall thickness and flow capability. If the internal inspections cannot be completed of a representative sample, then ultrasonic inspections will be used to complete the representative sample.

Based on inspectors' questioning, the applicant generated OIN – 354 to verify requirements for completion and documentation of inspections of buried fire water piping that are included in the revised Buried Piping Aging Management Program.

The inspectors also conducted plant visual inspections to assess the condition of fire water system equipment, including the diesel and electric fire pumps and associated equipment in the intake structure and several yard hydrants. The fire water system engineer was interviewed to confirm the continuation of the existing program along with the implementation schedule of the required program enhancements. In addition, the inspectors verified the applicant performed adequate historic reviews of plant specific and industry experience to determine aging effects specified in the LRA are consistent with current industry practice.

The inspectors concluded the Fire Water System Program, in general, effectively manages aging effects. With the enhancements to be incorporated prior to the period of extended operation, continued implementation of the fire water system program will provide reasonable assurance that the aging effects will be managed so the fire water system components will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

.16 Fuel Oil Chemistry Program (B.2.20)

The Fuel Oil Chemistry Program is an existing program that, with enhancements, will be consistent with NUREG 1801, Chapter XI, Program XI.M30, Fuel Oil Chemistry. The Fuel Oil Chemistry Program manages the loss of material and cracking aging effects on internal surfaces of the diesel fuel oil system piping, piping components, and tanks by minimizing the potential for a corrosive environment and verifying actions taken to mitigate corrosion are effective. The program includes fuel oil chemistry control, sampling, and receipt inspection activities that are performed in accordance with plant Technical Specifications requirements; American Society for Testing and Materials (ASTM) Standards; vendor and plant requirements for fuel oil chemistry. The program also includes periodic and one time inspection activities to verify the absence of unacceptable aging effects and the continued effectiveness of fuel oil chemistry control activities.

The inspectors reviewed license renewal program basis documents, aging management review documents, existing procedures, surveillance records, and corrective action program documents. The inspectors searched the applicant's corrective action database for relevant condition reports. The inspectors also interviewed the responsible program owner and conducted walkdowns of the emergency diesel generator 2, associated day tank, and piping components.

The inspectors identified the applicant does not test for microbiological activity at least quarterly as recommended in the GALL. The applicant agreed to enhance the program to test for microbiological activity at least quarterly and to amend the application to reflect this enhancement. This is being tracked by the applicant in OIN- 368.

The inspectors concluded the Fuel Oil Chemistry Program effectively manages aging effects. Continued implementation of the enhanced fuel oil chemistry program will provide reasonable assurance that the aging effects will be managed so the fuel oil system will continue to perform its intended function, consistent with the current licensing basis, for the period of extended operation.

.17 Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.21)

The Non-EQ Inaccessible Medium-Voltage Cable Program is a new program that the applicant will implement prior to the period of extended operation. The program, when implemented will be comparable to that described in NUREG-1801, Section XI.E3, "Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." This program applies to inaccessible (e.g., in conduit or direct-buried) medium-voltage cables within the scope of license renewal that are exposed to significant moisture simultaneously with applied voltage. This program includes a commitment to test these cables once every 10 years and the first test to be completed prior to the period of extended operation to provide an indication of the condition of the conductor insulation. The specific type of test to be performed will be determined prior to the expiration of the current license.

In addition, manholes associated with inaccessible non-EQ medium-voltage cables will be inspected for water accumulation and the water removed, as necessary. These inspections for water collection will be conducted at least once every two years, with the initial inspection to be completed prior to the period of extended operation.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed the applicant had a commitment in place to implement the program prior to the period of extended operation. The inspectors also interviewed the program owner to determine implementation of particular test procedures to be developed under the program. The inspectors performed a walkdown of manholes MHSA2 and MHSB2 containing 4.16 kV cables and observed water at about cable/conduit level. These manholes do not have sump pumps installed and are designed to drain to the adjacent manholes MHSA1 and MHSB1 with sump pumps. The inspectors also observed the sump pumps discharge right outside the manholes, which has the potential for the water to seep right back into the manholes. The system engineer noticed the problem earlier in March 2011 and had initiated CR 11-92055 to evaluate and take appropriate corrective actions. Upon questioning by the inspectors regarding the delay in correcting the problem, the system engineer issued Notification No. 600682819 to open the manholes and make necessary repairs to ensure no water was present in the manholes. The inspectors verified the applicant performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded the Non-EQ Inaccessible Medium-Voltage Cable Program, when implemented as described, will effectively manage aging effects, since it will incorporate appropriate testing techniques. Implementation of this program will provide reasonable assurance that the effects of aging will be managed such that components within the scope of the program will perform their intended functions consistent with the current licensing basis for the period of extended operation.

.18 Leak Chase Monitoring Program (B.2.25)

The Leak Chase Monitoring Program is an existing program, which has no corresponding Aging Management Program (AMP) described in NUREG-1801. This program was evaluated against the 10 elements described in Appendix A.1, Section A.1.2.3 of NUREG-1800, the Standard Review Plan for License Renewal (SRP-LR). The Leak Chase Monitoring Program is credited for detecting loss of material aging effects for the spent fuel pool, the fuel transfer pit, and the cask liners. The program includes periodic monitoring of the leak chase system, which permits early determination and localization of leakage.

The inspectors reviewed the applicable LR program basis documentation, and corrective actions for the leak chase monitoring program. Inspectors also interviewed applicant's staff to assess their knowledge of Leak Chase Monitoring Program.

A number of RAIs have been issued by NRR asking for clarification on the different elements of the program. Based on the possible changes to the program following NRC review and acceptance of the RAIs, the inspectors could not reach a conclusion on whether the Leak Chase Monitoring Program would effectively manage aging effects.

.19 Lubricating Oil Analysis Program (B.2.26)

The Lubricating Oil Analysis Program is an existing program that is consistent with NUREG 1801, Chapter XI Program XI.M39, Lubricating Oil Analysis Program. The Lube Oil Analysis Program maintains lubricating and hydraulic oil systems free of contaminants (primarily water and particulates); thereby, preserving an environment that is not conducive to loss of material, cracking or heat transfer degradation. Oil testing activities, which include periodic sampling, analysis, and trending of results, are performed to provide an early indication of adverse equipment condition in the lube and hydraulic oil environments.

The inspectors reviewed the lube oil analysis program documentation, corrective action documents, aging management review documents, existing procedures, and implementing documents. The inspectors searched the applicant's corrective action database for relevant condition reports and accessed the applicant's sample scheduling system. The inspectors also interviewed the lube oil analysis program owner.

The program is currently managed using a software database that contains the sample frequencies, test requirements, and acceptance criteria. This software is currently class C software per NOP-SS-1001; First Energy Nuclear Operating Company (FENOC) Administrative Program for Computer Related Activities; Revision 08. The inspectors identified that the software will become a regulatory requirement under a renewed license and should be controlled as Class B software at that time. The applicant initiated tracking item OIN- 353 to resolve this concern during implementation of the renewed license.

The inspectors concluded the Lubricating Oil Analysis Program effectively manages aging effects. Continued implementation of the lube oil analysis program will provide reasonable assurance that the aging effects will be managed so the program provides early indication of degrading conditions, to ensure equipment remains capable of performing its intended function consistent with the current licensing basis for the period of extended operation.

.20 Masonry Wall Program (B.2.27)

The Masonry Wall Program (MWP) is an existing program based on NRC IE Bulletin 80-11, “Masonry Wall Design,” and NRC Information Notice (IN) 87-67, “Lessons Learned from Regional Inspections of Licensee Actions in Response to IE Bulletin 80-11,” and applies to the walls in proximity of or having attachment to safety-related (SR) equipment. The MWP consists of inspection activities to detect cracking of masonry walls and degradation of steel edge supports or bracing on masonry walls within the scope of license renewal. The program elements which include scope, monitoring, trending, and acceptance criteria of the Masonry Wall Program will be enhanced and the description of the enhancements is contained in License Renewal Commitment 12.

The inspectors reviewed the program to assess consistency with Revision 2 of NUREG-1801 AMP XI.S5, "Masonry Walls.” The inspectors reviewed the applicable license renewal program basis documentation and the existing inspection procedures. The inspectors verified administrative controls were in place to ensure evaluation or reclassification of walls in accordance with the requirements of IEB 80-11. The inspectors interviewed the personnel responsible for the program, walked down portions of auxiliary building, and reviewed condition reports to verify the identified concerns are being addressed through the applicant’s corrective action program. The inspectors also performed an independent search of corrective actions related to masonry walls.

The NRR staff, in RAI B.2.39-5, requested justification for masonry wall inspections every five years.

With the exception of the concerns raised in RAI B.2.39-5, the inspectors had no further concerns. Resolution of the RAI will be necessary to complete the assessment of the Masonry Wall Program.

.21 One-Time Inspection Program (B.2.30)

The One-Time Inspection (OTI) Program is a new program that will require one-time inspections to verify the effectiveness of mitigation aging management programs; to confirm age-related degradation is not occurring, is insignificant, or is occurring slowly such that components’ intended functions will be maintained through the period of extended operation. One-time inspections are required to verify the effectiveness of the Closed Cooling Water Chemistry Program, Fuel Oil Chemistry Program, Lubricating Oil Analysis Program, and the PWR Water Chemistry Program for managing loss of material, cracking, or reduction in heat transfer in the closed cooling water, treated water, fuel oil, and lubricating oil environments. The applicant stated the OTI Program will be consistent with NUREG-1801, Section XI.M32, “One-Time Inspection” and will include additional enhancements not described in the XI.M32 Program. The first enhancement will include visual and physical (manipulation or prodding) examination of elastomers (flexible connections) in various environments for evidence of hardening or loss of strength due to thermal exposure, ultraviolet exposure, or ionizing radiation. The second enhancement will include characterization of the material condition of susceptible materials exposed to the “Condensation” and “Diesel Exhaust” environments, which are not addressed by other aging management programs, to verify unacceptable degradation is not occurring or to trigger additional actions that will assure the intended function of affected components will be maintained through the period of extended operation.

The inspectors reviewed the applicant's OTI Program documentation, aging management review documents, and interviewed personnel responsible for the program to evaluate consistency with the XI.M32 "One-Time Inspection" from Revision 2 of NUREG-1801. The inspectors identified the OTI Program was not consistent with AMP X1.M32 of Revision 2 of NUREG 1801 which stated "For components managed by the AMP XI.M2, Water Chemistry"; AMP XI.M30, "Fuel Oil Chemistry"; and AMP XI.M39, "Lubricating Oil Analysis," programs, a representative sample size is 20 percent of the population (defined as components having the same material, environment, and aging effect combination) or a maximum of 25 components." Instead, the applicant's program stated determination of a representative sample size was based on an assessment of materials, environment, aging effects and operating experience, but did not define neither a methodology for implementing this process nor a minimum sample size considered representative. The inspectors also identified the applicant's program did not include the NUREG-1801 AMP XI.M32 (revisions 1 and 2) constraint to credit or schedule one-time inspections no earlier than 10 years prior to the period of extended operation. The applicant issued OINs 364 and 365 to update the LRA which will correct these issues.

Due to the number of RAIs issued by NRR, on this and various other programs that rely on the OTI Program, the inspectors were not able to reach a final determination on the acceptability of the OTI Program.

.22 Open-Cycle Cooling Water Program (B.2.31)

The Open-Cycle Cooling Water Program is an existing program that is consistent with the 10 elements of an effective aging management program as described in NUREG-1801 Section XI.M20, "Open-Cycle Cooling Water System, with exceptions. The program consists of inspections, surveillances, and testing to detect and evaluate fouling, loss of material, and cracking, combined with chemical treatments and cleaning activities to minimize fouling, loss of material, and cracking.

The inspectors reviewed LR program basis documentation, aging management review documents, historical chemistry parameter trends, corrective action documents, and existing procedures and surveillances. The inspectors also interviewed the Open-Cycle Cooling Water program owner, conducted walkdowns to assess the condition of the Service Water (SW) system. The inspectors verified the applicant performed adequate historic reviews of plant specific experience to determine aging effects specified in the LRA are consistent with current industry practice.

The applicant is taking one exception to the GALL with respect to the Open-Cycle Cooling Water program. NUREG 1801 states, testing and inspections are done annually and during refueling outages. The exception taken is to use inspection frequencies documented in the licensee's supplemental response to NRC GL 89-13, "Service Water System Problems Affecting Safety-Related Equipment," in which the licensee committed to annual heat exchanger inspections for the first three cycles following implementation of NRC GL 89-13, with the option of then determining the testing frequency based on past history.

The inspectors noted, the Open-Cycle Cooling Water program also manages cracking for copper alloy >15% Zinc components that are cooled by the SW System. This appeared to be an enhancement to the program as described in NUREG-1801 Section

XI.M20, “Open-Cycle Cooling Water System”. NRR staff has submitted RAI B.2.31-1 on this issue.

With the exception of the concerns raised in RAI B.2.31-1, the inspectors had no further concerns. Resolution of the RAI will be necessary to complete the assessment of the Open-Cycle Cooling Water Program.

.23 Pressurized Water Reactor (PWR) Vessel Internals Program (B.2.32)

The PWR Reactor Vessel Internals (RVI) Program is a new plant-specific program, which will manage the effects of age-related degradation mechanisms that are applicable in general to the PWR RVI components at the facility. The aging effects for RVI components include: void swelling; various forms of cracking such as stress corrosion cracking (SCC) or intergranular attack (IGA) and irradiation-assisted stress corrosion cracking (IASCC); loss of preload due to stress relaxation; reduction in fracture toughness due to radiation and thermal embrittlement; and loss of material due to wear. The PWR RVI Program is based on the examination requirements for Babcock and Wilcox (B&W) designed PWRs provided in EPRI Topical Report 1016596, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MRP-227-Rev. 0)," along with the implementation guidance described in Nuclear Energy Institute (NEI) 03-08, “Guideline for the Management of Materials Issues.” MRP-227 has been submitted to the NRC for review and approval. Following NRC approval, MRP-227 will be revised to incorporate any necessary changes (e.g. NRC restrictions or limitations) to the guidelines and reissued as MRP-227-A. In LRA, Table A.1 commitment 15, the applicant stated “The PWR RVI Program will be revised, as necessary, to incorporate the final recommendations and requirements as published in MRP-227-A.”

The inspectors reviewed station procedures, completed surveillances, site corrective action records, and interviewed the program manager to evaluate consistency with AMP XI.M16A “PWR Vessel Internals” described in Revision 2 of NUREG-1801 because no corresponding AMP is described in Revision 1 of NUREG-1801 for a RVI Program. The applicant’s RVI Program was generally consistent with AMP XI.M16A with one clarification. The applicant’s RVI Program did not explicitly credit PWR water chemistry control (AMP X1.M2 of NUREG 1801) as a preventative action. In Section 3.1.2.1.2, of the LRA, the applicant identified the water chemistry program as a program that addressed the aging effects requiring management for the RVI Program. The inspectors considered this an adequate reference. Additionally, the inspectors identified the LRA Table 3.1.2-2 rows 145-152 incorrectly identified the core support assembly vent valve function as “support” instead of “flow control.” The applicant issued OIN- 357 to track correction of this error.

The inspectors identified the applicant’s vendor quality control inspector had recorded discoloration and pitting on the core support shield assembly internal vent valves during the most recent surveillance completed in March of 2010. Pitting or discoloration had also been identified by the applicant’s vendor during past vent valve surveillances dating back to 1977, but no specific information was recorded on pit dimensions, dimensional changes, number or specific location of pits and the cause of the pitting was not identified. The inspectors reviewed video records of the discoloration/pitting identified on the internal vent valves and noted a band of darkened area on the vent valve disc adjacent to the valve seating surface between 10:00 o’clock and 3:00 o’clock position appeared to correspond with the general description of the location of pitting/

discoloration observed by the vendor in the most recent surveillance test. The applicant had not previously entered the vent valve pitting into a site corrective action record. Subsequently, the applicant issued CR 11-94671 to investigate and evaluate the cause and impact of the pitting and issued OIN-370 to evaluate the need to change the LRA to incorporate pitting as a site specific operating experience for internals degradation.

The NRC staff identified in RAI 3.1.2.2-1, MRP-227 Table 3-1, 4-1 or 4-4 does not address the reduction in fracture toughness of the cast austenitic stainless steel (CASS) plenum cylinder reinforcing plate. Therefore, it was not clear to the NRC staff how the applicant will manage the reduction in fracture toughness due to thermal aging and neutron irradiation embrittlement of the CASS plenum cylinder reinforcing plate.

With the exception of the concerns raised in RAI 3.1.2.2-1, CR 11-94671 and OIN-370, the inspectors had no further concerns. Resolution of the RAI, CR and the OIN will be necessary to complete the assessment of the Pressurized Water Reactor (PWR) Vessel Internals Program.

.24 Reactor Head Closure Studs Program (B.2.33)

The Reactor Head Closure Studs (RHCS) Aging Management Program manages cracking and loss of material for the RCHS assemblies (studs, nuts and washers). Specifically, this program provides for monitoring and preventive activities to manage stud cracking due to stress corrosion cracking and loss of material due to wear, and general pitting and corrosion. The RHCS Program is an existing program implemented through station procedures which are based on the examination and inspection requirements identified in the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWB, Table IWB 2500-1. The applicant stated, with enhancement, this program will be consistent with the elements of an effective aging management program as described in NUREG-1801, Section XI.M3, “Reactor Head Closure Studs Program.” The specific enhancement was to select an alternate stable lubricant is compatible with the fastener material and the environment including a precaution against use of compounds containing sulfur.

The inspectors reviewed station procedures, completed surveillances, site corrective action records, and interviewed the program manager to evaluate consistency with NUREG-1801, Section XI.M3. The inspectors identified a minor reference error in Table A-1 of the LRA. The Table A-1 lacked a reference to LRA Section B.2.34 which described the RHCS Program and the applicant issued OIN- 355 to track correction of this reference error.

The inspectors concluded the RHCS Program will continue to appropriately manage aging effects and provide reasonable assurance that the intended function of the RHCS will be maintained through the period of extended operation.

.25 Reactor Vessel Surveillance Program (B.2.35)

The Reactor Vessel Surveillance (RVS) Program is an existing program, which manages reduction of fracture toughness for the low-alloy steel reactor vessel shell and welds in the beltline region. The applicant’s RVS Program includes participation in the Pressurized Water Reactor Owners Group (PWROG) Master Integrated Reactor Vessel Surveillance Program (MIRVSP) which includes all seven operating B&W plants and six participating Westinghouse-designed plants having B&W fabricated reactor vessels.

The MIRVSP is an NRC-approved program that implements the requirements of Appendix H to 10 CFR Part 50. The applicant stated, with enhancement, this program will be consistent with the elements of an effective aging management program as described in Revision 1 of NUREG-1801, Section XI.M31, "Reactor Vessel Surveillance." For the RVS Program enhancement, the applicant committed to revise the surveillance capsule insertion and withdrawal schedule to include testing of the TE1-C surveillance capsule.

The inspectors reviewed the RVS Program basis documents, site corrective action records and interviewed the program manager to evaluate consistency with AMP XI.M31, "Reactor Vessel Surveillance" described in Revision 2 of NUREG 1801. In NUREG-1801 Revision 1, the X1.M31 Program does not follow the typical ten element format and instead identifies eight elements that constitute an acceptable RVS Program. The applicant did not describe how their existing program complies with each of these eight elements. Instead, the applicant addressed the standard ten elements in the program basis document LRPD-05 "Reactor Vessel Surveillance Program." The inspectors compared the applicant's program as described in the LRA and as supplemented by LRPD-05 to the X1.M31 Program identified in Revision 2 of NUREG 1801, which also provided for the standard ten element format and determined the applicant's program provided sufficient information to show consistency with the X1.M31 Program.

The inspectors concluded the RVS Program with the proposed enhancement will continue to provide reasonable assurance the vessel fracture toughness is adequately monitored for compliance with NRC regulations through the period of extended operation.

.26 Selective Leaching of Materials (B.2.36)

The Selective Leaching of Materials Program is a new program that consist of one-time visual inspection, hardness measurement, and alternative detection techniques of selected components that are susceptible to selective leaching. The program will determine if selective leaching is occurring and, if found, whether the aging mechanism will affect the ability of the component to perform its intended function.

The inspectors reviewed the LR documentation, interviewed the selective leaching of materials program owner, and reviewed the applicant's commitment to develop and implement a selective leaching of materials inspection program before the start of the period of extended operation. This was done to assess consistency with Revision 2 of NUREG-1801 AMP XI. M33, "Selective Leaching."

The inspectors identified the acceptance criteria were not in agreement with the recommendations of Revision 2 of NUREG-1801 AMP XI.M33 "Selective Leaching." Specifically the program did not include recommendations for the acceptance criteria. The GALL specifically states "the acceptance criteria are no visible evidence of selective leaching or no more than a 20 percent decrease in hardness. For copper alloys with greater than 15 percent zinc, the criterion is no noticeable change in color from the normal yellow to the reddish copper color." The NRR staff issued RAI B.2.36-4 for the applicant to address this concern.

Also, in RAI B.2.36-1 NRR staff requested justification as to why one time inspection will not be conducted within five years prior to entering the period of extended operation and

in RAI B.2.36-2, requested justification for the sample size to be 20% of the population or a maximum of 25 components.

With the exception of the concerns raised in RAIs B.2.36-1, 2, and 4, the inspectors had no further concerns. Resolution of the RAIs will be necessary to complete the assessment of the Selective Leaching of Materials Program.

.27 Structures Monitoring Program (B.2.38)

The Structures Monitoring Program is an existing program that is designed to ensure age-related degradation of the plant structures and structural components. The program elements which include scope, parameters monitored and inspected, detection of aging effects, monitoring and trending, and acceptance criteria of the Structures Monitoring Program will be enhanced and the description of the enhancements are contained in License Renewal Commitment 20.

The inspectors reviewed the applicable license renewal program basis documentation, existing structures monitoring inspection procedures, and confirmed the applicant had commitments in place to enhance the program prior to the period of extended operation. The inspectors also interviewed the personnel responsible for the program, walked down portions of the Turbine Building, Intake Structure and Auxiliary Building and reviewed condition reports to verify the identified structural concerns are being addressed through the applicant's corrective action program.

The inspectors reviewed the program to assess consistency with Revision 2 of NUREG-1801 AMP XI.S6, "Structures Monitoring." A number of differences had been previously identified and are the subject of NRC review (reference NRC RAI B.2.4-1, B.2.4-2, B.2.39-4, B.2.39-5, B.2.39-6 and B.2.39-8).

The inspectors identified the RAIs related to crediting the Bolting Integrity program for the aging management of bolting within Structures Monitoring program. This credit was not documented in the Bolting Integrity program. The applicant issued OIN- 367 to track and update the LRA which will correct the issue.

Because the issues identified by the NRC in RAIs B.2.4-1, B.2.4-2, B.2.39-4, B.2.39-5, B.2.39-6 and B.2.39-8 have the potential to substantially change the Structures Monitoring program, the inspectors were not able to reach a final determination on the acceptability of the Structures Monitoring Program.

.28 Water Control Structures Program (B.2.40)

The Water Control Structures Program is an existing program that manages aging effects of the Intake Structure, fore bay, Service Water Discharge Structure and those structural components within the structures. The Water Controls Structures is implemented as part of the Structures Monitoring Program. The applicant stated, the Water Control Structures Inspection program with enhancements will be consistent with NUREG-1801, Section XI.S7, "Regulatory Guide 1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants." The existing program will be enhanced to include the Service Water Discharge Structure within the License Renewal scope. The enhancements will also include parameters monitored and inspected for water control structures in accordance with applicable inspection elements listed in Section C.2 of Regulatory Guide 1.127, Revision 1, include performing periodic

inspections at least once every five years and monitoring and trending requirements to follow the documentation requirement of 10 CFR 54.37, including submittal of records of structural evaluations to records management. The acceptance criteria for this program will be enhanced to list American Concrete Institute 349.3R-96, "Evaluation of Existing Nuclear Safety Related Concrete Structures," as a reference and will indicate it will be considered in developing acceptance criteria for inspection of water control structures.

The inspectors reviewed the applicable license renewal program basis documentation, existing water control structure inspection procedures, and confirmed the applicant had commitments in place to enhance the program prior to the period of extended operation. The inspectors also interviewed the personnel responsible for the program, walked down portions of the Intake Structure, reviewed program heath status reports, and reviewed condition reports to verify the identified structural concerns are being addressed through the applicant's corrective action program.

The inspectors reviewed the program to assess consistency with Revision 2 of NUREG-1801 AMP XI. S7, "Regulatory Guide 1.127, Inspection of Water Controls Structures Associated with Nuclear Power Plants." A number of differences had been previously identified and are the subject of NRC review (reference NRC RAI 3.5.2.3.12-2, B.2.4-1, B.2.4-2, B.2.39-3, B.2.39-6 and B.2.39-8).

In addition, the inspectors identified the applicant's program did not include the NUREG-1801 AMP XI.S7 (revision 2) recommendation to perform inspections immediately following the occurrence of significant natural phenomena, such as large floods, earthquakes, hurricanes, tornadoes, and intense local rainfalls. Also, the inspectors identified the applicant's program for bolted connection inspection for water control structures is handled through the bolting integrity program. The inspectors identified that the RAIs related to the bolting integrity program did not refer to the water controls structure inspection program. The applicant issued OINs 366 and 367 to track and update the LRA, which will correct these issues.

Because the issues identified by the NRC in RAIs 3.5.2.3.12-2, B.2.4-1, B.2.4-2, B.2.39-3, B.2.39-6 and B.2.39-8 have the potential to substantially change the Water Control Structures Inspection program, the inspectors were not able to reach a final determination on the acceptability of the Water Control Structures Inspection Program.

5. EXIT MEETING SUMMARY

The results of this inspection were discussed on May 13, 2011, with Mr. B. Allen, and other members of the Davis-Besse staff in an exit meeting. The applicant acknowledged the inspection results and presented no dissenting comments.

The inspectors noted proprietary documents were reviewed during the course of the inspection. The applicant confirmed all such proprietary documents were returned or the copies destroyed and the likely content of the report would not involve the proprietary material.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Applicants

Barry Allen	Davis-Besse Site Vice President
Brian Boles	Director, Site Operations
Cliff Custer	License Renewal Project Manager
Steve Dort	Site License Renewal Lead
Larry Hinkle	Site License Renewal Mechanical Lead
Don Kosloff	Site License Renewal Civil Lead (Contractor)
Allen McAllister	Site License Renewal Electrical Lead
Joe Tweddell	Site License Renewal Audit Support electrical Lead
John Thomas	Site License Renewal Audit Support Technical Lead
Jim Hester	Site License Renewal Audit Central Lead
Kathy Nesser	Fleet Licensing, Davis-Besse Station

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 the NRC inspectors reviewed the documents in their entirety, but rather, selected sections of 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.

LICENSE RENEWAL DOCUMENTS

License Renewal Application

License Renewal Action Items (Written as a Result of the Inspection)

OIN 352; External Surfaces Monitoring Program; April 27, 2011

OIN 353; Lube Oil Analysis Program; April 28, 2011

OIN 354; Fire Water Program; April 28, 2011

OIN 355; Reactor Head Closure Studs Program; April 28, 2011

OIN 357; PWR Vessel Internals Program; April 28, 2011

OIN 358; Boral Monitoring Program; April 29, 2011

OIN 359; Boral Monitoring Program; April 29, 2011

OIN 360; Boral Monitoring Program; April 29, 2011

OIN 361; Boral Monitoring Program; April 29, 2011

OIN 362; LRA Tables for Out of Scope System needs clarifications; May 9, 2011

OIN 363; Containment GALL Category for Exterior Surface; dated May 9, 2011

OIN 364; One-Time Inspection Program; May 9, 2011

OIN 365; One-Time Inspection Program; May 9, 2011.

OIN 366; Water Control Structures Program; May 9, 2011

OIN 367; Water Control Structures Program; May 10, 2011

OIN 368; Fuel Oil Chemistry Program; May 10, 2011

OIN 369; Rx Lifting Lugs- AMR and LRA Table 3.1.2-1 Require Change; dated May 10, 2011

OIN 370; PWR Vessel Internals Program; May 12, 2011

CR 11-93791; USAR Table 5.2-15 Conflict with LRA; dated April 29, 2011

CR 11-94671; Discoloration and Pitting on all four Vent Valves; dated May 12, 2011.

CR 11-94003; Spent Fuel Pool Cask Crane End Stop and Rail Bolting; dated May 2, 2011

License Renewal Aging Management Program Basis Documents

LRPD-05 Attachment 2.1; Aboveground Steel Tanks Inspection Program; Revision 1

LRPD-05 Attachment 2.6b; Closed Cooling Water Chemistry Program; Revision 1

LRPD-05 Attachment 2.6c; Fuel Oil Chemistry Program; Revision 1

LRPD-05 Attachment 2.7; External Surfaces Monitoring Program; Revision 1

LRPD-05 Attachment 2.10; Lubricating Oil Analysis Program; Revision 1

LRPD-05 Attachment 4.2; Electrical Cables and Connections Not Subject to 10CFR50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program; Revision 1

LRPD-05 Attachment 3.9; Boral Monitoring Program; Revision 1

LRPD-05 Attachment 2.11; One-Time Inspection; Revision 1

LRPD-04 Attachment 1.4; PWR Reactor Vessel Internals Program; Revision 1

LRPD-05 Attachment 1.5; Reactor Head Closure Studs Program; Revision 2

LRPD-01 Attachment 2A; Containment Leak Detection System; Revision 0

LRPD-01 Attachment 1A; Demineralizer System; Revision 3

NOP-ER-2007; Underground Piping and Tank Integrity Program; Revision 1

ECR 02-0792; Containment Leak Detection System, Revision 0

LRPD-05; Attachment 2.2; Air Quality Monitoring Program; Revision 2

LRPD-05; Attachment 4.6; Electrical Cable Connection Not Subject to 20CFR50.49 Environmental Qualification Requirements Inspection; Revision 1

LRPD-05; Attachment 4.1; Electrical Cables and Connections Not Subject to 10CFR 50.49 Environmental Qualification Requirements Program; Revision 1

LRPD-05; Attachment 3.5; Leak Chase Monitoring Program; Revision 1

LRPD-05; Attachment 2.12; Open-Cycle Water Program; Revision 1

LRPD-05; Attachment 2.13; Selective Leaching Inspection Program; Revision 1

LRPD-05; Attachment 2.15; Collection, Drainage and Treatment Components Inspection Program; Revision 2

LRPD-05; Attachment 3.1; Crane and Hoist Inspection Program; Revision 1

LRPD-05; Attachment 3.6; Water Control Structures Inspection Program; Revision 1

LRPD-05; Attachment 3.7; Structures Monitoring Program; Revision 1

LRPD-05; Attachment 3.8; Masonry Wall Inspection Program; Revision 1

LRPD-05; Attachment 2.8b; Fire Protection Program; Revision 1

LRPD-05; Attachment 2.8a; Fire Water Program; Revision 1

LRPD-05; Attachment 4.3; Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program; Revision 1

License Renewal Aging Management Review Reports

LRAMR-M11; Aging Management Review of Compressed Air and Gas System; Revision 0

LRAMR-M07; Aging Management Review of the Service Water System; Revision 0

LRAMR-E01; Aging Management Review of Electrical Component Commodity Groups; Revision 2

LRAMR-M02; Aging Management Review of the Reactor Vessel Internals, Revision 3

LRAMR-M12; Aging Management Review of the Fire Protection System; Revision 2

CURRENT PLANT DOCUMENTS

Corrective Action Documents

03-01509; Degrading Nuclear Instrumentation;

09-69494; Indication of Primary to CCW Leakage; December 31, 2009

CR 07-30464, Instrument Air Particulate Testing Limit Exceeded

CR 05-02157, Trending CR for Instrument Air Dew point (Dryer 1&2) Reading Low

CR 05-02727, Instrument Air Dew point Does Not Meet Acceptance Criteria

CR 05-03147, IA Dew point for Dryers 1&2 Outside the Acceptance Criteria

CR 05-04582, Desiccant in Air Dryers 3/4 are an Abnormal Color

CR 05-01271, Routine Infrared Inspection Identifies 34620 Hot Disconnect

CR 06-00523, Routine Infrared Identified DBC2N AC Input Breaker “A” Phase Load Termination Hot

CR 09-59292, ECCS Room Cooler #2 shows Marginal Signs of Biofouling

CR 08-33590, 15RFO- Silt Found in the AFW Train 2 Supply Piping

CR 02-03816; Corrosion Found on Mounting Base of Ductwork for FD1018 Room 603 by CREVS; dated August 7, 2002

CR 10-71016; Intake Gantry Crane Seismic Restraint Degraded; dated February 2, 2010

CR 10-80471; BACC Large Amounts of Boric Acid Found in the Southwest Corner of Room 312; dated July 29, 2010

CR 11-93794; Peeling Topcoat Identified on Main Feedwater Pipe Whip Restraint; dated April 28, 2011

CR 11-92055; Water Discovered in Manhole SB2; dated March 29, 2011

CR 11-93290; Manhole MHSB2 – Cable BPAD211B submergence; dated April 22, 2011

CR 10-81583; Fire Protection Valve Deficiencies; dated August 22, 2010

Drawings

C-37; Yard Utilities Sections and Details; Revision 17

C-85; Diesel Oil Storage Tank & Pump house; Revision 11

C-37; Yard Utilities; Revision 17

D-76-398; Emergency Diesel Generator Oil Storage Tanks; Revision 4

M-329-01480; Containment Leak Detection System; Revision 0

M-006F; Demineralizer System; Revision 27

M-005; Demineralizer System; Revision 53

M-005a; Demineralizer System; Revision 18

LR-M030A; Revision 0

LR-M006E; Revision 0

C-200; Auxiliary Building Foundation Mat EL. 545'-0" Sheet 1; Revision 30

C-351; Reinforced Concrete Found. Plan, Sections & Details Turbine Bldg.; Revision 8

C-335A; Structural Steel Misc. Plans, Sections & Details; Revision 0

C-335; Reinforced Concrete Elevated Concrete Slabs Operating Floor Turbine area; Revision 26

M-280; Fire Pump House & Water Treatment Piping (Construction Phase); Revision 0

FL-18809; Cardox Co2 Storage System Storage Unit Detail Toledo Edison Oak Harbor, Ohio; Revision B

Procedures

DB-CH-06900; Operational Chemical Control Limits; Revision 31

NOBP-ER-3003-02; System Walkdown Check List; Revision 00

NOBP-ER-3003; FENOC System Performance Monitoring Program; Revision 4

DS-SP-04400; Spent Fuel Pool, Fuel Transfer Pit, and Cask Pit Leak Detection System Test

DB-PF-04705; Component Cooling Water System Heat Exchanger 2; Revision7

EN-DP-00355; Determination of Allowable Operating Transient Cycles; Revision 5

DB-OP-06334; Station Blackout Diesel Generator Operating Procedure; Revision 18

DB-OP-02250; SBODG Alarm Panel 250 Annunciators; Revision 04

M/S DG-26; Design Guidelines for Maintenance Rule Evaluation of Structures; Revision 5

DB-FP-04047; Diesel Fire Pump Periodic Test Procedure; Revision 11

DB-FP-04017; 18 Month RRA Deluge sprinkler Functional Test; Revision 6

DB-FP-04018; RRA Wet Pipe Sprinkler System Test; Revision 9

DB-FP-04019; Non-RRA Wet Pipe Sprinkler System Test; Revision 9

DB-FP-04031; Quarterly Fire Valve Alignment Verification; Revision 4

Surveillances

200351575; Emergency Diesel Generator 1-2 Fuel Oil Day Tank Drain Sample; January 9, 2011

200354764; Emergency Diesel Generator 1-2 Fuel Oil Day Tank Drain Sample; February 5, 2011

200357961; Emergency Diesel Generator 1-2 Fuel Oil Day Tank Drain Sample; March 5, 2011

200363958; Emergency Diesel Generator 1-2 Fuel Oil Day Tank Drain Sample; April 4, 2011

200363967; Emergency Diesel Generator 2 Fuel Oil Day Tank Sample; April 5, 2011

PM 0789; “Sub018-01 Instrument Air Dyer 3 & 4”

PM 5764; “Sub018-01 Instrument Air Dyer 1 & 2”

PM 5959; “Instrument Air Sample Particulate & Condensable Hydrocarbons”

Work Orders

WO 200342566; Inst Air Rcvr 1 & 2 Dew Point; Revision 0

WO 200339266; Inst Air Rcvr 1 & 2 Dew Point; Revision 0

WO 200224674; IA *Sample* Partic/conden Hydrocarbons; Revision 0

WO 200324668; IA *Sample* Partic/conden Hydrocarbons; Revision 0

WO 200299458; Spent Fuel Cask Crane Inspection; dated February 18, 2010

License Renewal Related Miscellaneous Documents

NORM-ER-3112; Cable Monitoring; Revision 1

BAW-1799; Reactor Vessel Beltline Weld Chemistry Study; Dated July 1983

BAW -2325; Response to Request for Additional Information Regarding Reactor Pressure Vessel Integrity; Revision 1

BAW-2192PA; Low Upper Shelf Toughness Fracture Analysis of Reactor Vessels; Dated April 1994

BAW-2308 Revision 1-A; Initial RTNDT of Linde 80 Weld Materials; Dated August 2005.

Report Eawus830LINS080919-1; External Corrosion Direct Assessment Indirect Survey, Direct Examination and Post Assessment Davis-Besse Nuclear Station DFO-1 and DFO-2 Pipelines; Dated February 18, 2009.

Report NET-292-01; Inspection and Testing of BORAL Surveillance Coupons from the Beaver Valley Power Station Unit 1; dated October 1, 2007.

UT Bolting/Stud Examination Report 16-UT-045; Closure Head Stud (Hole No. 37); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-046; Closure Head Stud (Hole No. 38); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-047; Closure Head Stud (Hole No. 43); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-048; Closure Head Stud (Hole No. 44); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-049; Closure Head Stud (Hole No. 45); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-050; Closure Head Stud (Hole No. 46); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-051; Closure Head Stud (Hole No. 47); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-052; Closure Head Stud (Hole No. 48); Dated March 16, 2010

UT Bolting/Stud Examination Report 16-UT-053; Closure Head Stud (Hole No. 39); Dated March 17, 2010

UT Bolting/Stud Examination Report 16-UT-054; Closure Head Stud (Hole No. 40); Dated March 17, 2010

UT Bolting/Stud Examination Report 16-UT-055; Closure Head Stud (Hole No. 41); Dated March 17, 2010

UT Bolting/Stud Examination Report 16-UT-056; Closure Head Stud (Hole No. 42); Dated March 17, 2010

DB-MM-09089; Reactor Vessel Head Stud Removal and Reinstallation; Revision 3

AREVA Calculation 32 – 9123247-000; RTPTS Values of Davis-Besse Unit 1 for 52 EFPY, Including Extended Beltline; Dated November 12, 2009

NUREG-1800; Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants; Revision 2; dated December 2010

NUREG-1801; Generic Aging Lessons Learned (GALL) Report; Revision 2; dated December 2010

Regulatory Guide 1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants; Revision 1; dated March 1978

LIST OF ACRONYMS USED

AMP	Aging Management Program
AMR	Aging Management Report
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	Anticipated Transient without Scram
B&W	Babcock and Wilcox
CASS	Cast Austenitic Stainless Steel
CCW	Component Cooling Water
CCCW	Closed Cycle Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CRDM	Control Rod Drive Mechanism
EDG	Emergency Diesel generator
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
FENOC	First Energy Nuclear Operating Company
FHAR	Fire Hazards Analysis Report
FP	Fire Protection
FW	Fire Water
IEB	Inspection and Enforcement Bulletin
IASCC	Irradiation Assisted Stress Corrosion Cracking
IGA	Intergranular Attack
IN	Information Notice
ISI	Inservice Inspection
LR	License Renewal
LRA	License Renewal Application
MIRVSP	Master Integrated Reactor Vessel Surveillance Program
MRP	Material Reliability Program
MWP	Masonry Wall Program
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
PTS	Pressurized Thermal Shock
PWR	Pressurized Water Reactor
PWROG	Pressurized Water Reactor Owner's Group
RAI	Request for Additional Information
SBO	Station Blackout
SCC	Stress Corrosion Cracking
SER	Safety Evaluation Report
SMP	Structures Monitoring Program
SRP	Standard Review Plan
SSC	Systems, Structures, and Components
SW	Service Water
USAR	Updated Safety Analysis Report
VT	Visual Testing
WO	Work Order

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000346/2011010
w/Attachments: Supplemental Information

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