



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

December 31, 2013

Mr. Richard L. Anderson  
Vice President  
NextEra Energy Duane Arnold, LLC  
3277 DAEC Road  
Palo, IA 52324-9785

**SUBJECT: DUANE ARNOLD ENERGY CENTER NRC POST-APPROVAL LICENSE  
RENEWAL INSPECTION REPORT 05000331/2013009**

Dear Mr. Anderson:

On November 22, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Duane Arnold Energy Center. The enclosed report documents the results of this inspection, which were discussed on November 22, 2013, with you and other members of your staff.

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

Based on the sample selected for review, no findings were identified. The inspection team concluded commitments were properly identified, implemented, and completed.

On the basis of the sample selected for review and in consultation with the Division of License Renewal in the Office of Nuclear Reactor Regulation, the NRC concludes that the licensee has completed the necessary commitments for operation into the period of extended operation.

If you contest the subject or severity of the Non-Cited-Violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Duane Arnold Energy Center. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at Duane Arnold Energy Center.

R. Anderson

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

Sincerely,

/RA/

Stuart Sheldon, Acting Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket No. 50-331  
License No. DPR-49

Enclosure: Inspection Report 05000331/2013009  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 05000331  
License No: DPR-49

Report No: 05000331/2013009

Licensee: NextEra Energy Duane Arnold, LLC

Facility: Duane Arnold Energy Center

Location: Palo, IA

Dates: November 4 – 22, 2013

Inspectors: C. Tilton, Senior Reactor Engineer (Lead)  
S. Sheldon, Senior Reactor Engineer  
T. Bilik, Senior Reactor Engineer  
J. Corujo-Sandín, Reactor Engineer  
D. Jones, Reactor Engineer

Approved by: Stuart Sheldon, Acting Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## **SUMMARY OF FINDINGS**

Inspection Report (IR) 05000331/2013009; 11/4/13 – 11/22/13; Duane Arnold Energy Center; Post-Approval Site Inspection for License Renewal.

The report covers a team inspection conducted by region-based engineering inspectors. The inspectors concluded commitments, license conditions, and regulatory requirements associated with the issuance of the renewed operating license are being met. The NRC's program for overseeing the Safe Operation of Commercial Nuclear Power Reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

No findings were identified.

**B. Licensee-Identified Violations**

No violations were identified.

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA5 Other Activities

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

###### a. Inspection Scope

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

The inspectors discussed the identification of newly identified Structures, Systems, and Components (SSCs) under the purview of 10 CFR 54.37(b), with the licensee's license renewal staff. The licensee personnel indicated they have not identified any components that should have been within the scope of its license renewal program due to discovering components in the plant that were not accurately reflected in the database used to originally generate the application for a renewed license. The licensee staff reviewed modifications implemented since the renewed license was approved and determined there was no newly identified SSCs. The inspectors did not identify any deficiencies.

The inspectors contacted the Office of Nuclear Reactor Regulation (NRR), Division of License Renewal (DLR) staff for information on any generic NRC communications naming newly identified systems, structures, and components. NRR DLR staff advised the inspectors the NRC has not specified additional newly identified SSCs that the licensee must evaluate and include as applicable in its next Updated Final Safety Analysis Report (UFSAR) update in accordance with §54.37(b).

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

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

The inspectors reviewed the licensee's procedures to ensure commitment revisions followed guidance provided in the Nuclear Energy Institute (NEI) document 99-04, "Guidelines for Managing NRC Commitment Changes." The review included making sure the licensee appropriately eliminated commitments and properly evaluated, approved, and reported changes to license renewal commitments listed in the UFSAR, in accordance with 10 CFR 50.59. The inspectors reviewed each change associated with the commitment as described in the following sections. No disparities were identified with respect to implementation.

###### (3) Review of Commitments

The inspectors reviewed supporting documents including completed surveillance records, conducted interviews, and performed walkdowns to verify the licensee completed the necessary actions to comply with the license conditions that are a part of the renewed operating license. The inspectors verified the licensee implemented the AMPs and time-limited aging analyses (TLAA) included in NUREG-1955, "Safety Evaluation Report (SER) Related to the License Renewal of the Duane Arnold Energy

Center,” (ML 103070013), in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 54, “Requirements for the Renewal of Operating Licenses for Nuclear Power Plants.” The inspectors verified a selected sample of corrective actions taken to address issues identified during the Duane Arnold Energy Center license renewal, Phase I inspection, which was documented in Inspection Report 05000331/2012008.

When changes to these commitments were identified, the inspectors reviewed the Commitment Change Evaluation (CCE) to verify the licensee followed the guidance in NEI 99-04 for license renewal commitment change process, including the elimination of commitments, and properly evaluated, reported, and approved where necessary, changes to license renewal commitments listed in the UFSAR, in accordance with 10 CFR 50.59.

The inspectors reviewed the commitments listed below, which are referenced to Appendix A of the SER. All 58 Commitment Items were selected for review. Specific documents reviewed are listed in the Enclosure to this report.

1. Buried Piping and Tanks Inspection Program, Commitment Items 1, 52, and 53:

The DAEC Buried Piping and Tanks Program is a new program that manages the aging effects of corrosion on the pressure-retaining capacity of buried piping and tanks.

The program takes exception to the GALL and includes provisions for visual inspections of the protective wraps and coatings on buried carbon, and low-alloy steel, piping and tanks in-scope for license renewal. The visual inspections for damage are performed when the carbon, low alloy, and stainless steel pipes and tanks are excavated and exposed for any reason. If damage to the protective wraps and coatings of carbon and low-alloy steel is found, the outer surface of the pipe or tank is inspected for loss of material due to general corrosion, pitting, and crevice corrosion, and microbiologically-influenced corrosion (MIC).

Commitment Item 1 specified that the licensee would implement a Buried Piping and Tanks Inspection Program prior to the period of extended operation as described in Licensee Renewal Application (LRA) Section B3.7.

Commitment Item 52 specified that the Buried Piping and Tanks Inspection Program will be enhanced to include inspection of at least a minimum number of pipe segments in each material group (one stainless steel, two carbon steel, one cast iron, and two ductile iron) prior to entry into the period of extended operation and each ten-year period after entry into the period of extended operation.

Where torsional guided wave data indicates significant susceptibility, inspections will be performed on associated locations. The sample locations for directed inspections will preferentially select higher risk locations. Piping that normally contains hazardous materials will be prioritized in the inspection location selection process. The diesel fuel oil piping will be inspected prior to entry into the period of extended operation. These directed inspections will be performed with sufficient excavation to expose at least ten linear feet of piping as practicable, including the pipe bottom. Inspections of coated carbon steel piping will include the coating and backfill in the vicinity of the piping for material that could cause coating damage. The uncoated stainless steel, ductile iron and cast iron piping will be externally inspected for

corrosion, and the fill in the vicinity of the piping will be inspected for material that could cause external damage to the stainless steel, ductile iron or cast iron pipe.

As alternatives to direct external inspections involving excavation, the buried piping inspections may be performed by a hydrostatic test on at least 25 percent of the code class/safety-related or hazmat piping or both constructed from the material under consideration on an interval not to exceed 5 years. Or, similarly, at least 25 percent of the code class/safety-related or hazmat piping or both constructed from the material under consideration will be internally inspected by a method capable of precisely determining pipe wall thickness on an interval not to exceed 5 years.

Commitment item 53 stated that cathodic protection system availability will be maintained  $\geq 90$  percent. If 90 percent availability is not maintained, the condition will be entered into the corrective action program to evaluate the impact and take corrective actions. Availability will be demonstrated by having no more than six months of rectifier out-of-service time in any sixty-month period, as determined on a "per rectifier" basis; or no more than six months of rectifier out-of-service time in any twelve month period, for all rectifiers combined. Annual surveys will continue to be performed in accordance with NACE Standard Practice.

The inspectors reviewed the program basis documents, implementing procedures, scheduled and completed work orders, and related ARs; and interviewed plant personnel.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 1, 52 and 53.

2. Boiling Water Reactor (BWR) Vessel Internals Program (VIP), Commitment Items 2, 3, and 46:

The Boiling Water Reactor (BWR) Vessel Internals Program is an existing program that manages the aging effects of Stress Corrosion Cracking (SCC), Intergranular Stress Corrosion Cracking (IGSCC) or Irradiated Stress Corrosion Cracking (IASCC). The program also manages the thermal aging and neutron embrittlement of cast austenitic stainless steel (CASS) materials per License Renewal Change letter NG-13-0274.

Commitment Item 2 specified that the licensee perform an Enhanced Visual Test (EVT)-1 inspection of 5 percent of the top guide locations.

Commitment Item 3 specified that the licensee perform an EVT-1 inspection of an additional 5 percent of the top guide locations.

Commitment Item 46 specified that the BWR VIP incorporate the crack growth rate evaluations specified in the BWRVIP-100-A report. Plant specific inspection intervals will be developed for DAEC core shroud welds that are exposed to a neutron fluence value equal to or greater than  $1 \times 10^{21}$  n/cm<sup>2</sup> ( $E > 1$  MeV), as needed.

The inspectors reviewed the licensing and program basis documents, implementing procedures, action requests (ARs), inspection reports, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 2, and 46. Item 3 will remain open until the additional 5 percent of the top guide locations are inspected during RFO26 occurring in 2018.

3. Electrical Cables and Connections Program, Commitment Item 4:

The Electrical Cables and Connections Program is a new program with new inspection/monitoring activities. The program manages the effects of aging due to radiological, thermal and moisture aging mechanisms. Visual inspections are used to identify cables or connections degraded by these aging mechanisms.

Commitment Item 4 specified the licensee would implement an Electrical Cables and Connections Program and complete the first inspection prior to the period of extended operation.

The inspectors reviewed the program basis document, the UFSAR description of the program, and a sample of the implementing procedures and work orders implementing the first inspections. This included a review of photographs from the inspections. The inspectors verified that the program was implemented in accordance with the licensee's application and the commitments from the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 4.

4. Electrical Cables and Connections used in Instrumentation Circuits Program, Commitment Item 5:

The Electrical Cables and Connections used in Instrumentation Circuits Program is a new program consisting of existing inspection/monitoring activities which manages the effects of aging due to radiological and thermal aging mechanisms that affect the insulation resistance of cables and connections used in instrumentation circuits.

Commitment Item 5 specified the licensee would implement an Electrical Cables and Connections used in Instrumentation Circuits Program and complete the first inspection prior to the period of extended operation.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, and the work orders implementing the first inspections. The inspectors verified that the program was implemented in accordance with the licensee's application and the commitments from the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 5.

5. Electrical Connections Program, Commitment Item 6:

The Electrical Connections Program is a new site-specific program that utilizes existing maintenance activities to perform the one-time inspection of electrical connections to account for loosening of connections due to thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation. If the one-time inspection shows that an aging effect exists, then a periodic inspection program would be established.



Commitment Item 6 specified the licensee would implement an Electrical Connections Program and complete the one time inspection prior to the period of extended operation.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, the program technical report, and a sample of condition reports resulting from the one-time inspections. The inspectors verified that the licensee had documented the results of the one-time inspections, and identified that the licensee had not followed up appropriately when aging effects were identified.

For the electrical connections program (LRAP-E006), the licensee used thermography to test a representative sample of electrical connections within the scope of license renewal. A small number of these inspections identified degraded conditions and the licensee decided to continue with periodic thermography. However, LRAP-E006 Section 3.7.2 states that

If test acceptance criteria are not met, the corrective action program will be used to perform an evaluation that will consider the extent of the condition, the indications of aging effect, and changes to the one-time inspection program. Corrective actions may include, but are not limited to sample expansion, increase inspection frequency, and replacement or repair of the affected cable connection components.

The inspectors were concerned that the licensee did not do an evaluation to consider extent of condition and whether the thermography program provides adequate coverage of in-scope connections. In response, the licensee initiated AR 01918583 to evaluate the results. Upon further review with the licensee, it was evident that the thermography program already provided adequate coverage and the sample did not require expansion. The inspectors also noted that the program basis document and UFSAR had not been updated to reflect the change from a one-time inspection to a periodic monitoring program. In response, the licensee initiated AR 01918153 to update these documents. These items are considered minor documentation issues.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 6.

6. Electrical Penetration Assemblies Program, Commitment Item 7:

The Electrical Penetration Assemblies Program is a new plant specific program consisting of existing inspection/monitoring activities. The program manages the effects of aging due to moisture intrusion degrading the insulation resistance of the epoxy in the Electrical Penetration Assembly (EPA) by inspecting the EPAs periodically.

Commitment Item 7 specified the licensee would implement an Electrical Penetration Assemblies Program.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, operator logs documenting the inspections, and relevant condition reports. The inspectors verified that the program was implemented, in accordance with the licensee's application and the commitments from the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 7.

7. External Surfaces Monitoring Program, Commitment Item 8:

The External Surfaces Monitoring Program is an existing program. The program manages the aging effects through visual inspection of external surface for evidence of material loss, cracking, and changes in material properties. The program inspects components such as piping, piping components, fasteners, ducting, pipe supports, polymeric components and other components in the scope of license renewal and subject to aging management.

Commitment Item 8 specified the licensee would revise the inspection program to address inspector qualifications, types of components, degradation mechanisms, aging effects, acceptance criteria, inspection frequency, and periodic reviews to determine program effectiveness. The program will also specifically address inaccessible areas and include inspections of opportunity for possible corrosion under insulation.

The inspectors reviewed the Aging Management Program Basis Document and associated implementing documentation. Included in the review were completed work orders, program procedures, ARs of deficiencies identified during the walkdowns, discussions with responsible site personnel, and the revised UFSAR sections.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 8.

8. Fire Protection Program, Commitment Items 9, 10, 43, 44 and 49:

The Fire Protection Program is an existing program. The program manages aging effects of the fire protection components through detailed inspections via surveillance test procedures.

Commitment Item 9 specified the fire barrier penetration seal inspection surveillance procedure would be enhanced to include criteria for visual inspections of fire barrier wall, ceiling and floors to examine for any signs of degradation such as cracking, spalling and loss of material caused by freeze-thaw, chemical attack and reactions with aggregates by fire protection qualified inspectors.

Commitment Item 10 specified procedures would be enhanced to inspect the entire diesel driven fire pump fuel supply line for age related degradation.

Commitment Item 43 specified the fire barrier penetration seal inspection surveillance procedure would be enhanced to ensure approximately 10 percent of each type of penetration seal is included in the 35 percent selection of fire penetration seals that are visually inspected at an 18-month interval.

Commitment Item 44 specified the surveillance procedure for the CO<sub>2</sub> cardox system operability annual test would be enhanced to include a step to perform an inspection for corrosion and mechanical damage to system components.

Commitment Item 49 specified procedures would be enhanced to inspect the 1-hr fire rated gypsum board wall that separates the control room computer room area from the front panel area for aging due to cracking.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, completed work orders and relevant condition reports. The inspectors also interviewed the program owner and system engineer. The inspectors verified the commitments were implemented in accordance with the licensee's application and the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 9, 10, 43, 44 and 49.

9. Fire Water System Program, Commitment Items 11, 12 and 13:

The Fire Water Program is an existing program. The program manages the aging effects of the firewater components through detailed inspections and functional tests via surveillance test procedures and planned work orders.

Commitment Item 11 specified maintenance activities would be implemented to perform volumetric examinations for pipe wall thinning of fire protection piping periodically during the period of extended operation.

Commitment 12 specified procedures would be enhanced to include National Fire Protection Association (NFPA) 25 criteria for sprinklers regarding replacing or testing.

Commitment 13 specified procedures would be enhanced to perform visual inspection of fire hydrants annually.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, completed work orders and relevant condition reports. The inspectors also interviewed the program owner and system engineer. The inspectors verified the commitments were implemented in accordance with the licensee's application and the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 11, 12 and 13.

10. Fuel Oil Chemistry Program, Commitment Items 14, 15, 16 and 17:

The Fuel Oil Chemistry Program is an existing program. The program manages the aging effects of loss of material due to corrosion including microbiological organisms. This program includes the fuel oil in the fuel delivery systems for the plant Standby Diesel Generators (1G021 and 1G031), the Diesel Fire Pump (1P049-E) and the Diesel Driven Air Start Compressors (1K010C and 1K010D) for the air start system of the Standby Diesel Generators.

Commitment Item 14 specified the licensee would revise the program to require particulate testing of fuel oil samples from the diesel fire pump day tank

Commitment Item 15 specified the licensee would enhance procedures to require sampling and testing of new fuel oil delivered to the diesel fire pump day tank; and to require that purchase orders and sampling procedures for diesel fuel delivered to

and stored in the diesel fire pump day tank prohibit the delivery and use of biodiesel fuel.

Commitment Item 16 specified the licensee would enhance procedures to perform periodic (10-year) draining, cleaning, and visual inspection of the diesel fuel oil day tanks, diesel fire pump day tank, and diesel driven air start air compressor fuel oil tanks.

Commitment Item 17 specified: Implement procedures to require bottom thickness testing of the Standby Diesel Generator Day Tanks and the Diesel Fire Pump Day Tank.

The inspectors reviewed the Aging Management Program Basis Document and associated implementing documentation, including completed Work Orders, program procedures, and revised UFSAR sections.

The inspectors identified an error on the Basis Document's "Monitor and Trending" section. The Basis Document incorrectly referenced ACP 1201.2 "Conduct of Systems/Plant Engineering" as the procedure used for trending of analysis results. While reviewing ACP 1201.2, the inspectors noticed the procedure made no mention of being credited for monitoring or trending. Upon further investigation, it was determined ACP 1201.2 had been superseded by corporate procedure ER-AA-103, "Core Duties of System Engineering". Similarly, procedure ER-AA-103 did not have the appropriate reference in its body to establish it was credited for monitoring and trending of license renewal components. As a result of the inspectors questions, the licensee determined the process used for trending this program should be the Chemistry Program Health Report. The licensee initiated AR 01918913 to document and correct this issue.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 14, 15, 16 and 17.

#### 11. Fuse Holders Program, Commitment Item 18:

The Fuse Holders Program is a new program consisting of existing inspection/monitoring activities. The program manages the effects of aging due to loosening of the metal clip due to fatigue and ohmic heating due to frequent manipulation. The program is limited to the metal portion of the fuse holder and manages the effects of aging by thermographic inspection.

Commitment Item 18 specified the licensee would implement a Fuse Holders Program and complete the first test prior to the period of extended operation.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, and work orders implementing the inspections. The inspectors verified that the program was implemented in accordance with the licensee's application and the commitments from the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 18.

12. Inaccessible Medium Voltage Cables Program, Commitment Item 19 and 54:

The Inaccessible Medium Voltage Cables Program is a new program consisting of existing inspection/monitoring activities. The program manages the effects of aging due to moisture and voltage in 480 V to 35 kV power cables that support a license renewal intended function and are susceptible to significant moisture as defined in NUREG-1801 XI.E3. The program manages the effects of aging by measuring the insulation resistance of the cables and connections periodically. This program also includes actions to prevent cables from being exposed to significant moisture by periodically inspecting the manholes containing cables and testing of sump pumps.

Commitment Item 19 specified the licensee would implement an Inaccessible Medium Voltage Cables Program and complete the first inspection or test prior to the period of extended operation.

Commitment Item 54 specified the program will be enhanced to include 480 V to 2 kV power cables. This includes enhancing the scope of the program, preventive actions, parameters monitored or inspected, detection of aging effects and operating experience.

In response to control cable failures in conduit containing significant moisture, the licensee expanded the scope of this program and renamed it the Inaccessible Cable Aging Management Program.

The inspectors reviewed the program basis document, the UFSAR description of the program, and a sample of work orders implementing the program. The inspectors verified that the program was implemented in accordance with the licensee's application and the commitments from the SER. However, the licensee identified failed control cables that had been exposed to significant moisture. As a result, the licensee expanded the scope of the program and is in the process of revising the program basis document to include activities to dewater conduits and test control and indication cables. This is being tracked in AR 01892615.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 19 and 54.

13. Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program, Commitment Item 20:

The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program is a new program that consists of inspections of the internal surfaces of metallic piping, piping components, ducting, polymeric components, and other components that are exposed to air-indoor uncontrolled, air outdoor, condensation, and any water system other than open-cycle cooling water system, closed treated water system, and fire water system. These inspections are inspections of opportunity, performed during the existing pre-planned periodic system and component surveillances or during maintenance activities when the surfaces are made accessible for visual inspection.

Commitment Item 20 specified the licensee would implement an Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program.

The inspectors reviewed the Aging Management Program Basis Document and associated implementing documentation. The inspectors met with the responsible licensee staff, and discussed the way in which the licensee tracks the program's implementation. The inspectors reviewed the associated program procedures, and the revised UFSAR sections.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 20.

14. Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Program, Commitment Items 21 and 22:

The Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Program is an existing program that manages the aging effect of loss of material due to corrosion and wear for crane rails, structural girders, beams, special lifting devices, and welded and bolted connections of load handling systems within the scope of License Renewal. In addition, the program will record and evaluate the effects of past and future usage on the Reactor Building Crane and Turbine Building Crane.

Commitment Item 21 states that the licensee will enhance procedures to monitor for corrosion and wear of the supporting steel and rails. Several maintenance procedures address the management of material degradation due to general corrosion of the applicable system's supporting steel and the wear on the crane rails through periodic visual inspection in accordance with industry standards.

Commitment Item 22 states that the licensee will enhance procedures to record usage of the reactor building and turbine building cranes. A procedure (STP NS991201) was developed to record and evaluate the effects of past and future usage on the Reactor Building Crane and Turbine Building Crane. Both of these cranes have been designed to allow a limited number of lifts at 125 percent of the rated load.

The inspectors reviewed the implementing procedures, work orders and related corrective action documents, interviewed the plant personnel responsible for this program, to determine if the program is being implemented as described in the SER. The inspectors noted that the licensee was only recording crane usage that exceeded the crane's rated capacity, and not all usage as delineated in the commitment. As a result, the licensee plans to submit a commitment change. The issue is captured in AR 01918571. In addition, the inspectors noted that the licensee had not recorded the distances that the cranes had traveled during usage nor maintained maintenance records as required by the American National Standards Institute (ANSI) Standard B.30.2. These issues were captured in ARs 01921969 and 01922257 respectively.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined that the licensee met Commitment Items 21 and 22.

15. Lubricating Oil Analysis Program, Commitment Item 23:

The Lubricating Oil Analysis is an existing program that maintains lubricating 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. Testing activities include sampling and analysis of lubricating oil for detrimental contaminants, water and quality.

Commitment Item 23 specified the licensee would enhance procedures to include diesel fire pump.

The inspectors reviewed the Aging Management Program Basis Document and associated implementing documentation. This included completed work orders, scheduled preventative maintenance (PMs), program procedures, discussions with the program owner and the revised UFSAR sections.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 23.

16. Metal Enclosed Bus Program, Commitment Item 24:

The Metal Enclosed Bus Program is a new program consisting of existing inspection/monitoring activities. The program manages the aging effects of aging of loosening of bolted connections due to thermal cycling and ohmic heating, reduced insulation resistance and moisture/debris intrusion in metal enclosed buses that support a license renewal function. The program manages the effects of aging by inspecting the insulation of the metal enclosed bus periodically.

Commitment Item 24 specified the licensee would implement a Metal Enclosed Bus Program and complete the first inspection prior to the period of extended operation.

The inspectors reviewed the program basis document, the UFSAR description of the program, the implementing procedures, and the work order implementing the first inspection. The inspectors verified that the program was implemented in accordance with the licensee's application and the commitments from the SER. The inspectors identified that PMRQ 17820-02 which scheduled the periodic inspections had a frequency of once per six years with a 25 percent grace period. Since the licensee committed to conduct the inspection every six years, potential existed for exceeding the six-year interval committed to in the application due to the 25 percent grace period. The licensee initiated AR 01918590 to correct this document. This issue was determined to be minor.

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

17. One-Time Inspection Program, Commitment Items 25 and 55:

The One-Time Inspection Program is a new program that addresses potentially long incubation periods for certain aging effects and provides a means for verifying that an aging effect is either not occurring or progressing so slowly as to have negligible effect on the intended function of the structure or component.

Commitment Item 25 specified the licensee would implement a One-Time Inspection Program and complete the one-time inspections prior to the period of extended operation.

Commitment Item 55 specified the sample selection for the DAEC One-Time Inspection program would include a representative sample of the population. Existing maintenance records that document component condition would be used as

part of the sample. The material environment combinations and the number of required inspections for the sample group would be as shown in the following table:

Sample Group Environment	Materials in the Sample Group Environment	Number of Required Inspections
Sample Group 1- Fuel Oil	Carbon Steel and Cast Iron Stainless Steel	6
Sample Group 2- Lube Oil	Aluminum alloy Carbon Steel and Cast Iron Copper Alloy including Admiralty Brass Stainless Steel including Cast Austenitic Stainless Steel	38
Sample Group 3/4- Steam and Treated Water, Reactor Coolant and Sodium Pentaborate	Copper Alloy, Copper, Admiralty Brass, Brass, Carbon Steel, Low Alloy Steel and Cast Iron Stainless Steel Including Cast Austenitic Stainless Steel, Stainless Steel Cladding of Low Alloy Steel with Carbon Steel and Nickel Alloy	57

The inspectors reviewed the program basis document, the associated technical report, the UFSAR description of the program and a sample of work orders implementing the one-time inspections. The inspectors verified that the program was implemented in accordance with the licensee's application and the commitments from the SER.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 25 and 55.

18. Reactor Vessel Surveillance Program, Commitment Items 26, 27 and 28:

The Reactor Vessel Surveillance Program is an existing program that manages the aging effects of Neutron/Radiation Embrittlement on the Reactor Pressure Vessel beltline material.

Commitment Item 26 specified the implementation of a procedure to evaluate the BWRVIP Integrated Surveillance Program (ISP) data as it becomes available.

Commitment Item 27 specified the revision of the Reactor Vessel Surveillance Program to implement the recommendations of BWRVIP-116 BWR Vessel and Internals Project ISP Implementation for License Renewal.

Commitment Item 28 specified the implementation of BWRVIP-116 with the conditions documented in Sections 3 and 4 of the NRC Staff's SE dated March 1, 2006 for BWRVIP-116, including the following:

- NRC approval will be obtained for any change in the withdrawal schedules of the DAEC Reactor Vessel surveillance capsules.



- If a standby capsule is removed from the DAEC Reactor Vessel without the intent to test it, the capsule will be stored in a manner, which maintains it in a condition, which would permit its future use, including during the period of extended operation, if necessary.

The inspectors reviewed the licensing and program basis documents, implementing procedures, test result reports, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 26, 27 and 28.

19. Selective Leaching, Commitment Items 29 and 56:

The DAEC Selective Leaching of Materials Program is a new program that takes exception to the Generic Aging Lessons Learned (GALL) report. The program manages the aging effect of loss of material due to Selective Leaching. The program for selective leaching will ensure that components made of cast iron, bronze, brass, and copper alloys that were exposed to raw water, treated water, or groundwater environment will maintain their integrity through the period of extended operation. The program will include a one-time visual inspection, hardness measurement, and/or mechanical test of selected components that may be susceptible to selective leaching. The program will determine whether loss of materials due to selective leaching is occurring, and whether the process will affect the ability of the components to perform their intended function for the period of extended operation.

Commitment Item 29 specified that the licensee would implement and complete a program to include one-time visual inspection and hardness measurement of selected components susceptible to selective leaching.

Commitment Item 56 states that the sample selection for the DAEC Selective Leaching Program will include a representative sample of approximately 20 percent of the population for each susceptible material group or a maximum of 25 components. Existing maintenance records that document component condition will be used as part of the sample.

The inspectors reviewed the Selective Leaching of Materials Program basis documentation, completed work orders, and interviewed personnel responsible for the program regarding these documents.

The inspectors identified that the licensee had failed to complete both the visual and hardness tests as Commitment Item 29 requires. Specifically, the licensee occasionally used the visual examination results as a screening test to eliminate the need to perform the hardness test. As a result, the licensee was required to complete the requisite examinations on eight components (seven gray cast-iron and one copper alloy) in order to close the commitment. The issue was entered into the licensee's Corrective Action Program as AR 01917917.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 29 and 56.

20. Structures Monitoring Program, Commitment Items 30, 31, 32, 33, 34 and 57:

The Structures Monitoring Program is an existing program at DAEC that will be enhanced to ensure provision of aging management for structures and structural components within the scope of this program. The Structures Monitoring Program is primarily implemented through Module 6 of the DAEC Maintenance Rule Program.

The DAEC Structures Monitoring Program includes periodic visual inspection of structures and structural components for the detection of aging effects specific for that structure.

Commitment Item 30 states that the licensee will enhance procedures to include structures and structural components not currently in Maintenance Rule Program.

Commitment Item 31 states that the licensee will enhance procedures to include periodic sampling of groundwater for pH, chloride and sulfate concentration on a 5-year periodicity.

Commitment Item 32 states that the licensee will enhance procedures to include an elastomer inspection to prevent leakage through containment penetration.

Commitment Item 33 states that the licensee will enhance procedures to include a requirement to contact the proper personnel to allow opportunistic inspection of the buried concrete foundation.

Commitment Item 34 states that the licensee will enhance procedures to include opportunistic inspections of the buried concrete foundation on a 10-year periodicity.

Commitment Item 57 states that the DAEC Structures Monitoring Program will be enhanced to incorporate quantitative acceptance criteria for concrete inspections of all in-scope structures as determined from reviewing ACI 349.3R-96. Enhancements will be made to the program prior to entry into the period of extended operation. Conditions that are acceptable without further evaluation (ACI 349.3R-96 Section 5.1) observed during visual surveys will not be documented in the survey reports if the inspection is performed by a "responsible engineer" as defined in ACI 349.3R-96 Section 7.

The inspectors reviewed the program basis documents, implementing procedures, and interviewed the plant personnel responsible for this program. The inspectors verified that the program enhancement and program commitments specified in the SER were incorporated into implementing plant procedures.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined that the licensee met Commitment Items 30, 31, 32, 33, 34, and 57.

21. Metal Fatigue of Reactor Vessel Coolant Pressure Boundary Program, Commitment Items 35 and 51:

The Metal Fatigue of Reactor Vessel Coolant Pressure Boundary Program is an existing program that ensures that the impact of environmental effects on fatigue usage do not result in unacceptable fatigue usage factors (greater than 1.0) for reactor coolant pressure boundary components within the scope of License Renewal.

Commitment Item 35 specified that the implementing surveillance procedures will be enhanced to incorporate the requirements of NUREG/CR-6260 locations.

Commitment Item 51 specified that future revisions/updates to the environmental fatigue calculations for the Recirculation Inlet Nozzle Safe End, Feedwater Nozzle Safe End, and Core Spray Nozzle Safe End use  $F_{en}$  data for Nickel Alloy from the methodology described in NUREG/CR-6909 in the determination of usage factors.

The inspectors reviewed the licensing and program basis documents, implementing procedures, fatigue evaluations and analysis, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Items 35 and 51.

**22. Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program, Commitment Item 36:**

The Thermal Aging and Neutron Irradiation Embrittlement of CASS Program is an existing program that manages the aging effects of Stress Corrosion Cracking (SCC), Intergranular Stress Corrosion Cracking (IGSCC) or Irradiated Stress Corrosion Cracking (IASCC). The program also manages thermal aging and neutron embrittlement of CASS materials per License Renewal Change letter NG-13-0274.

Commitment Item 36 specified that the Augmented Inspection implementing procedures for the BWR Vessel Internals Program be enhanced to include inspection for thermal and/or neutron embrittlement in susceptible CASS components.

The inspectors reviewed the licensing and program basis documents, implementing procedures, change evaluations, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 36.

**23. Reactor Internals, Commitment Item 37:**

The Reactor Internals Program is an existing program that manages the aging effects of Stress Corrosion Cracking (SCC), Intergranular Stress Corrosion Cracking (IGSCC) or Irradiated Stress Corrosion Cracking (IASCC). The program also manages thermal aging and neutron embrittlement of CASS materials per License Renewal Change letter NG-13-0274.

Commitment Item 37 specified that DAEC ensure that aging of core plate hold down bolts is appropriately addressed by completing one of the following actions:

- Install core plate wedges to eliminate the function of core plate hold down bolts.
- Performs analysis of the core plate rim hold down bolts that demonstrates adequacy to perform their intended function including loss of pre-load in the period of extended operation including the effects of projected neutron fluence. Inspection of core plate hold down bolts will be performed in accordance with BWRVIP-25, or a deviation disposition will be developed/submitted in accordance with BWRVIP-94.

The inspectors reviewed the licensing and program basis documents, implementing guidelines, letters, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 37.

24. Reactor Vessel Circumferential Weld, Commitment Item 38:

Commitment Item 38 specified that the licensee submit a relief request to address the frequency requirements of the inservice inspection of the RPV circumferential welds. The Reactor Vessel Circumferential Weld examination relief analysis meets the requirements of 10 CFR 54.3(a). As such, it is a TLAA.

The inspectors reviewed the licensing and program basis documents, inspection plans, relief requests, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 38.

25. Quality Assurance Program, Commitment Item 39:

The Quality Assurance Program is an existing program, which establishes the requirements needed in order to comply with the criteria of 10 CFR 50 Appendix B. This program applies to nuclear safety related SSCs as identified in the Safety Analysis Report, and per commitment 39, it was expanded to include non-safety related components subject to aging management.

Commitment Item 39 specified the licensee would expand the scope of its 10 CFR Part 50, Appendix B Quality Assurance program to include non-safety-related structures and components subject to an aging management program for license renewal.

The inspectors reviewed the Quality Assurance (QA) Topical Report, UFSAR, other implementing documentation, and discussed the commitment with licensee staff. The inspectors noticed the UFSAR was revised to expand the scope of the QA program to include non-safety-related structures and components subject to license renewal. However, the QA Topical Report (FPL-1), which describes the QA program and its applicability, was not revised. The inspectors were concerned an individual using the QA Topical Report would not know of the new requirement of applicability of quality assurance program attributes to non-safety related structures and components subject to license renewal aging management. The licensee entered this issue into their corrective actions program as AR 01921585 to provide a statement in the QA Topical Report reflecting the new applicability.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 39.

26. Operating Experience, Commitment Item 40:

Commitment Item 40 specified the licensee would perform an operating experience review of extended power uprate and its impact on aging management programs for systems, structures, and components (SSCs) before entering the period of extended operation.

The inspectors reviewed the criteria used to perform and evaluate the operating experience review. The inspectors reviewed examples of the operating experience identified to see how it applied at the site.

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

27. Bolting Integrity Program, Commitment Item 41:

The Bolting Integrity Program is an existing program that manages the aging effects associated with bolting through the performance of periodic inspections. The program also includes repair/replacement controls for ASME Section XI related bolting and generic guidance regarding material selection, thread lubrication and assembly of bolted joints. The program considers the guidelines delineated in NUREG-1339 for a bolting integrity program, EPRI NP-5769 (with the exceptions noted in NUREG-1339) for safety related bolting, and EPRI TR-104213 for non-safety related bolting. The Bolting Integrity Program credits five separate aging management programs for the inspection of bolting. The five aging management programs are: (1) ASME Section XI IWB, IWC, IWD Inservice Inspection Program, (2) External Surfaces Monitoring Program, (3) Structural Monitoring Program and (4) ASME Section XI, Subsection IWF (5) Buried Piping and Tanks Program.

Commitment Item 41 states that the licensee will revise the implementing procedures for the ASME Section XI Inservice Inspection Subsections IWB, IWC, and IWD Program; ASME Section XI Inservice Inspection, Subsection IWF Program; External Surfaces Monitoring Program, Structural Monitoring Program and Buried Piping and Tanks Program such that they specifically address the inspection of fasteners (bolting, washers, nuts, etc.) for signs of leakage, corrosion/loss of material, cracking, and loss of pre-load/loss of pre-stress, as applicable.

The inspectors reviewed program basis document, implementing procedures, scheduled and completed work orders, and interviewed the plant personnel responsible for this program. The inspectors verified that the program enhancement and specific program commitments were incorporated into implementing plant procedures.

Based on the timeliness and adequacy of the licensee's actions the inspectors determined that the licensee met Commitment Item 41.

28. BWR Penetrations Program, Commitment Item 42:

The BWR Penetrations Program is an existing program that manages the aging effects of cracking. The program incorporates guidelines found in BWRVIP-49-A for instrument penetrations and BWRVIP-27-A for the Standby Liquid Control System. The program performs ultrasonic (UT) volumetric, surface, and visual inspections.

Commitment Item 42 specified the revision of the implementing document for the BWR Penetrations Program to specify that guidance in BWRVIP-14, -59 and -60 be used, as appropriate, depending on material, in the evaluation of crack growth in stainless steel, nickel alloys and low-alloy steels, respectively, when flaws are identified and evaluation is required.

The inspectors reviewed the licensing and program basis documentation, implementing procedures, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 42.

29. ASME Code Class 1 Small-Bore Piping Inspection Program, Commitment Item 45:

The ASME Code Class 1 Small-Bore Piping Inspection Program is a plant-specific Aging Management Program, which includes measures to verify degradation is not occurring, by inspecting locations susceptible to cracking. DAEC inspects small bore butt welds less than nominal pipe size (NPS) 4 inch as part of the risk-informed inservice inspection program and as part of the Augmented Inspections.

Commitment Item 45 specified that the licensee would implement an ASME Code Class 1 Small-bore Piping Inspection Program. Furthermore, the licensee committed to perform volumetric examination of a minimum of ten percent of the ASME Code Class 1 small-bore socket welds each inspection interval. Also, the ASME Code Class 1 Small-bore Piping inspection program will include provisions that a destructive examination may be performed on an opportunistic basis in lieu of the socket weld volumetric examinations.

ASME Code Class 1 small-bore socket welds presently receive a VT-2 visual inspection during system leakage tests each refueling outage per the requirements of IWB-2500-1, Examination Category B-P. DAEC will continue to perform these inspections per the ASME Section XI requirements during the period of extended operation. In addition, DAEC will perform volumetric examination of a minimum of ten percent of the ASME Code Class 1 small-bore socket welds each inspection interval. The sample will be based on susceptibility, inspectability, dose considerations, operating experience, and limiting locations of the total population of ASME Code Class 1 small-bore piping locations. The DAEC will use a volumetric technique for ASME Code Class 1 small-bore socket welds that is endorsed by the industry, when such a technique becomes available (a qualified phased-array UT technique now exists and is being used).

A destructive examination may be performed on an opportunistic basis in lieu of the socket weld volumetric examinations. If volumetric examination of small-bore class 1 socket welds becomes a requirement of ASME Section XI, DAEC will perform examinations per the applicable code requirement.

The inspectors interviewed the program owner and reviewed the program basis document, and a sample of completed work orders indicating that the UT examinations had been completed.

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

30. Boral Surveillance Program, Commitment Item 48:

The Boral Surveillance Program is a new, plant specific program. The program will monitor the integrity and performance of the Boral in the Spent Fuel Pool on a continuing basis. The intent is to assure that slow, long term synergistic effects, if any, do not become significant. The purpose of the program is to characterize certain properties of the boral surveillance with the objective of providing data necessary to assure the capability of the Boral panels in the racks will continue to perform their intended function.

Commitment Item 48 specified the licensee would implement a Boral Surveillance Program and complete the first in-situ neutron attenuation test of the PaR spent fuel racks.

The inspectors reviewed the Aging Management Program basis document and associated implementing documentation. This included completed work orders, scheduled PMs, program procedures, discussed the program with the licensee, and the revised UFSAR sections. The inspectors noted the recent in-situ test, required per the commitment, identified a number of locations where the average areal densities were below the minimum required per the licensee's calculation of record. Per the basis document and the SER, the licensee must establish a testing frequency, not to exceed 10 years, based on the results of the baseline test (first in-situ test). The licensee currently has established a testing frequency of 10 years. The licensee's assessment states the reduction in areal density is a result of uncertainties associated with the testing method rather than an actual deterioration of the Boral. This issue is currently being followed up by the resident inspectors and the Office of Nuclear Reactor Regulation (NRR). The inspectors noted that following this review, the licensee might need to re-evaluate their current testing frequency. This was discussed with licensee staff during the inspection.

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

31. ASME Section XI, Inservice Inspection, Subsection IWE Program, Commitment Item 50:

The DAEC ASME Section XI, Subsection IWE Program is an existing program. The program manages the aging effects of corrosion, cracking, wear, physical displacements, loose or missing parts, debris, erosion, or loss of integrity at bolted or welded connections. The components managed by the program include the drywell, the suppression chamber (torus), and the connecting piping (vent headers), their supports and pressure retaining bolting. The airlocks and hatches are included with the drywell and suppression chamber. Seals and gaskets are managed by the DAEC 10 CFR Part 50 Appendix J program.

The IWE Program performs inspections using the same primary ISI method as specified in IWE; visual examination (general visual, VT-3, VT-1). Limited volumetric examination (ultrasonic thickness measurement) and surface examination (e.g., liquid penetrant) may also be necessary in some instances. IWE specifies

acceptance criteria, corrective actions, and expansion of the inspection scope when degradation exceeding the acceptance criteria is found.

Commitment Item 50 specified that the licensee would perform a recoating of the suppression pool interior surface below the waterline prior to startup from the first refuel outage during the period of extended operation. The licensee elected to meet Commitment Item 50 by recoating the torus interior surfaces below the water line prior to the period of extended operation and completed the torus recoating work on November 17, 2012.

The inspectors reviewed the licensee's processes and procedures for removal of existing coatings in the torus/suppression pool, inspection of interior surfaces and components, evaluation and disposition of repair of identified pits in the torus/suppression pool internal surface, evaluation and disposition or repair of identified flaws in the torus/suppression pool internal components, and application and curing of new coating materials. Additionally, the inspectors interviewed licensee personnel and reviewed licensee's procedures related to visual inspection of the torus/suppression pool.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined that the licensee met Commitment Item 50.

### 32. Time-Limited Aging Analyses, Commitment Item 58:

The listing and evaluation of time-limited aging analyses (TLAAs) is required by Title 10 of the Code of Federal Regulations, Part 54 (10 CFR 54) which sets forth the requirements for License Renewal of Operating Nuclear Power Plants. Time-limited aging analyses are defined in 10 CFR 54 as those licensee calculations and analyses that:

- a. Involve systems, structures and components within the scope of license renewal, as delineated in 10 CFR 54.4 (a);
- b. Consider the effects of aging;
- c. Involve time-limited assumptions defined by the current operating term, for example, 40 years;
- d. Were determined to be relevant by the licensee in making a safety determination;
- e. Involve conclusions or provide the basis for conclusions related to the capability of the system, structure, and component to perform its intended functions, as delineated in 10 CFR 54.4(b); and
- f. Are contained or incorporated by reference in the current licensing basis (CLB).

Commitment Item 58 specified that DAEC perform a review of usage factors for ASME Class 1 components with design basis calculations to determine whether the NUREG/CR-6260-based components that have been evaluated for the effects of the reactor coolant environment on fatigue usage are the limiting components for the DAEC plant configuration. This review included qualitative or quantitative comparisons of components. If more limiting components are identified, the most limiting component usage factor will be evaluated for the effects of the reactor cooling environment on fatigue usage prior to entry into the period of extended operation. If a new limiting component identified consist of nickel alloy, the methodology used to perform environmentally-assisted fatigue calculation for nickel alloy will be consistent with NUREG/CR-6909.



The inspectors reviewed the licensing and program basis documents, scoping surveys, fatigue analysis, ARs, and interviewed plant personnel responsible for this program.

Based on the timeliness and adequacy of the licensee's actions, the inspectors determined the licensee met Commitment Item 58.

33. Commitment Item 47:

Commitment Item 47 was withdrawn by the licensee according to Letter NG-10-0091, dated March 9, 2010. As a result, Commitment Item 37 was revised to include the requirement previously listed in Commitment Item 47 to perform analysis of the core plate rim hold down bolts that demonstrates adequacy to perform their intended functions, including loss of pre-load and the effects of projected neutron fluence in the period of extended operation. As described under item 29, Reactor Internals, this commitment is complete and no deficiencies were identified.

b. Findings and Observations

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On November 22, 2013, the inspectors presented the inspection results to the Vice President, Mr. R. Anderson and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee

R. Anderson, Vice President  
G. Pry, Plant Manager  
K. Putnam, License Renewal Project Manager  
K. Chew, License Renewal  
C. Bock, License Renewal  
A. Thomas, Program Engineer  
J. Azmeh, Design Engineer  
M. Fairchild, Program Engineer

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

Opened, Closed, and Discussed

None

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections 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.

### 4OA5.1 Other Activities

#### General Licensing Documents

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	License Renewal Application	10/1/2008
NG-09-0059	License Renewal Supplement	1/23/2009

#### Action Requests Generated as a Result of the Inspection

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 1917917	Selective Leaching Did not Always Include Hardness	11/5/2013
AR 1918153	ACP1210.7 Does not Agree with UFSAR Section 18.1.19	11/5/2013
AR 1918571	Revise License Renewal Commitment 22 to Clarify Requirements for Recording Usage of the Reactor Building and Turbine Building Cranes	11/6/2013
AR 1918583	Evaluation of Results of Electrical Connections Program (E6)	11/6/2013
AR 1918586	Evaluate ASME Overhead and Gantry Crane Code Against DAEC Procedures	11/6/2013
AR 1918590	PMRQ 17820-02 Grace Period Exceeds Allowable Frequency	11/6/2013
AR 1918913	Evaluate Fleet Procedure Against Aging Management Programs	11/7/2013
AR 1920911	DAEC Vessel Surveillance Capsule was Withdrawn in October 2012	11/15/2013
AR 1921585	QATR Revision for PDA License Renewal	11/19/2013
AR 1921969	ANSI B30.2.0-1976, Section 2-3.2.1.1, States: "Complete Records of Lift"	11/20/2013
AR 1922056	Regarding the Evaluation Performed in 2004 for Minimum Wall Thickness of Piping HLE-014 Determine if NRC Approval Obtained	11/20/2013
AR 1922257	RFO-20 Work Orders 1138203 and 1139055 Were Missing Attachments	11/21/2013

Commitment No. 1

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
50.59 Screening 10997	18.1.7, Buried Piping and Tanks Inspection Program	8/13/2013
ACP 1408.29	Excavation, Trenching and Ground Disturbance Controls	Revision 15
AEC UTM-003	AEC Engineering, INC., UT Thickness Measurement	1/2000
AR 1815188	Sample Expansion on GBC-002 from Buried Piping Exam	10/20/2012
ER-AA-102-1000	Underground Piping and Tanks Integrity Examination Procedure	Revision 2
LRQP-M034	Buried Piping and Tanks Program	Revision 7

Commitments No. 2, 3, and 46

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346279	Perform an EVT-1 Inspection of 5 percent Of The Top Guide Locations	10/1/2008
AR 346280	Perform an EVT-1 Inspection of an Additional 5 percent Of The Top Guide Locations	10/1/2008
AR 346375	The BWR Vessel Internals Program Will Incorporate the Crack Growth Evaluations Specified in the BWRVIP-100-A Report	10/29/2009
BWRVIP	BWR Administrative Document	Revision 16
DAEC – RF0220312197	DAEC RFO22 IVVI Final Report	11/2010
LRAP-M009	Aging Management Program Basis Document, BWR Vessel Internals	Revision 6

Commitment No. 4

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
ACP 1210.8	Electrical Cables And Connections Inspection Procedure	Revision 0
GMP-ELEC-18	Electrical Distribution and Control Panels	Revision 18
LRAP-E001	Electrical Cables and Connections Program Basis Document	Revision 4
MOTOR-080-04	General Electric Totally Enclosed, Horizontal Induction Motor	Revision 7
TRANSF-M175-01	McGraw-Edison, Power Transformer	Revision 19
WO 4013672301	Inspect Accessible Cables per ACP 1210.8	10/24/2012

Commitment No. 5

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
GMP-TEST-34	LPRM Testing	Revision 29
LRAP-E002	Electrical Cables and Connections used in Instrumentation Circuits Program Basis Document	Revision 4
MECFUN-G080-03	General Electric IRM/SRM Detectors	Revision 18
WO 40134757	Perform Post UV Work Testing of IRM	11/8/2012
WO 40134758	Perform Post UV Work Testing of IRM	11/8/2012
WO 40134759	Perform Post UV Work Testing of IRM	11/8/2012
WO 40134760	Perform Post UV Work Testing of IRM	11/8/2012
WO 40134761	Perform Post UV Work Testing of IRM	11/8/2012
WO 40134762	Perform Post UV Work Testing of IRM	11/8/2012
WO 40134767	Perform Post UV Work LPRM Detector	11/7/2012
WO 40134768	Perform Post UV Work LPRM Detector	11/7/2012
WO 40134769	Perform Post UV Work LPRM Detector	11/9/2012
WO 40134770	Perform Post UV Work LPRM Detector	11/19/2012

Commitment No. 6

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	Thermography Program Manual	Revision 7
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
CAP054886	CAQ - Thermography Results on 1D15	1/18/2008
CAP055347	CAQ – 1G021 – 1C094 Rectifier Selector Switch Thermography Anomalies	2/6/2008
CAP058097	CAQ – 1X001 Main Transformer Hot Connection	6/3/2008
CAP067777	CAQ-Thermography Anomaly in 1C015	6/8/2009
GMP-TEST-48	Thermographic Monitoring of DAEC Equipment	Revision 40
LRTR-E006	Electrical Connections Program One-Time Inspection	Revision 0

Commitment No. 7

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
AR 1685237	Pressure on DW Penetration X104D Is Low OOS at 24 PSIG	9/10/2011
AR 1696856	PI-43104D Reads Low Out of Spec At 23 PSIG	10/15/2011
AR 1717265	Indication Not Consistent with Redundant AIT	12/18/2011
AR 1719075	PI43104D Nitrogen Pressure LOOS	12/24/2011
AR 1724424	PI-43104D is LOOS at 20 PSIG.	1/14/2012
LRAP-E008	Electrical Penetration Assemblies Aging Management Program Basis Document	Revision 3
OP-002	Weekly Auxiliary Operator and Second Assistant Log Review And Status Board Verification	Revision 20
OP-002	Operator Logs	10/8/2011, 11/12/2011 12/10/2011 1/14/2012 2/12/2012

Commitment No. 8

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.9	External Surface Monitoring and Aging Management Plant Walkdown Procedure	Revision 2
AR 18666862	Corrosion Buildup on Body to Nuts on V42-0075	04/17/2013
AR 346285	COM 032290 LR – Revise the Inspection Program TO Include License Renewal Commitments	05/14/2010
AR 373702	LR – Develop an Inspection Process	10/03/2008
AR 373705	LR – Include Inspection Parameters in the External Surfaces Monitoring Program	10/03/2008
AR 373706	Include this Aspect of the Gall Program in the Daec External Monitoring System	10/03/2008
AR 373707	LR – Include Criteria for How Degradation of Coating	10/03/2008
AR 373709	LR – Develop A Specific Instruction for the Refueling Outage Frequency.	10/03/2008
LRAP-M036	DAEC License Renewal Project Aging Management Program Basis Document External Surfaces Monitoring	Revision 8
WO 40170475-01	HCD073: Perform Under Insulation Pipe Inspection	04/16/2013
WO 40220313-01	On-Line License Renewal Ext Surfaces PGM Inspection-Admin BLDG	07/16/2013

WO 40245255-01	SUS99.28 Perform Walkdown Inspection of - Admin	07/21/2013
WO 40245262-01	SUS99.28: Perform Walkdown Inspection – Intake Structure	08/23/2013

Commitment No. 9

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
NS13F001	Fire Barrier Penetration Seal Inspection	Revision 21
AR 346286	COM 032291 LR – Revise the Fire Protection Program to Include	10/1/2008

Commitment No. 10

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346287	Enhance Procedures to Inspect the Entire Diesel Driven Fire Pump Fuel Supply Line for Age Related Degradation	10/1/2008
NS13B009	Diesel Driven Fire Pump Operability Tests and Fuel Oil Supply Verification	Revision 33

Commitment No. 11

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346288	COM 032293 – Establish Maintenance Activities to Address License Renewal Commitments	10/1/2008
AR 1880374	Part C – Service Water and Fire Protection Monitoring Program License Renewal Commitment 11	6/7/2013
Part C	Service Water and Fire Protection Monitoring Program	Revision 11

Commitment No. 12

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346289	Enhance Procedures to Include NFPA Criteria for Sprinklers Regarding Replacing or Testing	10/1/2008
	Fire Plan – Volume 1, Program	Revision 66

Commitment No. 13

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346290	COM 032295 LR - Revise Procedures to Perform Visual Inspections	10/1/2008
NS13E003	Fire Hydrant Flush, Freeze Proof Test	Revision 35

Commitment No. 14

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1201.2	Conduct of System/Plant Engineering	Revision 29
AR00346291	COM 032296 LR – Revise Fuel Oil Chemistry Program To Test DI	10/01/2008
ER-AA-103	Core Duties of System Engineering	Revision 0
LRAP-M030	DAEC License Renewal Program Basis Document Fuel Oil Chemistry Program	Revision 5
PCP 4.27	Water and Sediment	Revision 5
STP NS13B013	Diesel Fire Pump Fuel Test	Revision 6
WO4019035 6-01	STP NS13B013 Diesel Fire Pump Fuel Test	05/30/2013

Commitment No. 15

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346292	COM 032297 LR – Revise Procedures to Test New Fuel for The Diesel Fire Day Tank	10/01/2008
LRAP-M030	DAEC License Renewal Project Aging Management Program Basis Document Fuel Oil Chemistry Program	Revision 5
NS13B013	Diesel Fire Pump Fuel Test	Revision 6
NS13B016	1T89 Diesel Fire Pump Fuel Oil Delivery Test	Revision 0
PCP 2.21	Diesel Fuel Oil Storage Tank Sampling	Revision 10

Commitment No. 16

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 1811851	Sludge Observed on Interior Wall of 1T037A	10/10/2012
AR 346293	COM 032298 LR – Revise Procedures for Periodic Draining and CL	10/01/2008
PM 17356 01	1T037A: Inspect and Clean Tank and UT Tank Bottom	n/a
PM 17357 01	1T037B: Inspect and Clean Tank and UT Tank Bottom	n/a
PM 17380 01	MA Drain, Inspect and Clean Tank, Perform UT for Bott	n/a
PM 75223 01	1T477: Drain, Inspect, Clean Tanks, Verify Coating Not Degraded	n/a
PM 75224 01	1T478: Drain, Inspect, Clean Tanks, Verify Coating Not Degraded	n/a
WO 40080826 01	1T478: Drain Inspect, Clean Tanks, Verify Coating Not Dregraded	10/31/2011
WO 40109514 01	1T477: Drain, Inspect, Clean, Tanks, Verify Coating Not Degraded	03/27/2012
WO 40134929 01	MA 1T035 Drain, Clean, Inspect and Refill Tank	10/22/2012



Commitment No. 17

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 00346294	COM 032299 LR – Revise Procedure to Test Bottom Thickness	10/01/08
PM 17356	1T037A: Inspect and Clean Tank and UT Tank Bottom	n/a
PM 17357	1T037B: Inspect and Clean Tank and UT Tank Bottom	n/a
PM 17380	MA Drain, Inspect and Clean Tank, Perform UT for Bott	n/a
WO 40075011 01	1T037A Inspect and Clean Tank	10/09/2012
WO 40100326 01	1T037B: Inspect and Clean Tank	10/17/2012

Commitment No. 18

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	Thermography Program Manual	Revision 7
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
GMP-TEST-48	Thermographic Monitoring of DAEC Equipment	Revision 39
LRAP-E005	Fuse Holders Aging Management Program Basis Document	Revision 6
WO 01286826	Thermography Div C Route “F”	12/13/2010
WO 40137482	Thermography Div C Power Block	1/8/2013

Commitment No. 19 and No. 54

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
AR 01892615	Cable Program Improvement Items	7/29/2013
LRAP-E003	Inaccessible Cable Aging Management Program Basis Document	Revision 9
WO 01286605	Duct Bank Manhole Sump Pump Inspection	9/17/2010
WO 1130385	Inspect per TRANSF-1202-01	6/13/2006
WO 1285307	Inspect, Perform "Offline Motor Test"	1/10/2011
WO 1285739	Inspect and Perform Baker Offline or PI Test	1/11/2011
WO 40017560	Inspect and Perform Baker Offline or PI Test	7/13/2011
WO 40059678	Inspect, Perform "Offline Motor Test"/DAR	7/11/2011
WO 40071657	Electrical Inspection	1/10/2012
WO 40073474	Inspect Manholes for Water Intrusion	10/5/2011
WO 40188528	Annual Inspection of Manholes for Water Intrusion	6/20/2013

Commitment No. 20

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.11	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Monitoring Program Procedures	Revision 0
AR 00346297	COM 032302 LR – Develop an Inspection of Internal Surfaces	10/01/2008
AR 1649546	Review NUREG-1801 Rev.2 Against License Renewal Programs	05/09/2011
AR 1897411	ACP 1210.11 – Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Monitoring Program for License Renewal	08/16/2013
AR 1914076	Opportunistic Internal Inspection Annual Work Order Review	10/22/2013
AR 589988-06	Populate NAMS Equipment Database with LR Information	10/26/2010
LRAP-M038	DAEC License Renewal Project Aging Management Program Basis Document Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	Revision 6

Commitment No. 21

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1408.3	Crane Operating Practices and Operator Training and Qualifications	Revision 21
AR 346298	Enhance Procedures to Check for Corrosion and Wear of Crane Supports	10/1/2008
CN-23647	Duane Arnold Turbine Crane, CN-23647 Engineered Lift During RFO No. 20	2/6/2007
GMP-MECH-06	General Maintenance Procedure: Inspection, Tagging and Testing of Lifting Devices	Revision 39
LRAP-M023	DAEC Program Basis Document, Inspection of Overhead Heavy and Light Load (Related to Refueling) Handling Systems	Revision 4
RIS 2005-25	Clarification of NRC Guidelines for Control of Heavy Loads	10/31/2005

Commitment No. 22

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1408.19	Control of Generic Heavy Loads	Revision 23
ANSI B30.2	Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)	1976 Edition
AR 346299	Revise Procedures to Record Usage of the RB and TB Cranes	10/1/2008
CMAA Specification No. 70	Specifications for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes	Revised 2004
GMP-MECH-06	Inspection, Tagging and Testing of Lifting Devices	Revision 39
NS991201	Record of Turbine and Reactor Building Crane Over Capacity Lifts	Revision 0
WO 1139056	Perform Crane Inspections per Procedure	2/8/2007

Commitment No. 23

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346300	COM 032305 LR – Revise Procedures to Include Diesel Fire Pump in the Lubricating Oil Analysis	10/01/2008
LRAP-M039	DAEC License Renewal Project Aging Management Program Basis Document Lubricating Oil Analysis Program	Revision 3
PM 16746 08	1P049-E: Perform Oil Analysis of Diesel Fire Pump	
PMCR 01854192	Perform Oil Analysis of Diesel Fire Pump	06/01/2013
WO 40222214 01	1P049-E: Perform Oil Analysis of Diesel Fire Pump	07/17/2013
WO 40222214 03	1P049-E: Perform Oil Analysis of Diesel Fire Pump	06/09/2013
WO 40222214 04	1P049-E: (Chem) Perform Engine Oil Analysis	06/21/2013

Commitment No. 24

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1210.7	Electrical and I&C Aging Management Programs	Revision 3
AR 1918590	PMRQ 17820-02 Grace Period Exceeds Allowable Frequency	11/6/2013
LRAP-E004	Metal Enclosed Bus Program Basis Document	Revision 6
PMRQ 17820-02	Startup Transformer Major Inspection	

TRANSF-M175-01	Startup Transformer Inspection	Revision 6
WO 1143320	Startup Transformer Inspection	9/16/2009

Commitment Nos. 25 and 55

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP- M032	One-Time Inspection Program Basis Document	Revision 4
LRTR-OTI	One-Time Inspection	Revision 2
WO 1141964	CRD Pump 1P-209A Min Flow Isolation Valve - Remove Bonnet, Inspect & Reassemble	2/10/2009
WO 1144581	Replace Relief Valve and inspect(LR-OTI)	2/6/2009
WO 1283153	Disassemble and Inspect Check Valve	9/22/2010
WO 1284012	Perform UT of Vessel Outer Wall ~ 1T012A	11/15/2010
WO 1284889	Disassemble and Inspect Check Valve	12/3/2010
WO 1323835	Turbine Lube Oil Cooler	10/28/2012
WO 40075011	1T037A: Inspect and Clean Tank	10/18/2012
WO 40098528	CV1139 Suspected of Leaking Internally	10/22/2012
WO 40100316	1T037B: Inspect and Clean Tank	10/28/2012
WO 40109514	1T477: Drain, Inspect and Clean Tank	3/26/2012
WO 40115344	YS3286 License Renewal Selective Leaching Internal Insp	3/23/2012
WO 40134929	1T035 Drain, Clean, Inspect, and Refill Tank	11/2/2012
WO 40146471	1F515B: Inspect and Replace Filters	2/22/2012
WO 40223542	License Renewal One-Time Inspection – CI/LO	6/18/2013
WO 40223556	Perform License Renewal OTI - CS/LO	6/18/2013
WO 40223562	License Renewal One-Time Inspection OTI – S.STL/LO	6/18/2013
WO 40252457	License Renewal Non-intrusive UT inspection, OTI - CS/LO	9/27/2013
WO 40252460	License Renewal Non-Intrusive Inspection UT – CS/LO	9/26/2013

WO 40252462	License Renewal One-Time Inspection – CS/LO	9/26/2013
WO A73606	Fuel Pool Cooling Pump	1/8/2007
WO A85255	Feedwater Heater 1E-6B Dump to Condenser	2/22/2009
WO1283871	RCIC Turb Lube Oil Cooler - Perform Eddy Current Testing	11/6/2010

Commitment Nos.26, 27, and 28

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 1917276	Revise RPV ISP to Reflect Withdrawal of the 108 degree Surveillance Capsule from the Reactor	11/1/2013
AR 1920911	Status of the 108 Degree Surveillance Capsule Following Withdrawal from the Reactor	11/15/2013
AR 3463303	Develop A Procedure to Evaluate the BWRVIP ISP Data	10/1/2008
AR 3463304	Implement The Recommendations of BWRVIP-116	10/1/2008
AR 3463305	Implement BWRVIP-116 With The Conditions Documented in NRC SER	10/1/2008
LRAP-M031	Aging Management Program Basis Document, Reactor Vessel Surveillance Program	Revision 3
LTR 2013-052	Duane Arnold Surveillance Capsule Test Results Report	4/10/2013
RPV ISP	Reactor Pressure Vessel Integrated Surveillance Program	Revision 1

Commitment No.29

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO 40116209	AV2909A, License Renewal Selective Leaching Internal Inspection	5/10/2012

Commitment No.30

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-S006	Structures Monitoring Program Basis Document	Revision 6
AR 346307	Com 032312 LR	10/1/2008
	DAEC Maintenance Rule Program Module 6	Revision 7

Commitment No.31

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACP 1411.35	The DAEC Groundwater Protection Program	Revision 5
AR 1874720	Debris Found in the "B" RHRSW/ESW Pit	5/15/2013
AR 346308	Com 032313 LR	10/1/2008
WO 40174851	SUS99.13, Ground Water Protection Program Review	7/26/2012

Commitment No.32

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346309	Com 032314 – Enhance Procedures to Include an Elastomer Inspection	10/1/2008

Commitment No.33

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346310	Com 032315 LR, Enhance Procedures to do Opportunistic Inspection	10/1/2008
ACP 1408.29	Excavation, Trenching & Ground Disturbance Controls	Revision 15

Commitment No.34

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346311	Enhance Procedures to Include Opportunistic Inspections of the Buried Concrete Foundation	10/1/2008

Commitment Nos. 35 and 51

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-XM01	Aging Management Program Basis Document, Metal Fatigue of Reactor Vessel Coolant Pressure Boundary	Revision 3
STP NS620001	Reactor Vessel Transient Design Cycles and Other Design Transients	Revision 12
AR 346312	Enhance Procedures to Incorporate the Replacement of NUREG/Cr-6260	10/1/2008
AR 346401	Update Environmental Fatigue for Alloy 600	4/20/2010
APED-B11-3320-320	Fatigue Analysis of Core Spray Nozzle	Revision 3
APED-B11-3320-308	Environmental Fatigue Evaluation of Selected NUREG ICR-6260 Components Based on Existing Analysis	Revision 3
APED-B11-3320-307	Fatigue Evaluation of Feedwater Nozzle	10/25/2011

Commitment No.36

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346313	Develop And Implement A CASS Program	Oct. 1, 2008
Augmented	Augmented Inspection Administrative Document	Revision 21
Commitment Change Evaluation Number 346313	Implement a Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CAS) Program	7/24/2013
Letter NG-13-0274	License Renewal Commitment Changes	9/6/2013
LRAP-M009	Aging Management Program Basis Document, BWR Vessel Internals	Revision 6

Commitment No. 37

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346314	Core Plate Rim Hold-Down Bolts	9/30/2013
BWRVIP-25	BWR Vessel and Internals Project BWR Core Plate Inspection and Flaw Evaluation Guidelines	12/1996
BWRVIP-276	Evaluation to Justify Core Plate Bolt Inspection Elimination	9/2013
GEH Letter 315822-4	Duane Arnold Energy Center Core Plate Load Seismic Comparison Final Report	11/2/2012
Letter NG-11-0092	Notification of Deviation from Boiling Water Reactor Vessel And Internals Project Guidelines	3/31/2011
Letter NG-11-0101	Duane Arnold Technical Justification for Deviation From BWRVIP-25	3/30/2011
LRAP-M009	Aging Management Program Basis Document, BWR Vessel Internals	Revision 6

Commitment No.38

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRTR-TLAA	Time Limited Aging Analysis Report	Revision 4
AR 346315	Submit a Relief Request to Address the Frequency Requirements of the In-Service Inspection of the RPV Circumferential Welds	10/1/2008
NRC TAC No. ME7246	Reliefs From The Requirements of the ASME Boiler And Pressure Vessel Code for the Fourth 10-Year Inservice Inspection Interval	3/1/2013
	DAEC Fourth Interval Inservice Inspection Plan	6/30/2006

Commitment No. 39

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346316	COM 032321 LR – Expand the Scope of the QA Program to Include License Renewal	10/01/2008
No. 2012-05	UFSAR Change: Include Statement in UFSAR Section 17.2 to Indicate that the QA Program has been Expanded to Include the NSR SSCs Subject to Aging Management Review for License Renewal.	04/05/2012
FPL-1	Quality Assurance Topical Report	Revision 13
LI-AA-101-1005	NRC Commitment Management	Revision 0

Commitment No. 40



<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346317	COM 032322 LR – Perform an Operating Experience Review of Extended Power Uprate	10/01/2008
AR 1675849	OE Evaluation – NRC IN 2011-15 Steel Containments Degradation	08/08/2011
OEE 1889205-01	Review NRC IN 2013-10 Stream Dryer Integrity	09/12/2013

Commitment No. 41

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
	Program Engineering ASME Section XI Administrative Manual	Revision 14
TK1.1	Tank Program Plan for Duane Arnold Energy Center	Revision 0
	DAEC Maintenance Rule Module 6 Monitoring of Structures	Revision 6
	Buried Piping Program Basis Document	Revision 1
ACP 1210.9	External Surfaces Monitoring and Aging Management Plant Walkdown Procedure	Revision 2

Commitment No. 42

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-M008	Aging Management Program Basis Document, BWR Penetration Program	Revision 4
AR 346361	Enhance Procedures for BWR Penetrations Program	10/14/2013
BWRVIP	BWRVIP Administrative Document	Revision 18
ACP1211.36	Reactor Pressure Vessel Inspection Procedure	Revision 10

Commitment No. 43

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346362	The DAEC Fire Barrier Penetration Seal Inspection Surveillance Procedure will be Enhanced	10/14/2009
NS13F001	Fire Barrier Penetration Seal Inspection	Revision 18

Commitment No. 44

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 346363	COM 042418 LR – Enhance CO <sub>2</sub> Annual Test to Inspect for Corrosion	10/14/2009
NS13D002-A	CO <sub>2</sub> Operability Test	Revision 20

Commitment No. 45

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-M040	ASME Class 1 Small Bore Piping Inspection Program	Revision 1
LRTR	Phased Array Technique for Class 1 Small Bore Piping	Revision 0
WO 40139986	Socket Weld Inspection (RDA-J7-DCA-019)	10/14/2012
WO 40139987	Socket Weld Inspection (RDA-J9-DCA-019)	10/14/2012
WO 40139989	Butt Weld Inspection (CUA-J014, 15, 17-19, 20, 23-DCA006)	10/14/2012

Commitment No. 47

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
NG-09-0663	Response to Request for Additional Information Regarding Time-Limited Aging Analyses and Aging Management Programs of the Duane Arnold Energy Center License Renewal Application	10/23/2009
NG-10-0091	Responses to Requests for Additional Information Regarding the Duane Arnold Energy Center License Renewal Application - Batch 4	3/9/2010

Commitment No. 48

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-M041	DAEC License Renewal Project Aging Management Program Basis Document Boral Surveillance Program	Revision 1
AR 581924	LR – LRA Appendix A Table A-1 Item 48	09/23/2010
	Program Engineering ASME Section XI Administrative Manual (Boral Surveillance Program Administrative Document)	Revision 4
SPTP 215	Special Test Procedure: Boral BADGER Testing in the Spent Fuel Pool	Revision 3
PM 22554 06	SUS81.00: Perform BADGER Testing	
WO 40070417 03	MA: Boral BADGER Test-Perform Testing for PaR Racks	06/10/2013
VNDR-13-001	Procedure for Assembly and Testing of the Boron-1-Areal Density Meter at Duane Arnold Energy Center	Revision 0
AR 346390	COM 044778 NCAQ-Modify the Boral Surveillance Program Administrative Document	01/14/2010
AR 1902042	Prompt Operability Determination: BADGER Test Campaign at DAEC, Revision 1, Final Test Report Results Show 11 of 60 Boral Panel Areal Densities Measured Below the Minimum Manufactured Areal Density per the Criticality Calculation of Record	09/11/2013

Commitment No. 49

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
AR 581797	LR – LRA Appendix A Table A-1 Item 49 Gypsum Board	9/23/2010
ACP 1210.9	External Surfaces Monitoring and Aging Management Plant Walkdown Procedure	Revision 2
NG-10-0043	Response to RAI for Review of DAEC LRA – Batch 3	2/2/2010
NG-09-0646	Response to RAI Regarding Section 2.3.3.11 of the DAEC LRA	9/3/2009

Commitment No. 50

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-S001	ASME Section XI, Subsection IWE	Revision 2
WO 40132857	EC-274627, Perform Recoat of Torus Interior	10/7/2012
WO 1362604	Torus and Drywall External Visual Inspection	10/26/2010
STP NS590013	Suppression Chamber Visual Examination of Submerged Areas	Revision 4

Commitment No. 52

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO 40134929	MA: 1T035 Drain, Clean, Inspect and Refill Tank	10/31/2012
AR 373742	Buried Piping and Tank Inspection	10/3/2008
ACP 1415.1	Inspection Planning Guideline	Revision 11

Commitment No. 53

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO 40186193	SUS85.00: MA: Inspect Cathodic Protection System	6/19/2013
WO 40210817	SUS85.00 – Support FPL Fleet Rep and Inspect Cathodic Prptection	8/28/2013
NEER-RSC-14207	2013 Survey of the Cathodic Protection Systems at Nextera Energy Resources' DAEC in Palo, Iowa	9/6/2013

Commitment No. 56

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
WO A79085	Selective Leaching Inspection of 1P022D-M	11/10/2013
LRAP-M033	Selective Leaching Program Basis Document	Revision 6
AR 1616562	License Renewal Selective Leaching	2/4/2011
LRTR- Selective Leaching	Selective Leaching of Materials Program, Sampling and Inspection Methodology	Revision 3

Commitment No. 57

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
ACI 349.3R-96	Evaluation of Existing Nuclear Safety-Related Concrete Structures	1/1/1996
AR 1616564	License Renewal Commitment 57	2/4/2011

Commitment No. 58

<u>Number</u>	<u>Description or Title</u>	<u>Date/Revision</u>
LRAP-XM01	Aging Management Program Basis Document, Metal Fatigue of Reactor Vessel Coolant Pressure Boundary	Revision 3
AR 1616567	Perform a Review of Usage Factors for ASME Class 1 Components	2/4/2011
APED-B11-3320-351	Scoping Survey of Non-NUREG / CR 6260 Locations in DAEC Class 1 Components with Design Basis Fatigue Calculations	Revision 0
APED-B11-3320-316	RPV Fatigue Analysis for 60-Year Plant Life	Revision 0

## LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
AMP	Aging Management Program
ANSI	American National Standards Institute
AR	Action Request
BWR	Boiling Water Reactor
CASS	Cast Austenitic Stainless Steel
CCE	Commitment Change Evaluation
DLR	Division of License Renewal
EPA	Electrical Penetration Assembly
EVT	Enhanced Visual Test
GALL	Generic Aging Lessons Learned
IR	Issue Report
ISP	Integrated Surveillance Program
NFPA	National Fire Protection Association
NPS	Nominal Pipe Size
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
PARS	Publicly Available Records System
QA	Quality Assurance
SER	Safety Evaluation Report
SSC	Structures Systems And Components
TAA	Time Limited Aging Analyses
CFR	Code of Federal Regulations
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
VIP	Vessels Internals Program

R. Anderson

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Sincerely,

/RA/

Stuart Sheldon, Acting Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket No. 50-331  
License No. DPR-49

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