

January 10, 2005

Mr. M. Nazar  
Senior Vice President and  
Chief Nuclear Officer  
Nuclear Generation Group  
American Electric Power Company  
500 Circle Drive  
Buchanan, MI 49107

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2  
NRC AGING MANAGEMENT PROGRAM INSPECTION REPORT  
NO. 05000315/2004013(DRS); 05000316/2004013(DRS)

Dear Mr. Nazar:

On November 19, 2004, the NRC completed an onsite inspection regarding your application for license renewal for the D. C. Cook Nuclear Power Plant. The enclosed report documents the inspection results, which were discussed on December 15, 2004, with members of your staff in an exit meeting open for public observation at the American Electric Power engineering offices in Buchanan, Michigan.

The purpose of this inspection was an examination of activities that support your application for a renewed license for the D.C. Cook facility. The inspection consisted of interviews with personnel and examination of procedures and representative records regarding the implementation of your aging management programs to support license renewal. The inspectors also performed visual examination of accessible portions of various systems, structures or components to observe any effects of equipment aging. These included some areas normally not accessible, such as the ice condenser.

The inspection concluded that your license renewal activities were conducted as described in your License Renewal Application and that documentation supporting your application is in an auditable and retrievable form. The inspection also concluded that existing aging management programs are functioning adequately and that, when all the programs are implemented as described in your License Renewal Application, there is reasonable assurance that the intended functions of vital plant systems, structures, and components will be maintained through the period of extended operation.

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

M. Nazar

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Should you have any questions concerning this inspection, please contact Patricia Lougheed at (630) 829-9760.

Sincerely,

***/RA by Roy Caniano Acting for/***

Cynthia D. Pederson, Director  
Division of Reactor Safety

Docket Nos. 50-315; 50-316  
License Nos. DPR-58; DPR-74

Enclosure: Inspection Report 05000315/2004013(DRS);  
05000316/2004013(DRS)

cc w/encl: J. Jensen, Site Vice President  
M. Finissi, Plant Manager  
G. White, Michigan Public Service Commission  
Michigan Department of Environmental Quality  
Emergency Management Division  
MI Department of State Police  
D. Lochbaum, Union of Concerned Scientists

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DATE	12/21/04	12/28/04	01/05/05	01/10/05

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-315; 50-316  
License Nos: DPR-58; DPR-74

Report Nos: 05000315/2004013(DRS);  
05000316/2004013(DRS);

Licensee: American Electric Power Company

Facility: D. C. Cook Nuclear Power Plant

Location: 1 Cook Place  
Bridgman, MI 49106

Dates: November 1 through November 19, 2004

Inspectors: P. Lougheed, Senior Reactor Inspector  
L. Kozak, Senior Risk Analyst (first week only)  
L. Haeg, Reactor Inspector  
B. Jose, Reactor Inspector  
J. Neurauter, Reactor Inspector  
R. Orlikowski, Resident Inspector, Monticello

Approved by: A. M. Stone, Chief  
System Engineering Branch  
Division of Reactor Safety

Enclosure

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## SUMMARY OF FINDINGS

IR 05000315/2004013(DRS); 05000316/2004013(DRS); 11/01/2004 – 11/19/2004; D. C. Cook Nuclear Power Plant; License Renewal Aging Management Program.

This inspection of License Renewal activities was performed by five Region III inspectors, with support from a regional senior reactor analyst. The inspection program followed NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any findings as defined in NRC Manual Chapter 0612.

Documentation from the existing aging management programs was of good quality and provided reasonable assurance that aging effects would be adequately managed over the period of extended operation. Interviews with program owners indicated understanding of the impact of extended operation of aging management programs.

NRC inspectors examined a substantial portion of plant safety-related equipment. The NRC's conclusion was the material condition of the plant was being adequately maintained.

No issues were identified during the inspection which would be an adverse indicator for license renewal.

## REPORT DETAILS

### A. Inspection Scope

This inspection was conducted by NRC Region III inspectors. The purpose of the inspection was to interview applicant personnel and to examine a sample of documentation which supported the license renewal application (LRA) in order to verify the implementation of the applicant's Aging Management Programs and to confirm the accuracy of the LRA conclusions. The inspection concentrated on current on-going programs which were being credited for license renewal (LR).

For those programs indicated by the applicant as being consistent with NUREG 1801, "Generic Aging Lessons Learned" (GALL) report, the inspectors confirmed that the applicant's program included the GALL attributes. For those programs indicated by the applicant as not having a GALL report equivalent, the inspectors confirmed that the 10 elements, described by GALL report as being necessary for evaluating an aging management program, were incorporated. For those programs which the applicant indicated were new or being enhanced, the inspectors confirmed that commitments existed and were sufficient to support future implementation.

For a sample of plant systems, inspectors performed visual examination of accessible portions of the systems, structures or components to observe any effects of equipment aging. Because Unit 2 was in an outage, the inspectors also visually examined some areas not normally accessible during routine operation. The report is organized by aging management program following the order the programs are listed in Appendix B of the applicant's LRA.

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

### B. Visual Observation of Plant Equipment

During this inspection, the inspectors performed walkdown inspections of portions of many of the plant systems, structures, and components (SSCs) to determine their current condition and to attempt to observe aging effects. No significant aging-related issues were identified. The following systems and components were observed:

- Alternate Nitrogen System and associated piping;
- Auxiliary Feedwater System pumps, piping, valves and room coolers;
- Centrifugal Charging pumps, and associated piping and valves;
- Component Cooling Water pumps, heat exchangers, piping and valves;
- Containment Spray pumps, heat exchangers, and attached piping and valves;
- Control Room Emergency Ventilation heat exchangers;
- Essential Service Water pumps and attached piping and valves;
- Emergency Diesel Generators; lube oil coolers, and jacket water coolers;
- Instrument Air Compressors and associated piping;
- Main Steam System;
- New and Spent Fuel handling crane;

- Safety Injection pumps, piping and valves;
- Small bore piping within the Unit 2 lower containment area; and
- Various piping and piping supports.

The following structures were walked down:

- Concrete containment exterior surface area (Unit 2);
- Containment divider barrier seal (Unit 2);
- Containment steel liner (Unit 2);
- Emergency Service Water Pipe Tunnel;
- Fire Pump House;
- Ice Condenser Baskets (Unit 2);
- Lower containment annulus (Unit 2);
- Screen House;
- Various Turbine Building elevations (Units 1 and 2); and
- Various Auxiliary Building elevations (Units 1 and 2).

### C. Review of Aging Management Programs

#### 1. Bolting and Torquing Activities (B.1.2)

The bolting and torquing activities program is an existing plant-specific program credited in the LRA for managing loss of mechanical closure integrity in high-temperature systems and in applications subject to significant vibration. This plant specific program has no comparable NUREG-1801 program, but relied on industry recommendations as delineated in guidelines from the Electric Power Research Institute (EPRI) for a comprehensive bolting integrity program. However, the inspectors noted that the wording used in the LRA mirrored the wording in Section XI.M18, "Bolting Integrity," of the GALL report.

The inspectors reviewed the applicable LR evaluation, interviewed the bolting and torquing program owner, reviewed a sampling of procedures which addressed bolting and torquing activities, and a sampling of work requests which implemented bolting and torquing activities.

As a result of a question raised during the inspection, the applicant identified nearly 350 different procedures which described current bolting and torquing activities. Only a small fraction of these procedures had been identified and reviewed as part of the LR evaluation. Therefore, the applicant wrote condition report (CR) 04322022 to ensure that the elements stated in the LRA were sufficiently addressed either in all the current bolting and torquing procedures or in a comprehensive site bolting and torquing procedure.

The inspectors concluded that the bolting and torquing program was an on-going program subject to NRC review, which generally included the elements identified in the LRA. As it is a current program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections will be performed through the period of extended operation.

2. Boral Surveillance (B.1.3)

The boral surveillance program is an existing program credited in the LRA for monitoring the performance of the neutron absorber material used in the spent fuel pool. This plant specific program has no comparable NUREG-1801 program. However, the inspectors noted that the wording used in the LRA mirrored portions of the wording in Section XI.M22, "Boraflex Monitoring," of the GALL report. The program, as credited by the applicant, monitors changes in neutron attenuation, dimensional measurements, and weight and specific gravity of representative coupon samples.

The inspectors reviewed the applicable LR evaluation, interviewed the boral surveillance program owner, reviewed applicable surveillance procedures, and reviewed a boral coupon inspection test report.

During the inspection, the inspectors identified that the current program did not trend the inspection test data, as indicated in the LRA element of monitoring and trending. In addition, the inspectors determined that the program planned to increase the inspection monitoring period from once every two years to once every five years. As the inspection test data was not trended, the inspectors were unable to determine the basis for this decreased frequency of inspection when entering a period of extended license operation. As a result of the inspectors questions, the licensee wrote CR 04341042. The inspectors relayed the concern to the responsible reviewer in the Office of Nuclear Reactor Regulation (NRR) and it will be followed up as part of their review of this program.

The inspectors concluded that the boral inspection aging management program was in place, had been implemented, was an on-going program subject to NRC review, and generally included the elements identified in the LRA. As it is a current program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections will be performed through the period of extended operation. The issue identified above will be addressed during the NRR review and does not require further inspection effort.

3. Boric Acid Corrosion Prevention (B.1.4)

The boric acid corrosion prevention program is an existing program which is being expanded and credited in the LRA for managing effects of corrosion of ferritic steel components as a result of boric acid leakage. The program was developed in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants," as the primary means to monitor reactor coolant pressure boundary leakage and the resultant effects. With enhancements, the existing program will be comparable to the program described in Section XI.M10, "Boric Acid Corrosion," of the GALL report. The commitment for this program includes modifying the scope of inspections to include electrical components as specified in the GALL report.

The inspectors reviewed program documentation, condition reports, existing procedures, program self-assessments, boric acid deposit engineering evaluations, and confirmed that the licensee had commitments in place for writing additional procedures

prior to the start of the period of extended operation. The inspectors also interviewed the boric acid corrosion prevention program owner, to determine implementation of particular credited procedures under the program and to determine, in general, how the program would be enhanced to include electrical components. The inspectors also performed a thorough walkdown of selected emergency core cooling and other systems which could come in contact with boric acid and which credited the boric acid control program as part of the aging management program. The inspectors verified that the applicant performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded that the boric acid corrosion prevention program was in place, had been implemented, and included the elements identified in the LRA. When enhanced as described in commitment 8246, there is reasonable assurance that passive and long-lived structures, systems, and components subjected to boric acid will remain functional throughout the period of extended operation.

4. Bottom-Mounted Instrumentation Thimble Tube Inspection (B.1.5)

The bottom-mounted instrumentation (BMI) thimble tube inspection program is an existing plant-specific program credited in the LRA for identifying loss of material due to wear in the BMI thimble tubes prior to leakage. There is no corresponding NUREG-1801 program. The thimble tubes are part of the reactor coolant system pressure boundary.

The inspectors reviewed the applicable LR evaluation, interviewed the BMI thimble tube inspection program owner, reviewed applicable procedures, and reviewed BMI thimble tube eddy current test reports.

The inspectors concluded that the BMI thimble tube inspection aging management program was in place, had been implemented, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a current program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections will be performed through the period of extended operation.

5. Buried Piping Inspection (B.1.6)

The buried piping inspection program is a new program that the applicant will implement prior to the period of extended operation. This program will be comparable to the program described in Section XI.M34, "Buried Piping and Tanks Inspection," of the GALL report, with an exception. The exception is that the buried tanks and piping will only be inspected when they are excavated during maintenance.

The inspectors reviewed the applicable LR evaluation, interviewed personnel responsible for buried piping inspection, reviewed applicable procedures and reviewed a sampling of completed work orders. The inspectors primarily focused on whether there would be sufficient inspections of buried piping in the systems which credited this program for aging management.

The inspectors determined that only a limited amount of buried piping would be managed by this aging management program; the inspectors further concluded that the

applicant's operating experience was entirely on piping which was out-of-scope for license renewal. Therefore, the inspectors questioned the adequacy of the exception in managing aging effects during the period of extended operation. The licensee reviewed this concern and amended its commitment 8246 to require inspection and an extent of condition evaluation whenever out-of-scope piping was excavated.

The inspectors concluded that, if the program is implemented as planned, there should be reasonable assurance that the buried piping program will adequately monitor aging management of the in-scope buried tanks and piping.

6. Cast Austenitic Stainless Steel Evaluation Program (B.1.7)

The cast austenitic stainless steel (CASS) evaluation program inspection activities described in this program are new activities, not previously covered in the applicant's program. The program, when implemented, will be comparable to Section XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)," of the GALL report. This aging management program will include: (1) determination of the susceptibility of CASS components to thermal aging embrittlement based on casting method, molybdenum content, and percent ferrite; and (2) for potentially susceptible components, aging management is accomplished either through enhanced volumetric examinations or component specific flaw tolerance evaluations. The applicant committed to inspect hot, cold, and cross-over leg reactor coolant system CASS components in accordance with Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code.

The inspectors reviewed the LR evaluation, interviewed the CASS evaluation program owner, and reviewed the applicant's commitment to develop and implement a CASS evaluation program. The inspectors concluded that, if the procedures were implemented as planned, there should be reasonable assurance that CASS component monitoring of the reactor coolant system (hot, cold, and cross-over legs only) will be performed through the period of extended operation.

7. Containment Leakage Testing (B.1.8)

The Containment Leakage Rate Testing Program is an existing program. It is consistent with the program described in Section XI.S4, "10 CFR Part 50, Appendix J," of the GALL report. This program implements a current Part 50 program requirement. As described in 10 CFR Part 50, Appendix J, containment leakage rate tests are required to assure that: (a) leakage through the primary reactor containment and systems and components penetrating primary containment does not exceed allowable values as specified in the Technical Specifications or associated Bases; and (b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment.

The inspectors reviewed program documentation, condition reports, aging management review documents, self-assessments, and existing procedures to confirm that the licensee's existing containment leakage rate testing program effectively manages aging effects. The inspectors verified that appropriate corrective actions were taken in

response to condition reports generated in the area of containment leak rate testing. The inspectors also verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded that the containment leakage rate testing program effectively manages aging effects. Continued implementation of this program provides reasonable assurance that the effects of aging will be managed so that components included in this program will perform their intended functions consistent with the current licensing basis for the period of extended operation.

8. Diesel Fuel Monitoring (B.1.10)

The diesel fuel monitoring program is an existing program credited in the LRA for managing effects of aging by ensuring acceptable diesel fuel oil quality to prevent corrosion of the fuel oil storage tanks and fuel systems for the emergency diesel generator, fire protection and security diesel systems. It is comparable to the program described in Section XI.M30, "Fuel Oil Chemistry Program," of the GALL report with some exceptions.

The inspectors reviewed program procedures, past fuel oil storage tank analyses, previously completed ultrasonic testing results, and job packages. The inspectors also interviewed the current program owner as well as the previous and current system engineers regarding past cleaning results, oil analysis results, and future plans to manage aging effects.

The inspectors identified an issue concerning lack of appropriate acceptance criteria in inspection procedures to ensure that the diesel fuel oil storage tanks are inspected when drained in the future and to ensure that the tanks are adequately inspected to detect aging effects. As a result of this concern, the applicant wrote CR 04329020 to ensure that the procedures were revised to address the LRA commitments.

The inspectors concluded that the diesel fuel monitoring program was in place, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a current program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections will be performed through the period of extended operation. The issue identified above will be addressed during the NRR review and does not require further inspection effort.

9. Fire Protection (B.1.11)

a. Fire Protection (B.1.11.1)

The fire protection program is an existing program which, with enhancements will be comparable to Section XI.M26, "Fire Protection," of the GALL report. However, the applicant also identified some exceptions to the GALL program. The fire protection program includes fire barrier and diesel-driven fire pump inspections. Fire barrier inspections consists of periodic visual inspection of fire barrier penetration seals, fire barrier walls, ceilings and floors; and periodic visual inspection and functional tests of fire-rated doors. The diesel-driven fire pump inspections include periodic pump testing

to ensure that the fuel supply line can perform its intended function. The fire protection program also includes periodic inspection and testing of the halon and carbon dioxide fire suppression system.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures and confirmed that the licensee had a commitment in place to enhance the program prior to the start of the period of extended operation. The inspectors also conducted plant wide walkdowns to assess the condition of fire protection equipment, interviewed the fire protection program owner to confirm the continuation of the existing program along with the proposed implementation of the enhancements specified in commitment 8248 during the period of extended operation. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects and the exceptions to NUREG 1801 specified in the LRA are consistent with current industry practice.

The inspectors concluded that the fire protection program effectively manages aging effects. With the enhancements to be incorporated prior to the period of extended operation, continued implementation of the fire protection program will provide reasonable assurance that the aging effects will be managed so that the fire protection components will continue to perform their intended function consistent with the current licensing basis for the period of extended operation.

b. Fire Water System (B.1.11.2)

The fire water system program is an existing program. With the proposed enhancements, it will be comparable to the program described in Section XI.M27, "Fire Water System," of the GALL report, but will also contain exceptions to the GALL report. The fire water system program applies to water-based fire protection systems that consist of components that are tested in accordance with the applicable National Fire Protection Association codes and standards. This includes sprinklers, nozzles, fittings, valves, hydrants, hose stations, stand pipes, water storage tanks, and above ground and underground piping and components.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed that the licensee had a commitment in place to enhance the program prior to the start of the period of extended operation. The inspectors also conducted plant wide walkdowns to assess the condition of fire water system equipment, interviewed the fire water system program owner to confirm the continuation of the existing program along with the proposed implementation of the enhancements specified in commitment 8249 during the period of extended operation. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects and the exceptions to NUREG 1801 specified in the LRA are consistent with current industry practice.

The inspectors concluded that the fire water system program effectively manages aging effects. With enhancements to be incorporated prior to the period of extended operation, continued implementation of the fire water system program will provide reasonable assurance that the aging effects will be managed so fire water system

components will continue to perform their intended function consistent with the current licensing basis for the period of extended operation.

10. Flow-Accelerated Corrosion (B.1.12)

The flow-accelerated corrosion (FAC) aging management program is an existing program credited in the LRA as being consistent with NUREG-1801, Section XI.M17, "Flow-Accelerated Corrosion." The ongoing program is used to predict, detect, and monitor FAC in plant piping and other components, such as valve bodies, elbows, and expanders. The program was credited with: (1) conducting an analysis to determine critical locations; (2) performing baseline inspections to determine the extent of thinning at these locations; and (3) performing follow-up inspections to confirm the predictions, or repairing or replacing components as necessary.

The inspectors reviewed the applicable LR evaluation, interviewed the FAC program owner, reviewed applicable procedures, reviewed the analysis that determined critical locations, reviewed FAC self-assessment reports, and reviewed a sample of condition reports related to FAC.

During the inspection, the inspectors identified that the current program did not use a predictive method of determining when to expand the inspection scope, as indicated in the LRA element of monitoring and trending. Instead the utility's current program designated a minimum wall thickness value and provided options for the program owner to decide whether a scope expansion was necessary if the measured wall thickness fell below this value. As the current inspection procedures appeared to differ from the method described in the application, the inspectors were unable to determine whether the program as currently implemented met the commitment in the LRA. As a result of the inspectors questions, the licensee wrote CR 04323072. The inspectors relayed the concern to the responsible reviewer in NRR and it will be followed up as part of their review of this program.

The inspectors concluded that the flow-accelerated corrosion program was in place, had been implemented, was an ongoing program subject to NRC review, and generally included the elements identified in the LRA. As it is a current program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections required by the program will be performed through the period of extended operation. The issue identified above will be addressed during the NRR review and does not require further inspection effort.

11. Heat Exchanger Monitoring (B.1.13)

The heat exchanger monitoring program is a new, plant-specific program that the applicant will implement prior to the period of extended operation. There is no comparable NUREG 1801 program. The heat exchanger monitoring program, when implemented, will inspect heat exchangers for degradation using nondestructive examinations, such as eddy current inspections or visual inspections. If degradation is found, an evaluation will be performed to determine its effects on the heat exchanger design functions.

The inspectors reviewed the LR evaluation, performed walkdowns of several heat exchangers located in the plant, and discussed the heat exchanger monitoring program with the engineer responsible for the program. The inspectors concluded that, if the program were implemented as planned, there should be reasonable assurance that adequate heat exchanger monitoring will be performed through the period of extended operation.

12. Inservice Inspection – ASME Section XI, Subsection IWE (B.1.15)

The inservice inspection (ISI) program for ASME Section XI, Subsection IWE, components is an existing program credited in the LRA for managing the steel liner for the concrete containment and its integral attachments; containment hatches and airlocks; seals, gaskets and moisture barriers; and pressure retaining bolting which require inspections in accordance with the ASME B&PV Code, Section XI, along with the additional requirements specified in 10 CFR 50.55a(b)(2).

The inspectors reviewed the applicable LR evaluation, interviewed the ISI – IWE program owner, reviewed the containment ISI program plan, reviewed NRC approved ASME Code relief requests, walked down liner sections including repairs of previously identified degradation, and reviewed applicable procedures.

The inspectors concluded that the ISI – ASME Section XI, Subsection IWE, program was in place, had been implemented, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a currently required program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections required by ASME and 10 CFR 50.55a(b)(2) will be performed through the period of extended operation.

13. Inservice Inspection – ASME Section XI, Subsection IWF (B.1.16)

The ISI – ASME Section XI, Subsection IWF program is an existing program credited in the LRA for managing piping support and component support degradation which require inspections in accordance with Section XI of the ASME B&PV Code. The IWF scope of inspection is based on a sample of the total support population, and the sample size varies depending on the ASME Code Class. The primary inspection method is visual inspection. Discovery of support deficiencies during regularly scheduled inspections requires an increase of the inspection scope. Any degradation that potentially compromises support function or load capacity is identified for evaluation and supports requiring corrective action are re-examined during the next inspection period.

The inspectors reviewed the current 10 year ISI program basis document, reviewed the applicable LR evaluation, interviewed the ISI – IWF program owner, inspected a sample of safety related piping supports for indications of degradation, and reviewed applicable procedures.

The inspectors concluded that the ISI – ASME Section XI, Subsection IWF program was in place, had been implemented, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a currently required program subject to periodic NRC review and inspection, there is reasonable assurance that adequate

inspections required by ASME and the NRC will be performed through the period of extended operation.

14. Inservice Inspection – ASME Section XI, Subsection IWL (B.1.17)

The ISI – ASME Section XI, Subsection IWL program is an existing program credited in the LRA for managing concrete containment degradation such as cracking, distortion, efflorescence (leaching), popout, scaling, spall, corrosion stains, and exposed reinforcing steel which require inspections in accordance with the ASME B&PV Code, Section XI and additional requirements specified in 10 CFR 50.55a(b)(2).

The inspectors reviewed the applicable LR evaluation, interviewed the ISI – IWL program owner, reviewed the containment ISI program plan, reviewed an NRC approved ASME Code relief request, reviewed applicable procedures, reviewed the IWL inspection report, visually inspected a sample of exterior concrete containment surface area including locations of identified degradation, and reviewed documentation that tracked future repair at locations of identified degradation.

The inspectors concluded that the ISI – ASME Section XI, Subsection IWL program was in place, had been implemented, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a currently required program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections required by ASME and 10 CFR 50.55a(b)(2) will be performed through the period of extended operation.

15. Instrument Air Quality (B.1.19)

The instrument air quality program is an existing, plant-specific program which differs from the program for compressed air monitoring described in NUREG 1801. The instrument air quality program, with respect to license renewal, is credited with preventing and mitigating aging effects on control air system components by maintaining the system free of water and significant contaminants.

The inspectors reviewed the applicable LR evaluation, the existing procedures, and confirmed that the licensee had commitments in place for enhancing the current program procedure prior to the period of extended operation. When implemented as described, there is reasonable assurance that the Instrument Air System will remain functional throughout the period of extended operation.

16. Non-Environmentally Qualified Inaccessible Medium-Voltage Cable (B.1.20)

The non-environmentally qualified (non-EQ) inaccessible medium-voltage cable program is a new program that the applicant will implement prior to the period of extended operation. The program, when implemented will be comparable to that described in NUREG-1801, Section XI.E3, “Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.” This program applies to inaccessible (e.g., in conduit or direct-buried) medium-voltage cables within the scope of license renewal that are exposed to significant moisture simultaneously with applied voltage. This program includes a commitment to test these cables to

provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined and implemented prior to the expiration of the current Unit 1 license.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed that the licensee had a commitment in place to enhance the program prior to the start of the period of extended operation. The inspectors also interviewed the non-EQ inaccessible medium-voltage cable program owner to determine implementation of particular test procedures to be developed under the program and to determine, in general, how the program would be enhanced to include additional tests specified in the commitment 8253. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects.

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

17. Non-Environmentally Qualified Instrumentation Circuits Test Review (B.1.21)

The non-EQ instrumentation circuits test review program is a new program that the applicant will implement prior to the period of extended operation. This program will be consistent with the program described in NUREG-1801, Section XI.E2, "Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits." This program, when implemented, will provide reasonable assurance that the intended functions of specified non-EQ electrical cables will be maintained consistent with the current licensing basis through the period of extended operation. The electrical cables included in the scope of this program are cables which are not required to be environmentally qualified under 10 CFR 50.49; are used in instrumentation circuits with sensitive, high voltage, low-level signals; and are exposed to adverse localized environments caused by heat, radiation, or moisture.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed that the licensee had a commitment in place to enhance the program prior to the start of the period of extended operation. The inspectors also interviewed the non-EQ instrumentation circuits test review program owner to determine continuation of an insulation resistance test method through the period of extended operation as described in commitment 8254. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded that the non-EQ instrumentation circuits tests review program, when implemented as described, will effectively manage aging effects, since it will incorporate proven monitoring techniques, acceptance criteria, corrective actions, and administrative controls. Implementation of the non-EQ instrumentation circuits tests review program will provide reasonable assurance that the effects of aging will be

managed such that components within the scope of the program will perform their intended functions consistent with the current licensing basis for the period of extended operation.

18. Non-Environmentally Qualified Insulated Cables and Connections (B.1.22)

The non-EQ insulated cables and connections program is a new program that the applicant will implement prior to the period of extended operation. This program will be consistent with the program described in NUREG-1801, Section XI.E1, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The non-EQ insulated cables and connections program will apply to accessible insulated cables and connections installed in structures within the scope of license renewal and prone to adverse localized environments. The program will provide reasonable assurance that the intended functions of insulated cables and connections exposed to adverse localized equipment environments caused by heat, radiation, or moisture will be maintained consistent with the current licensing basis through the period of extended operation.

The inspectors reviewed program documentation, condition reports, aging management review documents and existing procedures, and confirmed that the licensee had a commitment in place to implement the program prior to the start of the period of extended operation. The inspectors also interviewed the non-EQ insulated cables and connections program owner to determine how and when aging management program changes that are required to satisfy LR commitments as described in commitment 8255 will be developed and implemented. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded that the non-EQ insulated cables and connections program, if implemented as described, will effectively manage aging effects, since it will incorporate proven monitoring techniques, acceptance criteria, corrective actions, and administrative controls. Implementation of this program will provide reasonable assurance that the effects of aging will be managed such that components within the scope of the program will perform their intended functions consistent with the current licensing basis for the period of extended operation.

19. Oil Analysis (B.1.23)

The oil analysis program is an existing plant-specific program credited in the LRA for managing effects of aging by ensuring that the lubricating oil in mechanical systems and components is maintained to prevent loss of material, cracking, or fouling. There is no comparable NUREG 1801 program. The program performs sampling, testing, and trending to verify lubricating oil properties and to ensure that the intended functions of passive and long-lived SSCs are not lost.

The inspectors reviewed program documentation and existing procedures to determine if the procedures have been effective in managing aging effects. This review included review of aging management documents for the component cooling water system, as a representative system, and reviews of condition reports related to component cooling

water pump conditions where degraded oil was identified. The inspectors verified that appropriate corrective actions were taken in response to these condition reports in accordance with in-place procedures. The inspectors interviewed the oil analysis program owner to assess the level of scrutiny posed to oil test and analysis results. The inspectors also reviewed previous laboratory results of the Unit 1 AB emergency diesel generator lubricating oil to determine the applicant's acceptance criteria.

The inspectors concluded that the oil analysis program was an ongoing program subject to NRC review, which included the elements identified in the LRA. As it is a current program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections will be performed through the period of extended operation.

20. Preventive Maintenance (B.1.25)

The preventive maintenance program is an existing program credited in the LRA for managing aging effects such as material condition, presence of corrosion products, and signs of cracking for passive and long lived components of various systems. There is no comparable program in the GALL report.

The inspectors reviewed program procedures, implementing procedures and commitments for the following components in the scope of aging management review:

- Centrifugal charging pump case cladding cracking inspection, repair, and testing;
- Emergency Diesel generator elastomer flex hosing; and
- Auxiliary feedwater pump room coolers.

Review of these components consisted of system walkdowns, interviews with applicant personnel cognizant of the program, and historical review of existing completed job orders and procedures. The inspectors determined that the applicant had a preventive maintenance optimization initiative aimed at making the preventive maintenance program more efficient and effective.

The inspectors concluded that the preventive maintenance program was in place, had been implemented, and included the elements identified in the LRA. When enhanced as described in commitment 8257, there is reasonable assurance that intended functions of the reviewed systems within the scope of the license renewal will be maintained during the period of extended operation.

21. Reactor Vessel Integrity (B.1.26)

The reactor vessel integrity program is an existing program credited in the LRA for managing reduction of fracture toughness of the reactor vessel beltline materials to assure that the pressure boundary function of the reactor vessel is maintained. With enhancements, it will be consistent with the program described in NUREG-1801, Section XI.M31, "Reactor Vessel Surveillance." The program requires surveillance capsule specimens to be withdrawn from the reactor vessel and tested in accordance with 10 CFR Part 50, Appendices G and H, ASTM Specification E-185-82 and other approved standards. The test results from the surveillance specimens represent the actual behavior of the material in the reactor vessel. Data from testing of the

surveillance capsule specimens are used to analyze pressurized thermal shock, upper shelf energy, and to generate pressure-temperature curves for future operation of each unit.

The inspectors reviewed the applicable LR evaluation, interviewed the reactor vessel integrity program owner, reviewed applicable procedures, reviewed the analysis for capsule "U" on Unit 1, reviewed the pressurized thermal shock and heatup and cooldown limit curve analyses for both units, and confirmed that the licensee had commitment 8258 in place for testing one additional capsule specimen for each unit to address peak fluence expected at 60 years prior to the start of the period of extended operation.

The inspectors concluded that the reactor vessel integrity program was in place, had been implemented, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a currently required program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections required by ASME will be performed through the period of extended operation.

22. Reactor Vessel Internals – Plates, Forgings, Welds, and Bolting (B.1.27)

The reactor vessel internals – plates, forgings, welds, and bolting inspection activities described in this program are new activities, not previously covered in the applicant's program. When implemented in accordance with commitment 8260, it will be consistent with Section XI.M16, "PWR Vessel Internals," of the GALL report. The program will consist of periodic visual inspections and non-destructive examination (NDE) of reactor vessel internals during the period of extended operation to manage the effects of crack initiation and growth due to irradiation-assisted stress corrosion cracking, loss of fracture toughness due to neutron irradiation embrittlement, and distortion due to void swelling. This new program will supplement the reactor vessel internals inspections required by the ASME Section XI ISI program.

The inspectors reviewed the LR evaluation, interviewed the reactor vessel internals (plates, forgings, welds, and bolting) program owner, and reviewed the applicant commitment to develop and implement a reactor vessel internals (plates, forgings, welds, and bolting) inspection program. The inspectors concluded that, if the procedures were implemented as planned, there should be reasonable assurance that reactor vessel internals (plates, forgings, welds, and bolting) monitoring will be performed through the period of extended operation.

23. Reactor Vessel Internals – Cast Austenitic Stainless Steel (B.1.28)

The reactor vessel internal CASS inspection activities described in this program are new activities, not previously covered in the licensee's program. When implemented in accordance with commitment 8247, the program will be consistent with Section XI.M13, "Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel," of the GALL report. The program will consist of periodic visual inspections and NDE testing of reactor vessel internals during the period of extended operation to manage cracking, the reduction of fracture toughness, and dimensional changes using

visual inspections and NDE. This new program will supplement the reactor vessel internals inspections required by the ASME Section XI ISI program.

The inspectors reviewed the LR evaluation, interviewed the reactor vessel internal CASS program owner, and reviewed the applicant commitment to develop and implement a reactor vessel internal CASS inspection program. The inspectors concluded that, if the procedures are implemented as planned, there should be reasonable assurance that monitoring of reactor vessel internal CASS components will be performed through the period of extended operation

24. Service Water System Reliability (B.1.29)

The service water system reliability program is an existing program that primarily implements the station's Generic Letter 89-13 programs that include chemical and biocide injection, system testing, periodic inspections and nondestructive examinations, component preventive maintenance, plant surveillance testing, inservice inspection, and inspections. The program, when enhanced, will be comparable to the program described in NUREG-1801, Section XI.M20, "Open-Cycle Cooling Water System." The enhanced activities provide for management of loss of material, cracking, flow blockage and buildup of deposit (including fouling from biological, corrosion product, and external sources) aging effects in system components exposed to a raw water environment.

The inspectors reviewed the program procedures, interviewed the Generic Letter 89-13 program owner, and performed a comprehensive walkdown of major components served by the essential service water system. The inspectors also reviewed a sample of condition reports and associated condition evaluations.

The inspectors concluded that the service water system reliability program was in place, had been implemented, and included the elements identified in the LRA. When enhanced as described in commitment 8261, there is reasonable assurance that components in the scope of license renewal will be maintained in their desired environment during the period of extended operation.

25. Small Bore Piping (B.1.30)

The small bore piping program is a new program that will be implement prior to the period of extended operation. The program will be comparable to portions of the program described in NUREG-1801, Section XI.M.32, "One-Time Inspection." The small bore piping program is credited for managing cracking of small bore Class 1 piping (<4 inch nominal pipe size), including pipe, fittings, and branch connections, in the reactor coolant system. The small bore piping inspection will involve a one-time volumetric examination of susceptible items in selected locations of Class 1 small bore piping prior to the period of extended operation.

The inspectors reviewed the LR evaluation, performed walkdowns of small bore piping in the lower containment, and discussed the small bore piping one-time inspection with the engineer responsible for the program. The inspectors concluded that, if the small bore piping program is implemented as described in the LRA, there should be

reasonable assurance that the small bore piping program would adequately evaluate aging effects.

26. Structures Monitoring – Structures Monitoring (B.1.32)

The structures monitoring program is an existing program which will be expanded to encompass structures and structural components within the scope of license renewal. This program was developed using the guidance provided in "Implementation of Structures Monitoring Under 10 CFR 50.65" (the Maintenance Rule), which is addressed in NRC Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2, and NUMARC 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2. The program, when enhanced through commitment 8263, to include a number of additional structural components and structures will be consistent with Section XI.S6, "Structures Monitoring Program," of the GALL report.

The inspectors reviewed program documentation, aging management review documents and existing procedures, and confirmed that the licensee had a commitment in place to enhance the program prior to the start of the period of extended operation. The inspectors also interviewed the structures monitoring program owner to determine implementation of particular credited procedures under the program and to determine, in general, how the program would be enhanced to include the additional structures and components specified in the commitment 8263. A specific aspect of the program, ground water intrusion on structural components, was also addressed in greater detail. The inspectors also performed thorough walkdowns of selected structures, systems and components for which aging management reviews were performed. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded that the structures monitoring program as described in the LRA was in place, has been implemented, and included the elements identified in the LRA. When enhanced as described, there is reasonable assurance that passive and long-lived structures will remain functional throughout the period of extended operation.

27. Structures Monitoring – Crane Inspection (B.1.33)

The structures monitoring – crane inspection activities described in this program are new activities, not previously covered in the licensee's program. They will consist of periodic visual inspections during the period of extended operation to manage the effects of general corrosion and wear on the crane, rails and supports. When implemented in accordance with commitment 8264, the program will be comparable to NUREG-1801, Section XI.M23, "Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems," although there will be exceptions to the GALL program.

The inspectors reviewed the LR evaluation, interviewed the structures monitoring (crane inspection) program owner, walked down the new and spent fuel handling crane with maintenance staff, and reviewed the applicant commitment to develop and implement procedures or recurring tasks to: (1) evaluate the effectiveness of the maintenance

monitoring program and the effects of past and future usage on the structural reliability; (2) manage loss of material on the cranes, rails, and supports; (3) verify crane rails and structural components are inspected on a routine basis for loss of material; and (4) verify that significant visual indications of loss of material due to corrosion or wear are evaluated according to applicable industry standards and good industry practice. The inspectors concluded that, if the enhancements were implemented as planned, there should be reasonable assurance that structures monitoring – crane inspections will be performed through the period of extended operation.

28. Structures Monitoring – Divider Barrier Seal Inspection (B.1.34)

The divider barrier seal inspection program is an existing plant specific program credited in the LRA for managing cracking and change in material properties of elastomeric pressure seals for penetrations and openings through the containment divider barrier. These seals limit potential ice condenser bypass leakage subsequent to a postulated pipe rupture or loss of coolant accident. The program detects aging through visual examination of the seals. There is no comparable program in NUREG 1801.

The inspectors reviewed the applicable LR evaluation, interviewed the divider barrier seal inspection program owner, reviewed applicable procedures, walked down a sample of divider barrier seal locations, reviewed seal inspection reports, and reviewed a seal coupon inspection test report.

The inspectors concluded that the divider barrier seal inspection program was in place, had been implemented, was an ongoing program subject to NRC review, and included the elements identified in the LRA. As it is a current applicant program subject to periodic NRC review and inspection, there is reasonable assurance that adequate inspections required by the program will be performed through the period of extended operation.

29. Structures Monitoring – Ice Basket Inspection (B.1.35)

The ice basket inspection program is an existing plant-specific program which does not have a comparable program within the GALL report. The ice basket inspection program provides instructions to verify that ice condenser baskets are free of detrimental structural wear, cracks, corrosion, or any other noticeable damage. The functional integrity of the ice condenser baskets ensures that the ice condenser can perform its intended safety function.

The inspectors reviewed the LR evaluation, performed walkdowns of ice basket structures, and discussed the ice basket inspection program with the engineer responsible for the program. The inspectors concluded that the ice basket inspection program was in place, had been implemented as described, and included the elements as identified in the LRA. The inspectors further concluded that there should be reasonable assurance that the ice basket inspection program would adequately manage the effects of aging.

30. Structures Monitoring – Masonry Wall (B.1.36)

The Masonry Wall Program is an existing program. The objective of the Masonry Wall Program is to manage aging effects so that the evaluation basis established for each masonry wall within the scope of license renewal remains valid through the period of extended operation. Masonry walls are inspected as part of the Structures Monitoring Program conducted for the Maintenance Rule. This program includes a commitment to clearly define the program scope to include masonry block walls identified as performing intended functions in accordance with 10 CFR 54.4. With implementation of commitment 8265, the program will be consistent with NUREG-1801, Section XI.S5, “Masonry Wall Program.”

The inspectors reviewed program documentation, aging management review documents and existing procedures, and confirmed that the licensee had a commitment in place to enhance the program prior to the start of the period of extended operation. The inspectors also interviewed licensee personnel, specifically the masonry wall program owner.

To determine implementation of particular credited procedures under the program and to determine, in general, how the program would be enhanced to include the additional masonry block walls specified in the commitment 8265. The inspectors also performed thorough walkdown of selected areas of the plant, where masonry block walls performing intended functions existed. The inspectors verified that the licensee performed adequate historic reviews of plant specific and industry experience to determine aging effects.

The inspectors concluded that the masonry wall program as described in the LRA will effectively manage aging effects. This program employs visual inspection techniques that have proven effective in the industry at detecting aging effects on masonry walls. With one enhancement to be incorporated prior to the period of extended operation, continued implementation of the masonry wall program will provide reasonable assurance that the effects of aging will continue to be managed such that structures and structural components in the scope of the program will perform their intended functions consistent with the current licensing basis for the period of extended operation.

31. System Testing (B.1.37)

The system testing program is an existing plant-specific program which has no comparable GALL report equivalent. The system testing program encompasses a number of miscellaneous system and component testing activities credited for managing the effects of aging. These activities are typically surveillance activities required by the Technical Specifications or normal monitoring of plant operation. In general, these activities are conducted on a periodic basis (surveillances) or routinely (logs) during plant operation. They are intended to verify the continuing capability of safety-related systems and components to meet established performance requirements.

The inspectors reviewed the LR evaluation, the existing procedures, and confirmed that the licensee had commitments in place for developing a preventative maintenance procedure to inspect the centrifugal charging pumps minimum flow orifices and the

Unit 1 centrifugal charging pumps discharge orifices, and to ensure procedures include inspections of vent and drain valves of the engineered safety features ventilation unit, the fuel handling area exhaust unit, and the control room ventilation unit prior to the start of the period of extended operation. During the license renewal inspection, it was identified that recording letdown flow in the critical parameters log is no longer done as indicated in the LRA and supporting documents. The applicant wrote CR 04310046 to track this deficiency. Upon further investigation the applicant determined that the parameter continues to be recorded by the critical parameters log. The inspectors reviewed the completed CR and found the resolution acceptable.

The inspectors concluded that, if the system testing program is implemented as described in commitment 8266, there should be reasonable assurance that the system testing program would adequately manage the effects of aging.

32. System Walkdown (B.1.38)

The system walkdown program is an existing plant-specific program which does not have a NUREG 1801 equivalent. The applicant planned several enhancements to the program prior to the period of extended operation. This program includes inspections of external surfaces of structures and components within the scope of license renewal. Observations are documented in quarterly walkdown reports. Walkdown reports are reviewed by the system engineering supervisor and included in the system notebooks.

The inspectors reviewed recent system walkdown reports and corrective action documents for the auxiliary feedwater (AFW) and main steam systems. The inspectors also performed walkdowns of these systems and discussed the system walkdown program with the system engineering supervisor and the license renewal staff. In addition, the inspectors reviewed the applicant's comparison of the system walkdown program with a similar program which was approved in the license renewal of the H. B. Robinson plant.

In reviewing the corrective action documents, the inspectors noted that several sections of Unit 2 AFW system piping had been repaired or replaced in October 2004, during the refueling outage. External corrosion of the carbon steel pipes had occurred due to groundwater in-leakage in the essential service water pipe tunnel, where these AFW pipes were located. The inspectors found that the problems with the corrosion were not captured in the past four system walkdowns of the AFW system. The applicant provided additional information that the issue was tracked by the system engineer via the system health program, a much broader program of which the system walkdown program was only a part. The issue was also adequately captured in the corrective action program. As a result of this most recent operating experience, the inspectors determined that the system walkdown program alone did not manage the corrosion of the external surface of this carbon steel piping, but rather a combination of the system health program and the corrective action program were used to manage this aging effect.

The applicant provided a comparison of the system walkdown program with the system monitoring program which had been approved by the NRC in the H. B. Robinson license renewal. The inspectors noted a few important differences between the two programs.

The Robinson program appeared to be comparable to the broader system health program rather than the narrow scope system walkdown program. The Robinson program also provided specific requirements including a requirement to perform a walkdown of the entire system over an operating cycle and specific direction for walkdowns during shutdown conditions to observe system components that were not normally accessible. While the applicant stated that these items were expectations associated with the system walkdown program, the inspectors did not find that they were specified in the system walkdown guidance and had not been previously implemented in this manner.

The inspectors noted that implementation of the current system walkdown program differed from the program described in the LRA. In the LRA, the system walkdown was described as being performed quarterly. In practice, the inspectors found that the documented walkdowns were performed sometimes more frequently and sometimes less frequently than quarterly. Also, the LRA stated that the results were reviewed by the system engineering supervisor. However, for the walkdowns reviewed, no record of the system engineering supervisor review was available. This discrepancy was entered into the corrective action program as CR 04307030. The license renewal staff stated that existing commitment 8267 would address this issue.

As a result of the inspectors' observations regarding the system walkdown program, the applicant identified additional enhancements that will strengthen the program's ability to effectively manage aging. The additional commitments included:

- emphasizing that entire system walkdowns be performed once per refueling cycle;
- emphasizing the accessibility of the system during refueling and maintenance outages;
- ensuring that evidence of corrosion is monitored adequately;
- emphasizing the need to walkdown existing aging concerns and provide feedback to management regarding their condition; and
- extrapolating conditions found in accessible structures and components to inaccessible structures and components.

Based on the improvements to the program anticipated by the enhancements described in the applicant's commitments, the inspectors concluded that the system walkdown program would be effective in managing aging.

### 33. Wall Thinning Monitoring (B.1.39)

The wall thinning monitoring activities described in this program are new activities, not previously covered in the licensee's program. The program is plant specific, and there is no equivalent program in NUREG 1801. They consist of managing loss of material through periodic inspections and non-destructive testing of carbon steel piping and valves in the containment isolation and auxiliary feedwater systems.

The inspectors reviewed the LR evaluation, interviewed the wall thinning monitoring program owner, and reviewed the applicant commitment to develop and implement a wall thinning monitoring program. The inspectors concluded that, if the procedures were

implemented as planned, there should be reasonable assurance that wall thinning monitoring will be performed through the period of extended operation.

34. Water Chemistry Control (B.1.40)

The water chemistry control program consists of three programs: primary and secondary water chemistry control; closed cooling water chemistry control; and auxiliary systems water chemistry control. The primary and secondary water chemistry control program is an existing program. It relies on monitoring and control of water chemistry based on EPRI guidelines which, when enhanced in accordance with commitment 8269, will be consistent with NUREG 1801, Section XI.M2, "Water Chemistry." The closed cooling water chemistry control program is an existing program which, with some exceptions, is consistent with Section XI.M21, "Closed-Cycle Cooling Water System," of the GALL report. It includes preventative measure that manage loss of material (including that due to selective leaching, where applicable), cracking, and fouling, as applicable, for closed cooling water systems components. The auxiliary systems water chemistry control program is an existing plant-specific program which does not have a NUREG 1801 equivalent. The purpose of the auxiliary systems water chemistry control program is to manage loss of material and fouling, as applicable, of components exposed to treated water environments.

The inspectors reviewed the LR evaluation, interviewed personnel responsible for the program, and confirmed that the licensee had commitments in place for revising the program controlling procedures, bringing the parameters monitored/inspected into clear alignment with EPRI water chemistry guidelines, and including sulfate monitoring criteria for the refueling water storage tanks that are consistent with EPRI guidelines and sulfate criteria for other systems impacted by refueling water storage tank chemistry. The inspectors concluded that the water chemistry control program should provide reasonable assurance that water chemistry aging effects would be adequately managed through the period of extended operation.

35. Water Chemistry Control – One-Time Inspection (B.1.41)

The chemistry one-time inspection program is a new program that will be completed prior to the period of extended operation. The program will be comparable to the program described in NUREG-1801, Section XI.M32, "One-Time Inspection," for water chemistry control. Verification of the effectiveness of the chemistry control programs will be undertaken to ensure that aging effects are effectively managed during the period of extended operation. Combinations of NDE methods (including visual, ultrasonic, and surface techniques) will be performed consistent with Section XI of the ASME B&PV Code and 10 CFR Part 50, Appendix B. Follow-up of unacceptable inspection findings may include expansion of the inspection sample size and locations.

The inspectors reviewed the LR evaluation and interviewed personnel responsible for the program. The inspectors concluded that, if the water chemistry control one-time inspection program is implemented as described in commitment 8270, there should be reasonable assurance that the program would adequately evaluate the effects of aging.

36. Environmental Qualification of Electric Components (B.2.1)

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

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

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

D. Review of Open Items from Scoping and Screening Inspection

The inspectors identified three open issues from the scoping and screening inspection performed May 17 - 21, 2004. These issues were reviewed during the current inspection and determined to be adequately resolved. The resolution is discussed below.

1. Condensate Storage System Buried Piping

During the scoping and screening inspection, the inspectors noted that a portion of in-scope piping was partially buried in sand. The aging management review considered an external air environment and not a buried environment. The applicant initiated CR 04141040 to review the issue. The applicant determined that the condition of the piping was temporary and did not reflect a permanent environment, therefore the piping did not need to be considered as buried for the purposes of an aging management review. A work request was completed to remove the soil surrounding the pipe. This open issue is closed.

2. Emergency Core Cooling System Leak Detection Enclosures

The inspectors found that the emergency core cooling system leak detection enclosures were not determined to be within the scope of license renewal, but potentially were credited in the plant's offsite dose calculation. The applicant initiated CR 04142013 to review of the function of the enclosures. The inspectors reviewed the analysis performed in the CR. The leak detection enclosures were not safety-related and were not described in the plant's accident analysis or offsite dose analysis. The inspectors determined that this assessment of the function of the leak detection enclosures was appropriate and that the enclosures were not required to be within the scope of license renewal. This issue is closed.

3. Main Steam System Environment

During a system walkdown, the inspectors found the ambient environment to be very hot and humid. The LRA described the environment as indoor atmospheric air. The applicant's aging management review did not appear to consider the high temperatures and humidity. The applicant initiated CR 04142084 to review this issue. The applicant determined that the indoor atmospheric air did not restrict either temperatures or humidity levels. Therefore the environment was appropriately considered during the aging management review. This issue is closed.

E. Exit Meeting Summary

The results of this inspection were discussed on December 15, 2004, with members of the American Electric Power staff in an exit meeting open for public observation at the American Electric Power Company offices in Buchanan, MI. The applicant acknowledged the inspection results and presented no dissenting comments.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

D. Fadel, Vice President, Engineering  
R. Grumbir, Project Manager, License Renewal Project  
N. Haggerty, Licensing Lead, License Renewal Project  
R. Kalinowski, Technical Lead, License Renewal Project  
C. Lane, Engineering Program Supervisor  
L. Lindquist, License Renewal Project  
J. Newmiller, Regulatory Assurance, Cook Nuclear Plant  
R. Schlichter, License Renewal Project  
T. Woods, Compliance Supervisor, Cook Nuclear Plant

#### Nuclear Regulatory Commission

R. Caniano, Deputy Director, Division of Reactor Safety, Region III (DRS, RIII)  
B. Kemker, Senior Resident Inspector  
A. Stone, Chief, Systems Engineering Branch, DRS, RIII

### **LIST OF DOCUMENTS REVIEWED**

#### Aging Management and Other License Renewal Documents

LRP-CMP-1; Program Component List; Revision 1

LRP-EAMP-01; Evaluation of Aging Management Programs; Revision 2

LRP-MAMR-01; Aging Management Review of the Reactor Coolant System; Revision 2

LRP-MAMR-02; Aging Management Review of the Containment Spray System;  
Revision 1

LRP-MAMR-03; Aging Management Review of the Emergency Core Cooling System;  
Revision 1

LRP-MAMR-04; Aging Management Review of the Containment Equalization/Hydrogen  
Skimmer Systems; Revision 1

LRP-MAMR-05; Aging Management Review of the Containment Penetrations;  
Revision 1

LRP-MAMR-10; Aging Management Review of the Component Cooling Water System;  
Revision 2

LRP-MAMR-11; Aging Management Review of the Emergency Diesel Generator System; Revision 1

LRP-MAMR-12; Aging Management Review of the Heating, Ventilation and Air Conditioning Systems; Revision 2

LRP-MAMR-15; Aging Management Review of the Compressed Air Systems; Revision 1

LRP-MAMR-19; Aging Management Review of the Security Diesel; Revision 1

LRP-MAMR-20; Aging Management Review of the Spent Fuel Pool System; Revision 1

LRP-MAMR-22; Aging Management Review of the Chemical and Volume Control System; Revision 2

LRP-MAMR-30; Aging Management Review of the Main Feedwater System; Revision 0

LRP-MAMR-31; Aging Management Review of the Main Steam System; Revision 1

LRP-MAMR-32; Aging Management Review of the Auxiliary Feedwater System; Revision 1

LRP-MAMR-34; Aging Management Review of the Blowdown System; Revision 1

LRP-MAMR-35; Aging Management Review of Non Safety-Related Systems and Components Affecting Safety-Related Systems; Revision 0

LRP-NGPR-01 attachment B-14; System Walkdown Program Comparison; Draft Revision 0

LRP-SAMR-01; Aging Management Review of Turbine Building and Screen House; Revision 1

LRP-SAMR-02; Aging Management of the Containment Buildings; Revision 2

LRP-SAMR-03; Aging Management Review of the Auxiliary Building; Revision 2

LRP-SAMR-04; Aging Management Review of Yard Structures; Revision 1

LRP-SAMR-05; Aging Management Review of Bulk Commodities; Revision 1

### Commitments

8245; Implement Boric Acid Corrosion Prevention Program Enhancements; Revision 1

8246; Implement Buried Piping Inspection Program; Revision 1

8247; Implement Cast Austenitic Stainless Steel Evaluation Program; Revision 1

8248; Implement Fire Protection Program Enhancements; Revision 1

8249; Implement Fire Water System Program Enhancements; Revision 1

8252; Implement Instrument Air Quality Program Enhancements; Revision 1

8253; Implement Non-EQ Inaccessible Medium Voltage Cable Program; Revision 1

8254; Implement Non-EQ Instrumentation Circuits Test Review Program; Revision 2

8255; Implement Non-EQ Insulated Cables and Connections Program; Revision 1

8257; Implement Preventive Maintenance Program Enhancements; Revision 2

8258; Implement Reactor Vessel Integrity Program Enhancements; Revision 1

8259; Implement Reactor Vessel Internals: Cast Austenitic Stainless Steel Program; Revision 0

8260; Implement Reactor Vessel Internals: Plates, Forgings, Welds, and Bolting Program; Revision 1

8261; Implement Service Water System Reliability Program Enhancements; Revision 1

8263; Implement Structures Monitoring Program Enhancements; Revision 1

8264; Implement Crane Inspection Program Enhancements; Revision 1

8265; Implement Masonry Wall Program Enhancements; Revision 2

8266; Implement System Testing Program Enhancements; Revision 1

8267; Implement System Walkdown Program Enhancements; Revision 1

8268; Implement Wall Thinning Monitoring Program; Revision 0

8269; Implement Primary and Secondary Water Chemistry Control Program Enhancements; Revision 1

8270; Implement Chemistry One-Time Inspection Program; Revision 2

8271; Implement Fatigue Monitoring Program; Revision 1

#### Condition Reports

CR P-98-06836; EQ Program Deficiencies; dated November 12, 1998

CR P-99-05019; Corroded Foundation Bolts on RHR Pump; dated March 9, 1999

CR P-99-07987; ECCS Pump Room Sump Instrumentation Not Classified as Regulatory Guide 1.97 Applicable; dated April 9, 1999

CR P-99-10574; Degraded Oil; dated May 4, 1999

CR P-99-10576; Excessive Water in Recent Outboard Pump Bearing Oil Sample Indicates Leakage Past Mechanical Seal; dated May 4, 1999

CR P-99-10927; Response to Generic Letter 91-17 Appears Inadequate; dated May 5, 1999

CR P-99-12170; Adverse Trend Noted on Finding Water in Cable Conduit; dated May 17, 1999

CR P-99-13143; Poor Housekeeping for Control Room Ventilation System; dated May 24, 1999

CR P-99-19358; U2 ECCS Accumulator Tanks 1 and 2 Surface Pitting; dated July 19, 1999

CR P-99-27605; Water Leaking from Junction Box for Conduit 1-8447R1; dated November 18, 1999

CR 01283012; Tracking CR on Items Found During 2001 IWL Containment Concrete Examinations; dated October 10, 2001

CR 02276064; Items Needing Additional Follow up in Response to Chemistry's First Review of LRP-EAMP-01; dated October 3, 2002

CR 02291038; Revise 10 Year Fuel Oil Storage Tank Cleaning PM to Include Pumping Out Tank Contents and Cleaning Tank as Described under T.S. 4.8.1.1.2.f.1; dated October 18, 2002

CR 02331020; OE14886-Hydrogen Gas Generated by Interaction of Fuel Pool Water with Material in Holtec Multi-Purpose Canister; dated November 27, 2002

CR 03014006; Auxiliary Building and Turbine Building Eroding Away at Intersecting Joint; dated January 14, 2003

CR 03026038; Boric Acid on Floor, Piping, Conduits, Cable Trays, Supports under #4 Accumulator; dated January 26, 2003

CR 03127046; Flow Accelerated Corrosion Component 2-MSD-23-1-1D-9E Has Failed Its Inspection; dated May 7, 2003

CR 03268025; Rusting Auxiliary Feedwater Pipes in Turbine Building Sub Basement Pipe Tunnel; dated September 25, 2003

CR 04140047; 12-THP-6020-CSP-203, Boral Surveillance Program, Does Not Contain Accuracy Values for Coupon Thickness or B-10 Areal Density; dated May 19, 2004

CR 04141040; Buried AFW Piping and Possible New Environment and Material Combination for License Renewal; dated May 21, 2004

CR 04142013; Safety Function of ECCS Leak Detection Enclosures and Associated Pump Compartment Sump Instrumentation for License Renewal; dated May 21 2004

CR 04142084; Address Potential for Recurring Conditions Such as Steam Leaks to Create New Environment and Material Combinations in License Renewal Documents; dated May 21, 2004

CR 04179002; Extensive Paint Peeling on Condensate Storage Tank Supply to the Auxiliary Feedwater Pumps; dated June 27, 2004

CR 04191036; Condensate Storage Tank Supply Pipe to Unit 1 AFW Pumps Paint Is Peeled and Base Metal Is Rusting from Ground Water Dripping from Above; dated July 9, 2004

CR 04208040; 2-GFW-L-825, Material Loss Due to an Aggressive Environment; dated July 26, 2004

CR 04218069; Take Action to Prevent Corrosion of Safety Related Piping in Turbine Building 569' ESW Pipe Tunnel; dated August 5, 2004

CR 04246074; Operating with MSRs Out of Service Invalidates FAC CHECWORKS Model Wear Rate Predictions; dated September 2, 2004

CR 04247023; No Procedures in Place to Assure Integrity Testing Portion of the Oil Spill Prevention, Control and Countermeasure (SPCC) Regulations Are Met; dated September 3, 2004

CR 04259014; OE19074-Heater Drain Tank Recirculation Line Through-wall Leak; dated September 15, 2004

CR 04307030\*; Auxiliary Feedwater System Walkdown Report Not Signed by Supervisor; dated November 2, 2004

CR 04307052\*; Discrepancy in LRA Table 3.4.2-3; dated November 2, 2004

CR 04309025\*; Surface Rust Identified at Valve 2-CCW-135 on Downstream Pipe Flange Weld; dated November 4, 2004

CR 04310046\*; Letdown Flow No Longer Recorded in Critical Parameters Log as Indicated in License Renewal Application; dated November 6, 2004

CR 04321049\*; Risk Level Assigned to EPRI CHECWORKS Software Is Incorrect; dated November 16, 2004

CR 04322022\*; Bolting and Torquing EAMP Did Not Capture All Procedures; dated November 18, 2004

CR 04322048\*; Translation of Commitment # 8254 from LRA Was Not Completely Accurate; dated November 17, 2004

CR 04323072\*; License Renewal Application Incorrect in Regard to FAC Program; dated November 18, 2004

CR 04323076\*; CR 04202072 Evaluation Did Not Correctly Implement EQ Requirements for the Auxiliary Feed Water to Steam Generator Flow Indication Transmitter O-rings; dated November 18, 2004

CR 04324009\*; Consistency Error in LRA Source Document LRP-EAMP-01 Regarding Components In-Scope for an AMP; dated November 19, 2004

CR 04324025\*; Minor Typographical Error in ISI Program Basis Document; dated November 19, 2004

CR 04324046\*; Software Validation Requirements; dated November 19, 2004

CR 04324068\*; Rigor of Non-Safety-Related Walkdowns; dated November 19, 2004

CR 04329020\*; Fuel Oil Tank Cleaning and Inspections; dated November 25, 2004

CR 04341042\*; Trending of Inspection Data for Boral Surveillances; dated December 7, 2004

### Engineering Programs

Calculation 013001-01; FAC System Susceptibility Evaluation, Unit 1 and Unit 2; Revision 1

Containment Inservice Inspection Program Plan; Revision 1

EHI-5300; D. C. Cook Nuclear Power Plant Containment Leak Rate Testing Program (Appendix J); Revision 1

EHI-8913; Program for Implementing Generic Letter 89-13 (Service Water System Reliability); Revision 3; dated September 9, 2003

ENVI-8913; Zebra Mussel Monitoring and Control Program; Revision 3; dated December 5, 2002

ES-CIVIL-0434-QCN; Standard Specification for Structural Steel Class I Applications; Revision 0; dated January 15, 2002

ES-CIVIL-0435-QCN; Erection of Structural Steel; Revision 0, Change 1; dated April 8, 2004

01-OME-150-AB; Unit 1 AB Emergency Diesel Engine Oil Analysis Results from Herguth Laboratories, Inc; sampled August 10, 2004

Preventive Maintenance Optimization; Emergency Diesel Generator Expansion Joints

Program Comparison Document; Instrument Air Quality Program

Program Health Report; Flow Accelerated Corrosion (FAC); 2nd Quarter 2002, 2nd Quarter 2004

Program Comparison Document; Structures Monitoring – Ice Basket Inspection Program

Report NED-2001-034-REP; REP Report; IWL Inspection - Year 2001; Revision 0

Report NET 196-01; Inspection and Testing of BORAL Surveillance Coupon; Revision 0

System Engineering Handbook; Revision 16

Unit 2 Auxiliary Feedwater System Health Report; Second Quarter 2004

Units 1 and 2 Main Steam System Walkdown Report; dated July 28, 2004

Units 1 and 2 Main Steam System Walkdown Report; dated October 6, 2004

Units 1 and 2 Main Steam System Walkdown Report; dated September 16, 2004

Units 1 and 2 Main Steam System Walkdown Report; dated August 25, 2004

Units 1 and 2 Auxiliary Feedwater System Walkdown Report; dated March 29 and 30, 2004

Units 1 and 2 Auxiliary Feedwater System Walkdown Report; dated July 7, 2004

Units 1 and 2 Auxiliary Feedwater System Walkdown Report; dated June 16, 2003

#### Plant Maintenance Job and Work Orders

Facilities Work Order 2275; Unit 1 and 2 RWST Yards; dated August 27, 1984

JO C0036293; Remove Sediment and Clean Tank Internals (Work Request A0119117); dated January 20, 1997

JO C0167577; Correct Valve Seat “Leak By”, 12-WW-170; dated April 25, 2001

JO C0186033; Replace Valves 12-FP-115 and 12-HYD-16; dated November 16, 2001

JO R0018427; Cladding Inspection; dated October 15, 1999

JO R0246502; Unit 2, 295-249-Perform Barrier Seal Inspection; dated April 28, 2004

JO 01036016; Replace Valve 12-WW-171; dated March 30, 2001

JO 01227044; Investigate and Repair Water Seeping Up; dated November 23, 2001

JO 01250070; Replace Underground Well Water Valve; dated September 4, 2002

JO 01330017; Repair Leaking Brazed Fitting to Lake Township Water; dated April 14, 2003

JO 02058038; Replace the U-2 West Charging Pump Rotating Assembly; dated May 15, 2003

JO 02074005; Excavate and Repair Inoperable Valve 12-DR-259; dated September 23, 2002

JO 03119022; 1-DR-CNT612-2, Perform Door Surveillance; dated April 30, 2003

JO 03268025; Repair Groundwater Leakage and Investigate Piping; dated July 23, 2004

WR A0244854; 2-NRI-3, Perform TDR on Cables; dated October 6, 2004

WR 03319123; Investigate Condition of Spool Piece; dated August 29, 2004

#### Preventive Maintenance

PM Task 17-23; Mechanical Preventive Maintenance Task Sheet: New and Spent Fuel Handling Crane, 1 Ton; Revision 2

PM Task 17-19; Mechanical Preventive Maintenance Task Sheet: Containment 250/35 Ton Polar Crane; Revision 3

PMI-5022; Flow Accelerated Corrosion Inspection Program; Revision 2

PMI-5025; Environmental Qualification Program; Revision 7

PMI-5030; Preventive Maintenance; Revision 13; dated December 10, 2001

PMI- 5032; Boric Acid Corrosion Control Program; Revision 0; dated April 18, 2003

PMI-5070; Inservice Inspection; Revision 16

PMP-2220-SCC-001; Cleanliness Inspection Criteria; Revision 10; dated October 30, 2004

PMP-5030-001-003; Preventive Maintenance; Revision 14; dated April 27, 2004

PMP-5030-001-001; Boric Acid Corrosion of Ferritic Steel Components and Materials; Revision 8; dated July 30, 2004

PMP-5030-001-006; Predictive Maintenance Program; Revision 2; dated April 16, 2004

PMP-5030-001-001; Boric Acid Corrosion of Ferritic Steel Components and Materials, Data Sheet 1; completed June 18, 2003

PMP-5035-MRP-001; Maintenance Rule Program Administration; Revision 4

PMP-5046-SCP-001; Software Control; Revision 3

PMP-5070-ISI-002; Inservice Inspection Program Implementation; Revision 2

PMP-7200.RST.004; Expanded System Readiness Review Program System Walkdown Guidelines; Revision 15A

12-THP-6020-CHM-307; Emergency Diesel Fuel Oil, Data Sheet 3; completed March 9, 2004; April 6, 2004; June 1, 2004; and May 4, 2004

RT 6944; Recurring Task: Inspect and Lubricate Fuel Transfer System 1-1/2 Ton Nuclear Fuel Manipulator Crane; dated July 31, 2003

RT 000 24465-01; 2-NRI-31 Perform "TDR" on Cables

RT 6939; Recurring Task: Inspect, Lubricate Polar Crane; dated March 3, 2003

#### Miscellaneous

Drawing 1187E89, Sheets 1 and 2; Ice Condenser Containment, General Arrangement; Revision 1

Letter from D. P. Ritzenthaler to J. D. Grier; RFC 12-4113, Phase III, Replacement of EDG Fuel Oil Storage Tanks, UT Results and Recommendations; dated March 1, 1996

Letter from C. I. Grimes (NRC) to D. J. Walters (NEI); License Renewal Issue 98-0030, Thermal Aging Embrittlement of Cast Austenitic Stainless Steel Components; dated May 19, 2000

Letter from M. W. Rencheck (I&M) to NRC Control Desk; Request for Relief from the Provisions of the ASME Code, Section XI, for Containment Inspections; dated February 20, 2001

Letter from C. M. Craig (NRC) to R. P. Powers (I&M); Safety Evaluation for Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii) for Containment Inspections; dated July 13, 2001

RPA005606; Request for Project Authorization: Repair Unit 1 Containment Exterior Concrete; Revision 0

Safety Classification Determination (SCD) 04-0745-0; Unit 1 and 2 ECCS Leak Detection Enclosures; dated September 3, 2004

Existing Plant Procedures

01-EHP-4030-128-229; Unit 1 Control Room Emergency Ventilation Surveillance; Revision 3

01-EHP-4030-195-249; Containment Divider Barrier Seal Surveillance Test; Revision 1

01-EHP-4030-128-228A; 1-HV-AES-1 Engineered Safety Feature Ventilation Surveillance; Revision 4

01-EHP-4030-128-228B; 1-HV-AES-2 Engineered Safety Features Ventilation Surveillance; Revision 4

01-IHP-4030-166-004; Fire Protection Water System Open Head Deluge Air Flow Tests; Revision 1a

01-IHP-4030-SMP-129; Source Range Nuclear Instrumentation Functional Test and Calibration; Revision 1a

01-MHP-5021-001-009; Torque Selection; Revision 13; dated July 12, 2004

01-MHP-5021-002-005; Unit 1 Steam Generator Primary Manway Cover Removal and Installation; Revision 12; dated September 18, 2003

01-MHP-5021-002-011; Unit 1 Steam Generator Secondary Side Handhole Cover and Recirculation Cover Removal and Reinstallation; Revision 8; dated April 19, 2002

01-OHL-4030-SOM-048; Daily Shift Surveillance Checks; Revision 2

01-OHP-4024-101; Annunciator # 101 Response: Plant Fire System; Revision 9

01-OHP-4030-114-030; Daily and Shiftly Surveillance Checks; Revision 2

02-EHP-4030-228-228A; 2-HV-AES-1 Engineered Safety Feature Ventilation Surveillance; Revision 5

02-EHP-4030-228-228B; 2-HV-AES-2 Engineered Safety Feature Ventilation Surveillance; Revision 4

02-EHP-4030-228-229; Unit 2 Control Room Emergency Ventilation Surveillance; Revision 4-CS6

02-EHP-4030-295-249; Containment Divider Barrier Seal Surveillance Test; Revision 1

02-IHP-4030-SMP-229; Power Range Nuclear Instrumentation Channel Test and Calibration; Revision 1

02-MHP-5021-002-005; Unit 2 Steam Generator Primary Manway Cover Removal and Installation; Revision 3; dated October 17, 2004

02-MHP-5021-002-011; Unit 2 Steam Generator Secondary Side Handhole Cover and Recirculation Cover Removal and Reinstallation; Revision 1, Change 2; dated October 13, 1994

02-OHL-4030-SOM-049; Daily and Shiftly Surveillance Checks; Revision 1

02-OHP-4030-001-002; Containment Inspection Tours; Revision 16; dated July 7, 2004

02-OHP-4030-001-002; Containment Inspection Tours, Data Sheet 5; completed April 4, 2004

02-OHP-4030-214-030; Daily and Shiftly Surveillance Checks; Revision 1

12 PMP 5030.001.005; Essential Service Water System Inspection Program; Revision 0; dated January 19, 1996

12MHP5021.002.015; Steam Generator Secondary Side Manway Covers Removal and Reinstallation; Revision 4; dated May 10, 2000

12MHP-5021-001-092; Pressurizer Safety Valves Removal and Installation; Revision 5; dated September 9, 2003

12-EA-6090-061-251-005; Security Diesel Fuel Oil Storage Tank Leakage Test; Revision 1

12-EHP-4030-128-230; Spent Fuel Pool Exhaust Ventilation System Surveillance; Revision 3a

12-EHP-5022-001-001; Program for Implementing FAC Inspection Program; Revision 1

12-EHP-5030-CAR-001; Characterization Testing Program; Revision 1

12-EHP-5030-OIL-001; Oil Analysis Program; Revision 2a; dated April 15, 2004

12-EHP-5035-SMP-001; Plant Structure Performance Evaluation and Monitoring Program; Revision 3

12-EHP-5035-SMP-001; Plant Structure Performance Evaluation and Monitoring Program; Revision 3

12-EHP-6040-PER-324; Incore Instrument Thimble Tube Multifrequency Eddy Current Inspection, Unit 2; dated March 11, 2002

12-EHP-6040-PER-324; Incore Instrument Thimble Tube Multifrequency Eddy Current Inspection; Revision 3

12-EHP-6040-PER-154; Containment Divider Barrier Survey; Revision 1

12-EHP-6040-PER-324; Incore Instrument Thimble Tube Multifrequency Eddy Current Inspection, Unit 1; dated June 5, 2002

12-IHP-6030-IMP-011; Nuclear Instrumentation Cable and Detector Test and Detector Replacement (Westinghouse Detectors only); Revision 7

12-MHP-4030-066-001; Inspection of Dry Pilot Fire Protection System in Auxiliary and Turbine Buildings; Revision 0

12-MHP-4030-010-007; Ice Condenser Ice Basket Surveillance; Revision 1a

12-MHP-5021-001-201; Structural Bolting; Revision 1; dated March 11, 2004

12-MHP-5021-003-001; Centrifugal Charging Pump Maintenance; Revision 13; dated August 26, 2004

12-MPH-4030-046-002; Upper and Lower Containment Compartments Seal Material Inspection; Revision 0a

12-OHP-4030-STP-039; Security Diesel Generator Operability Test; Revision 2a

12-OHP-5030-001; Operations Plant Tours; Revision 4

12-PPP-4030-066-005; Fire Protection Water System Unobstructed Flow Test; Revision 1

12-PPP-4030-066-023; Test and Inspection of the Plant Fire Hose Standpipe Stations; Revision 1

12-QHP-5050-NDE-008; Ultrasonic Examination for Thickness Measurements; Revision 1c

12-QHP-5070-NDE-005; Visual Examinations: Containment Pressure Retaining Components and Their Integral Attachments; Revision 0a

12-THI-6020-ADM-014; Unit Trip/Shutdown Guide; Revision 0

12-THP-6020-CHM-109; Chemical and Volume Control Tank; Revision 5b

12-THP-6020-CHM-307; Emergency Diesel Fuel Oil; Revision 7d; dated April 5, 2004

12-THP-6020-CHM-205; Steam Generator Sampling; Revision 8a

12-THP-6020-CSP-203; Boral Surveillance Program; Revision 1a

12-THP-6020-CHM-101; Reactor Coolant System; Revision 14e

12-THP-6020-CHM-201; Steam Generator Chemistry Specifications; Revision 15

12-THP-6040-PER-005; Control Air Performance Monitoring; Revision 6-CS2

THI-6020-ADM-001; Quality Control; Revision 1

Self-Assessments

SA-1999A-ENP-016; Containment Leak Rate Testing Program Assessment; dated November 22, 1999

SA-2000-ENP-015; 10 CFR Part 50, Appendix J, Program Self-Assessment, Revision 0; dated December 19, 2000

## LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
ASME	American Society of Mechanical Engineers
B&PV	Boiler and Pressure Vessel
BMI	Bottom Mounted Instrumentation
CASS	Cast Austenitic Stainless Steel
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
DRS	Division of Reactor Safety
EPRI	Electric Power Research Institute
EQ	Environmental Qualification
FAC	Flow-accelerated Corrosion
GALL	Generic Aging Lessons Learned
ISI	Inservice Inspection
LR	License Renewal
LRA	License Renewal Application
NDE	Non-Destructive Examination
non-EQ	Non-Environmentally Qualified
NRR	Office of Nuclear Reactor Regulation
PARS	Publicly Available Records
SSCs	Systems, Structures, and Components