UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

September 10, 2007

Carolina Power & Light Company
ATTN: Mr. Robert J. Duncan II
Vice President - Harris Plant
Shearon Harris Nuclear Power Plant
P. O. Box 165, Mail Code: Zone 1
New Hill, NC 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INSPECTION REPORT 05000400/2007007

Dear Mr. Duncan:

On July 27, 2007, the NRC completed an inspection regarding the application for license renewal for your Shearon Harris reactor facility. The enclosed report documents the inspection results, which were discussed on July 27, 2007, with Mr. C. L. Burton and other members of your staff in an exit meeting open for public observation at the New Horizons Fellowship facility, 820 East Williams St., Apex NC.

The purpose of this inspection was an examination of activities that support the application for a renewed license for the Harris facility. The inspection consisted of a selected examination of procedures and representative records, and interviews with personnel regarding implementation of your aging management programs to support license renewal. For a sample of plant systems, inspectors performed visual examination of accessible portions of the systems to observe any effects of equipment aging.

The inspection concluded that your license renewal activities were generally conducted as described in your License Renewal Application. The inspection also concluded that existing programs to be credited as aging management programs (AMPs) for license renewal are generally functioning well. The applicant had established implementation plans in the plant Action Request system to track the committed future actions for license renewal to ensure they are completed. In walking down plant systems and examining plant equipment, the inspectors found no significant adverse conditions, and it appears plant equipment was being maintained adequately.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (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).

Sincerely,

/RA/

Joseph W. Shea, Director
Division of Reactor Safety

Docket No.: 50-400
License No.: NPF-63

Enclosure: NRC Inspection Report 05000400/2007007
w/Attachments: 1. Supplemental Information
2. Aging Management Programs Selected for Review
3. List of Acronyms Used

cc w/encl:
Paul Fulford, Manager
Performance Evaluation and
Regulatory Affairs PEB 5
Carolina Power & Light Company
Electronic Mail Distribution

Chris L. Burton
Director of Site Operations
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Electronic Mail Distribution

J. Wayne Gurganious
Training Manager-Harris Plant
Progress Energy Carolinas, Inc.
Harris Energy & Environmental Center
Electronic Mail Distribution

Thomas J. Natale, Manager
Support Services
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Electronic Mail Distribution

(cc w/encl cont'd - See page 3)

(cc w/encl cont'd)
David H. Corlett, Supervisor
Licensing/Regulatory Programs
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Electronic Mail Distribution

David T. Conley
Associate General Counsel - Legal Department
Progress Energy Service Company, LLC
Electronic Mail Distribution

John H. O'Neill, Jr.
Shaw, Pittman, Potts & Trowbridge
2300 N. Street, NW
Washington, DC 20037-1128

Beverly Hall, Chief, Radiation
Protection Section
N. C. Department of Environmental
Commerce & Natural Resources
Electronic Mail Distribution

Public Service Commission
State of South Carolina
P. O. Box 11649
Columbia, SC 29211

Chairman of the North Carolina
Utilities Commission
c/o Sam Watson, Staff Attorney
Electronic Mail Distribution

Robert P. Gruber
Executive Director
Public Staff NCUC
4326 Mail Service Center
Raleigh, NC 27699-4326

Herb Council, Chair
Board of County Commissioners
of Wake County
P. O. Box 550
Raleigh, NC 27602

Tommy Emerson, Chair
Board of County Commissioners
of Chatham County
Electronic Mail Distribution

Letter to: Mr. Duncan, Shearon Harris Nuclear Power Plant Dated: 9/10/2007

Distribution w/encl:
M. Vaaler, NRR
RIDSNRRDIRS
PUBLIC

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).

Sincerely,

/RA/
Joseph W. Shea, Director
Division of Reactor Safety

Docket No.: 50-400
License No.: NPF-63

Enclosure: NRC Inspection Report 05000400/2007007
w/Attachments: 1. Supplemental Information
2. Aging Management Programs Selected for Review
3. List of Acronyms Used

cc w/encl:
Paul Fulford, Manager
Performance Evaluation and
Regulatory Affairs PEB 5
Carolina Power & Light Company
Electronic Mail Distribution

Chris L. Burton
Director of Site Operations
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Electronic Mail Distribution

J. Wayne Gurganious
Training Manager-Harris Plant
Progress Energy Carolinas, Inc.
Harris Energy & Environmental Center
Electronic Mail Distribution

Thomas J. Natale, Manager
Support Services
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Electronic Mail Distribution

David H. Corlett, Supervisor
Licensing/Regulatory Programs
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
Electronic Mail Distribution

(cc w/encl cont'd - See page 3)

☐ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☐ NON-SENSITIVE

ADAMS: ☐ Yes ACCESSION NUMBER:_____

OFFICE	RII:DRP	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRP
SIGNATURE	***RA***	***RA***	***RA***	***RA***	***RA***	***RA***	***RA***
NAME	TNazario	RMoore	LLake	BMiller	CJulian	GHopper	RMusser
DATE	08/ 22 /2007	09/ 5 /2007	09/ 6 /2007	08/ 29 /2007	09/ /2007	09/ 6 /2007	09/ 10 /2007
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\FileNet\ML072530894.wpd

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-400
License No:	NPF-63
Report No:	05000400/2007007
Licensee:	Carolina Power and Light Company
Facility:	Shearon Harris Nuclear Power Plant, Unit 1
Location:	5413 Shearon Harris Road New Hill, NC 27562
Dates:	July 9, 2007 through July 27, 2007
Inspectors:	C. Julian, Inspection Team Leader L. Lake, Senior Reactor Inspector B. Miller, Reactor Inspector R. Moore, Senior Reactor Inspector T. Nazario, Reactor Inspector
Approved by:	G. Hopper, Chief Engineering Branch 3 Division of Reactor safety

Enclosure

SUMMARY OF FINDINGS

IR 05000400/2007-007; July 9, 2007 - July 27 2007; Shearon Harris Nuclear Power Plant, Unit 1; License Renewal Inspection Program, Aging Management Programs.

This inspection of License Renewal (LR) activities was performed by five regional office engineering inspectors. The inspection program followed was NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any "findings" as defined in NRC Manual Chapter 0612.

The inspection concluded that LR activities were being conducted as described in the License Renewal Application (LRA). The inspection also concluded that existing programs to be credited as aging management programs (AMPs) for license renewal are generally functioning well.

The applicant had established implementation plans in the plant Action Request system to track the committed future actions for license renewal to ensure they are completed. The inspectors observed a few instances where enhancements could be made to the AMP description documents. The applicant included in the documents several enhancements pointed out by the inspectors.

In walking down plant systems and examining plant equipment the inspectors found no significant adverse conditions and it appears plant equipment was being maintained adequately.

Attachment 1 to this report contains a partial list of persons contacted and a list of documents reviewed. The Aging Management Programs selected for review during this inspection are listed in Attachment 2 to this report. Attachment 3 is a list of acronyms used in this report.

REPORT DETAILS

I. Inspection Scope

This inspection was conducted by NRC Region II inspectors to interview applicant personnel and to examine a sample of documentation which supports the license renewal application (LRA). This inspection reviewed the implementation of the applicant's Aging Management Programs (AMPs). The inspectors reviewed supporting documentation to confirm the accuracy of the LRA conclusions. For a sample of plant systems, inspectors performed visual examination of accessible portions of the systems to observe any effects of equipment aging. Attachment 1 of this report lists the applicant personnel contacted and the documents reviewed. The Aging Management Programs selected for review during this inspection are listed in Attachment 2 to this report. A list of acronyms used in this report is provided in Attachment 3.

II. Findings

A. Visual Observation of Plant Equipment

During this inspection, the inspectors performed walkdown inspections of portions of plant systems, structures, and components (SSCs) to determine their current condition and to observe any effects of equipment aging. Overall the material condition at Harris was good and no significant aging management issues were identified. The following SSCs were observed:

High Head Safety Injection System
Containment Spray System
Component Cooling Water System
Residual Heat Removal System
Diesel Generators and Building
Various Cranes in the Scope of LR
Spent Fuel Pools
Fire Pumps
Containment Building and Auxiliary Building
Service Water Intake Structures
Electrical Transformer Area
Switchyard
Dams and Water Control Structures

Additionally, at the request of NRR, the inspectors reviewed the applicant's screening and scoping analysis for the following non-safety related systems to assess the implementation of 10 CFR 54.4(a)(2):

Service Water Screen Wash system
Non-Essential Chilled Water System
Waste Processing Building Cooling Water system
Turbine Generator Lube Oil System

The review included the applicant's calculation that assessed the system and component applicability to 10 CFR 54.4(a)(2), applicable plant drawings, and visually examining the in-plant configuration to attempt to identify any non-safety related systems located in proximity to safety related systems to assess the implementation of 10 CFR 54.4(a)(2). The inspectors concluded that the applicant had appropriately implemented the criteria of 10 CFR 54.4(a)(2) in identification of in-scope SSCs for these systems.

The inspectors visually examined the Diesel Service Water Pipe Tunnel and identified no potential for spatial interaction between non-safety related and safety related SSCs within the tunnel.

The inspectors visually examined the service water intake structure and the adjacent cooling tower makeup strainer pit and identified no potential for spatial interaction between non-safety and safety related SSCs at this location.

The inspectors reviewed the Security Power System diesel manual, system drawings, and the scoping calculation document and field inspected the system equipment. No components were identified that were incorrectly omitted from the aging management review.

B. Review of Mechanical Aging Management Programs

1. One Time Inspection Program

This is a new program that uses one-time inspections to verify the effectiveness of an aging management program and confirm the absence of an aging effect for the period of extended operations on SSCs identified in the aging management review. This program will verify the effectiveness of the Water Chemistry, Fuel Oil Chemistry, and the Lubrication Analysis Programs. The program inspections will include a combination of Non Destructive Examinations (NDE) by qualified personnel following procedures consistent with ASME Code and 10 CFR 50, Appendix B. The required program elements and general statement of scope are identified in the application, section B.2.18, One-Time Inspection Program. The program scope and methodology are described in calculation HNP-P/LR- 0632, License Renewal Aging Management Program Description of the One -Time Inspection Program, Rev. 2. The SSCs within the scope of the program are identified in the program description. A representative sample of these SSCs will receive one time inspections. The program implementation plan is documented in AR188046-13, One Time Inspection Program Implementation Plan. The plan stated that the sample will be developed and the program completed prior to the period of extended operation. The inspectors reviewed the program description, the implementation plan, the scope identification in the application, and discussed the program development and implementation with the responsible station staff.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained through the period of extended operation.

2. Selective Leaching of Materials Program

This new program will perform one time visual inspections/examinations to determine whether loss of material due to selective leaching is occurring and whether the process will affect the intended function of the SSCs. Evidence of selective leaching will result in expanded sampling as appropriate and engineering evaluation. The program scope will include SSCs of copper alloys with zinc content greater than 15 % and gray cast iron exposed to raw water, treated water, lubricating oil, hydraulic fluid, fuel oil, wetted air/gas or soil environment. The required program elements and general statement of scope are identified in the application, section B.2.19. The implementation plan documented in AR 188046-07, included selection of a sample population, procedure development to define the one-time examination methodology and acceptance criteria, and examinations scheduled to be completed prior to the period of extended operation. The inspectors reviewed the program description, HNP-P/LR-0633, Program Description of the Selective Leaching of Materials Program and the implementation plan, and discussed the program development and implementation with the responsible station staff. The inspectors noted the implementation plan did not include a provision for training the plant staff responsible for performing the visual and qualitative examinations for selective leaching or indicate who was responsible for performing the examinations. The inspectors also noted inconsistent wording between the application appendix B program description and similar description in the program description calculation and the implementation plan related to actions to be taken when evidence of selective leaching was identified. Following the discussion with the applicant on this issue, actions were initiated to revise the program description and implementation plan to address these items.

The inspectors concluded that the applicant conducted adequate historic reviews of plant specific and industry experience information to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operations.

3. Buried Piping and Tanks Inspection Program

This is a new program that will manage the aging effects on the external surfaces of buried carbon steel or cast iron piping. There are no buried tanks included in the scope of this program. Aging effects include loss of material due to general pitting and crevice corrosion and MIC. Aging effects are managed by preventive

measures to mitigate the aging effects, i.e. protective coatings and inspections, and visual inspections for evidence of coating damage or degradation. Buried components will be inspected when they are excavated for any reason. The program requires that at least one buried piping inspection be performed every ten years. A corporate procedure has been developed for implementation of this program, which requires revision to incorporate Harris site specific information. The inspectors reviewed the description of the program in application section B.2.20 and calculation HNP-P/LR-0634 which stated the criteria and methodology for the program activities and identified the SSCs within the scope of this program. Additionally the inspectors reviewed the program implementation plan documented in AR-188046-06 and discussed the program with the assigned responsible staff. The station excavation procedure had been revised to incorporate the license renewal requirements of this program.

The inspectors concluded that the applicant conducted adequate historic reviews of plant specific and industry experience information to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operations.

4. Water Chemistry Program

This is an existing program to mitigate the aging effects on component surfaces that are exposed to water as process fluid by monitoring and controlling water chemistry based on the latest version of Electric Power Research Institute (EPRI) PWR Primary and Secondary Water Chemistry Guidelines. The program includes periodic monitoring, control, and mitigation of known detrimental contaminants below levels known to result in loss of material, cracking and flow blockage. The program is described in Section B.2.2 of the application and calculation HNP-P/LR-0600. The implementation plan is described in AR 1888048-03. There are no enhancements planned for this program. The implementation plan items were to annotate procedures to identify license renewal credited activities. The inspectors reviewed the program documentation, discussed the program with responsible station staff, and reviewed existing procedures which implemented the scope and actions of this program. The inspectors reviewed trending of critical chemistry parameters and reviewed the identification and resolution of conditions in which chemistry parameter limits were exceeded. Additionally, the inspectors reviewed past NRC inspections and applicant self assessments of the water chemistry program.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

5. Fuel Oil Chemistry Program

This is an existing program with planned enhancements, to manage the aging effects of loss of material to fuel oil tanks and piping by minimizing exposure to fuel oil contaminants such as water and microbiological organisms. This is accomplished by verifying the quality of new oil before introduction into the storage tanks; addition of a stabilizer corrosion inhibitor, and biocide; and periodic sampling to assure that the tanks are free of water and particulate. Tanks in the scope of this program include the main fuel oil storage tanks for the emergency diesel (EDG), security diesel, and the diesel driven fire pump (DDFP) as well as the EDG and security diesel day tanks. Enhancements include a one time ultrasonic thickness measurement inspection of the diesel fuel oil storage tank building tank liners, development of work activities to increase sampling and inspection of the security diesel and DDFP fuel oil tanks, establishment of trending for measured parameters and establishment of administrative limits for particulate. Additionally, the enhancements include identification in implementing procedures of activities credited for license renewal. Enhancements are scheduled to be implemented by the beginning of the extended period of operations (10/25/2026). The program is described in Section B.2.16 of the application and calculation HNP-P/LR-0631. The implementation plan for enhancements was described in AR 188047-13. The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. The inspectors reviewed results of previous inspections of fuel oil tanks and procedures and results for fuel oil tank sampling.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented and enhanced, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

6. One Time Inspection of American Society of Mechanical Engineers (ASME) Class 1 Small Bore Piping

This new program will manage the aging effect of cracking due to thermal, mechanical and intergranular stress corrosion via volumetric examinations to identify cracking in ASME Class 1 Small Bore Piping. Small bore piping is less than NPS 4 size. Volumetric examinations for small bore socket welds will not be done. Inspection of small bore piping socket welds will continue to be by VT-2 inspection as is done in the current, 2nd interval, In-service Inspection (ISI) Program Plan. A one time volumetric examination of a sample of small bore butt welds will be performed in lieu of volumetric examination of socket welds. The sample population will be at least 10 percent or based on an NRC approved risk-informed inspection plan. The acceptance criteria stated is that loss of system function will not occur and loss of RCS boundary does not occur during period of

extended operation. The program will be implemented and inspections completed and evaluated within the last five years of the current licensing period, prior to the period of extended operation. The program was described generally in Section B.2.21 of the application and specifically in calculation HNP-P/LR-0610. The calculation identified and prioritized the small bore piping in the scope of this program. The implementation plan was described in AR 188046-09 which identified the specific program elements to be included in the fourth interval ISI Program Plan. The inspectors reviewed the program documentation, discussed the program with responsible applicant personnel, and verified the existing ISI Program Manual identified this new program as an augmented ISI program and a license renewal commitment to be implemented in the fourth ISI interval.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

7. Closed-Cycle Cooling Water (CCCW) System Program

This existing program manages the aging effects of closed cooling water loops with controlled chemistry, such as the Component Cooling Water system, Essential Services Chilled Water, and Jacket Water systems for the EDG, security diesel and the diesel driven fire pump. The program relies on maintenance of corrosion inhibitor concentrations within specified limits. Surveillance testing and inspection in accordance with EPRI report for CCCW systems is performed to evaluate system and component performance. The program is described in Section B.2.11 of the application and calculation HNP-P/LR-0627, License Renewal Aging Management Program Description of the Closed-Cycle Cooling Water System Program. The implementation plan is described in AR188048-06. There are no enhancements planned for this program. The implementation plan included actions to revise existing program implementing procedures to identify license renewal credited activities. The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. Additionally, the inspectors reviewed trend information from the period of 2000 to 2006 which demonstrated that corrosion inhibitor concentrations have been maintained within the specified limits for the treated water provided for EDG jacket water, essential chilled water, DDFP coolant and the reactor building component cooling system.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed.

As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

8. Open-Cycle Cooling Water (OCCW) System Program

This existing program manages the aging effects caused by biofouling, corrosion, erosion and silting on open cooling water systems which includes the Emergency Service Water system and the safety related portion of the Normal Service Water system. The program implements the recommendations of GL 89-13, Service Water System Problems Affecting Safety-Related Equipment. The program is described in Section B.2.10 of the application and calculation HNP-P/LR-0602, Open-Cycle Cooling Water System Program. The implementation plan is described in AR 188048-09. There are no enhancements to this program. The implementation plan included actions to revise the existing station service water program procedure to identify license renewal credited activities. The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. The inspectors reviewed NRC inspections and applicant self assessments of the existing program implementation during the past 10 years. Additionally, the inspectors reviewed the corrective actions for identified equipment degradation.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

9. Boraflex Monitoring Program

This existing program, with enhancements, monitors the aging effects of the Boraflex neutron absorbing material in the spent fuel pools (SFPs) to assure that no unexpected degradation would occur that would compromise the criticality analysis for the spent fuel storage racks. The program relies on periodic inspection, testing and analysis of test coupons and monitoring of silicon levels to assure the required 5 percent subcriticality is maintained. The program is described in Section B.2.12 of the application and calculation HNP-P/LR-0644, Boraflex Monitoring Program. The implementation plan is described in AR188047-06 and includes actions to incorporate program enhancements revising the implementing procedures to provide guidance for performance of more direct measurement of actual boron areal density, gap formation in Boraflex panels and the use of the EPRI RACKLIFE predictive computer code. Currently these parameters are monitored via calculation from coupon testing. The due date for the enhancements was prior to the period of extended operations (10/25/26).

The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. Additionally, the inspectors reviewed a self-assessment of the spent fuel program performed in 2004.

The SFPs at this station store both PWR (Harris and Robinson plant fuel) and BWR (Brunswick plant fuel) fuel assemblies. The storage racks installed during construction were made with Boraflex and credited the Boraflex to maintain a subcriticality margin and did not credit the pool borated water. The racks built during the later SFP construction used Boral. The racks that use Boral rather than Boraflex were not subject to the age related degradation of the Boraflex. The applicant performed a criticality analysis for the PWR storage racks which credited fuel pool borated water and not Boraflex to maintain the required sub-criticality margin and submitted the results to the NRC in Technical Specification amendment request 121 which was approved via a safety evaluation report, dated March 10, 2006. Therefore the PWR spent fuel storage racks are not within the scope of the Boraflex aging management program under the current licensing basis or the extended period of operation. Currently, the applicant is developing a similar criticality review for BWR storage racks but continuing to monitor the BWR racks via the Boraflex monitoring program until adequate sub-criticality margin is verified for BWR storage racks without crediting Boraflex. The BWR criticality analysis and subsequent amendment request are scheduled to be completed at the end of 2008. Until the criticality analysis is complete and the amendment request is approved, the BWR racks will be within the scope of the Boraflex monitoring program under the current licensing basis and the extended period of operation.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, with enhancements, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

10. ASME Section XI, Subsection IWB, IWC, and IWD In-Service Inspection (ISI) Program

The ISI program is an existing program credited in the LRA for managing cracking, loss of preload, loss of material, and reduction of fracture toughness in several systems which require inspections in accordance with ASME Section XI. The program covers selected safety-related systems and components including Reactor Vessel and Internals, Reactor Coolant, Chemical and Volume Control, Safety Injection, Residual Heat Removal and Steam Generators. The ISI program detects degradation of components by using specified volumetric examinations, surface examinations and pressure tests. Because the ASME Code is a consensus document that has been widely used over a long period, it

has been shown to be generally effective in managing aging effects in Class 1, 2, and 3 components and their integral attachments in light-water cooled power plants. The extent and schedule of the inspection and test techniques prescribed by the program are designed to maintain structural integrity and ensure that aging effects will be discovered and repaired before the loss of intended function of the component. Inspection can reveal cracking, loss of material due to corrosion, leakage of coolant and indications of degradation due to wear or stress relaxation, such as verification of clearances, settings, physical displacements, loose or missing parts, debris, wear, erosion, or loss of integrity at bolted or welded connections.

It should be noted that certain inspection requirements have been modified by the HNP Risk Informed Inservice Inspection Program as an alternative to Section XI requirements for Class 1, and Class 2, piping welds. The Risk Informed Inservice Inspection Program was developed in accordance with the methodology contained in the NRC-approved Electric Power Research Institute topical report "Revised Risk - Informed Inservice Inspection Evaluation Procedure, Final Report," TR-112657, Progress Energy letter dated April 27, 2005, as supplemented by Progress Energy letter dated October 21, 2005, which requested from NRC the relief to implement the HNP Risk Informed Inservice Inspection Program. The NRC staff's evaluation and conclusions contained in NRC letter dated March 8, 2006, authorize the HNP Risk Informed Inservice Inspection Program for the remainder of the second 10-year ISI interval at HNP, on the basis that the alternative provides an acceptable level of quality and safety.

The inspectors reviewed the calculations, reviewed applicable procedures including HNP ISI-100, and HNP-ISI-002, that serve as the governing plant procedures that assure compliance with ASME code ISI requirements, the ASME Boiler and Pressure Vessel Code Section XI Repair and Replacement Program, PLP-605, that governs Section XI repair and replacement activities, the ASME Boiler and Pressure Vessel Code Section XI Pressure Test Program, PLP-652, that implements the Section XI pressure testing requirements, and exceptions to code requirements, which are granted by approved relief requests and periodically reviewed in accordance with provisions of 10CFR50.55a. These exceptions (Relief Requests) are not considered exceptions to the NUREG-1801 LR criteria.

The inspectors also reviewed the LR program description calculation, the program implementation plans, the ISI plan, SSC inspection results from the last outage, and discussed the program with plant personnel. HNP self-assessments and audits of the ISI program identified program weaknesses which were captured in the applicant corrective action program. These corrective actions will be monitored during future NRC inspections.

The inspectors concluded that the ISI Program was in place and included elements described in the LRA. The applicant had specifically identified ISI procedures to be credited for LR and for each of the LR required AMPs, the applicant had established implementation plans under NTM Action Request 188048 to ensure that all LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that adequate inspections required by ASME will be performed through the extended period and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

11. Reactor Head Closure Studs Program

The applicant has maintained an ongoing periodically updated existing program for inspection of reactor vessel studs as part of the ISI program. The closure head stud assemblies are inspected under the HNP ISI Program which conforms to ASME Code, Section XI. Table IWB-2500-1 specifies examination requirements for the reactor vessel closure stud for bolting each refueling outage. The applicant has previously inspected the studs and has appropriately scheduled reinspection. In addition, the applicant has implemented controls to assure use of approved lubricants via maintenance procedures.

The inspectors reviewed the LR program description calculation, the program implementation plan, and site procedures, and discussed the program with applicant personnel. The inspectors concluded that the Reactor Head Closure Studs Program was in place, and included elements described in the LRA. The applicant had specifically identified procedures to be credited for LR and had established a tracking mechanism under NTM Action Request 188048-05 to ensure that all LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that adequate inspections required by ASME will be performed through the extended period and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

12. Nickel-Alloy Nozzles and Penetrations Program

The Nickel-Alloy Nozzles and Penetrations Program is a new program credited in the LRA as an aging management program for primary water stress corrosion cracking (PWSCC) in all Nickle-Alloy Reactor coolant System (RCS) components including the Reactor Vessel Head (RVH) and internals. The applicant plans to maintain involvement in ongoing industry initiatives and plans to utilize the ASME Section XI program for evaluation and repair/replacement of components. The applicant has conducted RVH inspections required by NRC Bulletins and required by NRC Order EA-03-009 issued on February 11, 2003. During RFO-11, the RPV head was visually examined to satisfy the requirements of the Order and to provide a baseline for future inspections.

Subsequently, the NRC issued a Revised Order EA-03-009 which revises certain aspects of the original Order. The applicant has not identified leaks through the RVH to date and these activities are subject to on-going NRC inspections.

The Order (as amended) provides criteria for determining a plants susceptibility category ("High", "Moderate", "Low", and "Replaced"). The Harris Plant is in the category of plants considered to be of "low" susceptibility to PWSCC. The susceptibility category was determined in HNP Calculation HNP-M/MECH-1091. This calculation is revised periodically to incorporate actual operating experience. The current revision of the calculation projects the category to remain "low" through operating Cycle 34. Beginning with Cycle 35, the calculation projects the ranking to be "moderate" through Cycle 40 (60-years of operation).

This aging management program directly manages only the aging effect that produces cracking. Although the program includes a requirement to inspect for loss of material, these inspections are performed primarily to identify signs of cracking in the vessel head penetration nozzles. The aging effect of "loss of material" of the RPV head is managed by the HNP Boric Acid Corrosion Program. However the Boric Acid Corrosion Program credits the visual inspection of the RPV head required by the NRC Order to manage the "loss of material" aging effect so that RPV head inspections are not duplicated. In order to implement the requirements of the NRC Order (as amended), an augmented program was added to HNP-ISI- 002, HNP ISI Program Plan for the 2nd Interval. The HNP Inservice Inspection Program is administratively controlled by HNP procedure ISI- 100, Inservice Inspection Program. One of the purposes of ISI-100 is to identify the augmented inspection programs to which HNP is committed. The current revision to ISI-100 does not identify the augmented inspection programs required by NRC Order EA-03-009 (as amended) therefore a program enhancement has been identified and is tracked in NTM Action Request 188047.

The inspectors reviewed the LR program description calculation, the program implementation plan, the applicant NRC Bulletin responses and responses to NRC Order EA-03-009 which included inspection results, and held discussions with applicant personnel responsible for the inspections. The applicant has identified that the Nickel-Alloy Nozzles and Penetrations Program will be enhanced to reflect current industry experience and specifically identified procedures to be credited for LR. There is an established tracking mechanism under NTM Action Request 188047-12 to ensure that all LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that adequate inspections required by NRC Order EA-03-009 will be performed through the extended period and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

13. Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program

The CASS program, as an aging management program, monitors for the effects of reduction in fracture toughness due to thermal embrittlement of CASS components within Class 1 boundaries. Although the synergistic effects from thermal aging and neutron irradiation embrittlement have not yet been defined by industry data, these effects will be considered and incorporated into the program as data becomes available. The applicant's program involves inspections and/or evaluations and does not provide guidance for mitigation of aging effects. The program will be periodically updated to incorporate new industry knowledge.

For the components within the scope of this program, the program consists of either supplemental examination of the affected component based on the neutron fluence to which the component has been exposed, or component specific evaluation to determine the component's susceptibility to loss of fracture toughness. The program will implement a supplemental examination as part of the ISI Program during the period of extended operation. This program will be identified as an "augmented inspection" in HNP procedure ISI-100, "Control of the Inservice Inspection and Testing Activities". This program manages aging effects for CASS reactor internals components. Specifically, the components within the scope of this program include the bottom mounted instrumentation column cruciforms and the upper support column spiders. The augmented inspections will be performed along with visual inspections of the core support structure already required by ASME Code Section XI. The program also allows for a component-specific evaluation to determine the component's susceptibility to "loss of fracture toughness" using the methodology outline in the NUREG-1801 program elements. Using this methodology, if it can be determined that the component is not susceptible to loss of fracture toughness, then the supplemental examination is not necessary. In order to determine susceptibility to thermal aging, the evaluation must consider the screening criteria described in the May 19, 2000 NRC letter on the subject of thermal aging embrittlement of CASS components. The applicant's analyses have shown that no additional inspections are warranted for piping, fittings, and valves and that the ongoing surface inspections for reactor coolant pump casings performed under the ISI program are sufficient.

The inspectors reviewed the LR program description calculation, the program implementation plan, a vendor analysis of CASS components, and held discussions with applicant personnel. The inspectors concluded that the CASS components and piping have been appropriately evaluated for adequacy of ongoing inspections which provides reasonable assurance that CASS materials will be appropriately monitored. There is an established tracking mechanism under NTM Action Request 188046-11 to ensure that all LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that adequate inspections and evaluations required by ASME will be performed through the extended period and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

14. Reactor Vessel Surveillance Program

The Reactor Vessel (RV) Surveillance Program is an existing program credited in the LRA as an aging management program for managing reactor vessel irradiation embrittlement. The applicant's program consists of periodic testing of RV surveillance capsules and updating of calculations for irradiation embrittlement. The applicant also imposes temperature/pressure limits on plant operations. The applicant has recently recalculated the projected degree of reduction of Upper Shelf Energy and Pressurized Thermal Shock Reference Temperature, confirming that all requirements will continue to be met for the 60 year proposed license period.

The inspectors reviewed the LR program description calculation, the program implementation plan, site procedures, and capsule test results. In addition, the inspectors held a discussion of the program with responsible applicant personnel. The inspectors concluded that the Reactor Vessel Surveillance Program was in place, had been implemented, and was consistent with the description presented in the LRA. Historic reviews to determine aging effects had been conducted, and adequate guidance had been provided to reasonably ensure that aging effects of irradiation embrittlement of the RV will be appropriately managed. There is an established tracking mechanism under NTM Action Request No.188047-08 to ensure that all LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that the required testing and evaluations will be performed through the extended period and there is reasonable assurance that the intended function of the RV will be maintained through the period of extended operation.

15. Flux Thimble Tube Inspection Program

This program is an existing program which assures periodic inspections in response to NRC Bulletin 88-09, Thimble Tube Thinning in Westinghouse Reactors. The program manages loss of material on the bottom mounted flux thimble tubes due to wear. As required by NRC Bulletin 88-09, the applicant has established and implemented an inspection program to periodically confirm thimble tube integrity and to perform any corrective measures necessary to maintain thimble tube integrity within the program acceptance criteria. This program is formally implemented by Engineering Test Procedure EPT-114, Eddy Current Testing Requirements for the Incore Instrumentation Thimbles. The HNP program consists of testing and inspection that monitor flux thimble tube wall thickness using eddy current testing to determine actual wall thickness and calculates the predicted wear of each thimble at the next scheduled inspection. This is an ongoing program which will continue into the period of extended operation.

The inspectors reviewed the LR program description calculation, the program implementation plan, reviewed the applicable plant procedures, reviewed the latest inspection results, and held discussions with responsible applicant personnel. The inspectors concluded that the Flux Thimble Tube Inspection

Program was in place, had been properly implemented, and was consistent with the description in the LRA. There is an established tracking mechanism under NTM Action Request No. 188047-04 to ensure that all enhancements and LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that the required testing and evaluations will be performed through the extended period and there is reasonable assurance that the intended function of the flux thimbles will be maintained through the period of extended operation.

16. ASME Section XI, Subsection IWE Program

This is an existing program credited in the LRA for monitoring aging of the reactor containment which includes visual examination of the steel containment liner and integral attachments, containment hatches and airlocks, seals, gaskets, and moisture barriers, and pressure-retaining bolting in accordance with ASME Section XI. The frequency and scope of examinations specified in 10 CFR 50.55a and Subsection IWE ensure that aging effects would be detected before they would compromise the design basis requirements. Progress Energy corporate procedure EGR-NGGC-0015, “Containment Inspection Program,” and HNP procedures EST-924, “ASME Section XI Subsection IWE General Visual Inspection,” and HNP IWE/IWL- 001, “First Containment Inspection Interval Containment Inspection Program, “ serve as the governing plant procedures that assure compliance with ASME Section XI requirements. As an alternative to certain Section XI requirements, HNP intends to incorporate the requirements identified in ASME Code Case N-604.

10CFR50a(b)(2)(ix) specifies additional requirements for inaccessible areas and states that the licensee is to evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas. HNP once previously identified liner corrosion at the interface between the base slab and the liner and liner corrosion below the base slab. Corrective actions included removal of the moisture barrier, removal of corrosion, UT measurement to ensure design minimum thickness, recoating, and replacement of the moisture barrier. HNP conducted visual and ultrasonic inspections just below the moisture barrier seal for wear, corrosion, damage, surface cracks, or other defects that may violate the leak-tight integrity and determined the condition of the inaccessible portion of the containment liner below the moisture barrier to be acceptable for continued service. No corrosion was identified during follow-up inspections in subsequent plant outages. The inspectors reviewed these evaluations and found them to be acceptable.

The inspectors reviewed the LR program description calculation, the program implementation plan, reviewed the applicable plant procedures, reviewed recent inspection results, and held discussions with responsible applicant personnel. The inspectors concluded that the IWE Inspection Program was in place, had been properly implemented, and was consistent with the description in the LRA. There is an established tracking mechanism under NTM Action Request 188047-

16 to ensure that all enhancements and LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that the required inspections and evaluations will be performed through the extended period and there is reasonable assurance that the intended function of the reactor containment will be maintained through the period of extended operation.

17. ASME Section XI, Subsection IWL Program

This program is an existing program credited in the LRA for aging management of accessible and inaccessible pressure retaining primary containment concrete by performing inspections required by ASME Section XI. The program is in accordance with ASME Code, Section XI, Subsection IWL, 1992 Edition, 1992 Addenda and consists of periodic visual inspection of the reinforced concrete containment structure for degradation conditions such as corrosion, cracks, distortion, efflorescence, exposed reinforcing steel, popout, scaling, and spalling. The frequency and scope of examination of accessible areas are sufficient to ensure that aging effects are detected before the design basis requirements would be compromised. The HNP concrete containment does not utilize a post-tensioning system; therefore, the IWL requirements associated with a post-tensioning system are not applicable.

The ASME Section XI, Subsection IWL Program is implemented and maintained in accordance with the general requirements for engineering programs including HNP IWE/IWL-001. The first concrete examination or baseline was performed during the first inspection period (09/09/98 to 09/08/01) in the first containment inspection interval. HNP will perform successive examinations of concrete components classified as Class CC at least once every five years based on the date of the baseline inspection. The implementation schedule for the performance of examinations has been prepared and is shown in HNP IWE/IWL-001.

Plant-specific operating experience (OE) includes assessments, performed on both a plant specific and corporate basis, dealing with program development, effectiveness, and implementation. The HNP ASME Section XI, Subsection IWL program is continually being upgraded based upon industry and plant-specific experience. Additionally, plant OE is shared between Progress Energy sites through regular peer group meetings, a common corporate sponsor, and outage participation of program managers from other Progress Energy sites.

The inspectors reviewed the LR program description calculation, the program implementation plan, reviewed the applicable plant procedures, reviewed recent inspection results, and held discussions with responsible applicant personnel. The inspectors concluded that the IWL Inspection Program was in place, had been properly implemented, and was consistent with the description in the LRA. There is an established tracking mechanism under NTM Action Request 188048-04 to ensure that all enhancements and LR future actions are tracked and completed.

When implemented as described, there is reasonable assurance that the required inspections and evaluations will be performed and there is reasonable assurance that the intended function of the reactor containment will be maintained through the period of extended operation.

18. ASME Section XI, Subsection IWF Program

This program is an existing program credited in the LRA for aging management of nuclear component hangers, snubbers and supports by conducting inspections required by ASME Section XI and is part of the overall ISI program at HNP described in procedure ISI-002, HNP ISI Program Plan – 2nd Interval. As an acceptable alternative to parts of article IWF of Section XI, HNP incorporates Code Case N-491-2. The applicable code for snubber attachments and fasteners is the ASME OM Code, Subsection ISTD, 1995 Edition with 1996 Addenda and Code Case OMN-13.

The ASME Section XI, Subsection IWF Program is implemented and maintained in accordance with the general requirements for engineering programs described in procedure ISI-100, Control of Inservice Inspection and Testing Activities. Component supports, snubber attachments and fasteners are inspected in accordance with procedure ISI-202, Safety Related Component Support (Hangers and Snubbers) Examination and Testing Program, and hydraulic and mechanical snubber attachments and fasteners are inspected in accordance with procedure PLP-106, Technical Specification Equipment List Program and Core Operating Limits Report. The parameters monitored or inspected include: 1. Deformations or structural degradations of fasteners, springs, clamps, or other support items; 2. Missing, detached, or loosened support items; 3. Arc strikes, weld splatter, paint scoring, roughness, or general corrosion on close tolerance machined or sliding surfaces; 4. Improper hot or cold settings of spring supports and constant load supports; 5. Misalignment of supports; 6. Improper clearances of guides and stops. The visual inspection would be expected to identify relatively large cracks.

Plant-specific OE includes assessments, performed on both a plant specific and corporate basis, dealing with program development, effectiveness, and implementation. Additionally, plant OE is shared between Progress Energy sites.

The inspectors reviewed the LR program description calculation, the program implementation plan, reviewed the applicable plant procedures, reviewed recent inspection results, and held discussions with responsible applicant personnel. The inspectors concluded that the IWF Inspection Program was in place, had been properly implemented, and was consistent with the description in the LRA. There is an established tracking mechanism under NTM Action Request No.188048-07 to ensure that all enhancements and LR future actions are tracked and completed. When implemented as described, there is reasonable assurance that the required inspections and evaluations will be performed and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

19. Flow Accelerated Corrosion (FAC) Program

The FAC program, as described in Section B.2.7 of the LRA, is an existing program that provides for the prediction, detection, and monitoring of FAC in plant piping so that the probability of a leak or rupture is minimized. This program contains one enhancement to provide a consolidated exclusion bases document (a FAC susceptibility analysis). The inspectors found that this enhancement has already been completed. The FAC program is based on the EPRI guideline NSAC-202L-R2, which includes requirements for the identification of locations susceptible to FAC, baseline inspections to determine the extent of thinning, and performing follow-up inspections for trending wall loss and corrosion rates. This empirical data, along with plant and industry operating experience, is used to predict when the minimum wall thickness will be reached so that proper repair or replacement activities can be performed prior to leak or rupture. Additionally, the Secondary Chemistry Strategic Plan is credited toward this program for limiting the effects of aging due to FAC.

The inspectors reviewed the implementation plan, program description, a recent self-assessment, and held discussions with licensee personnel. The program coordinator tracks equipment and piping projected to need replacement up to 15-20 years into the future to ensure proper planning activities can be performed. Additionally, industry operating experience is continuously evaluated and appropriately incorporated into the program. The inspectors concluded that there is reasonable assurance this program will effectively manage the aging effects due to FAC during the period of extended operation.

20. Bolting Integrity Program

The Bolting Integrity Program, as described in Section B.2.8 of the LRA, is an existing program that has one enhancement and one exception with respect to the Generic Aging Lessons Learned (GALL) report (NUREG-1801). The exception involves the licensee's use of their site-specific ASME Section XI Code Edition rather than the Edition specified in NUREG-1801. This appropriately ensures the licensee maintains compliance with 10 CFR 50.55a. The enhancement includes a change to procedure MMM-010, "Threaded Fastener Tightening Procedure," to prohibit the use of molybdenum disulfide lubricants since NUREG-1339 identifies it as a potential contributor to stress corrosion cracking.

The inspectors reviewed the program description, implementation plan, and held discussions with licensee personnel. This program includes bolting within the scope of license renewal and relies on recommendations delineated in NUREG-1339, "Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants." This program consists of essentially two components: bolting inspection and bolting maintenance. The former component takes credit for the inspections performed under ASME Section XI Subsections IWB, IWC, and IWD as part of the Inservice Inspection Program, and also for inspections performed under the External Surfaces Monitoring Program. ASME Section XI,

Subsection IWF does not apply to this program since no high strength structural bolting was identified during the licensee's Aging Management Review process. The latter component (bolting maintenance) utilizes standard industry guidance documents from EPRI to manage maintenance and installation activities. This guidance has been incorporated into site procedures. The inspectors concluded that the Bolting Integrity Program is a functioning program, includes elements described in the LRA, and there is reasonable assurance that it will effectively manage the effects of aging during the period of extended operation.

21. Steam Generator Tube Integrity Program

The Steam Generator Tube Integrity Program, as described in Section B.2.9 of the LRA, is an existing program that is credited for the aging management of tubes, tube plugs, tube supports, and secondary-side components whose failure could prevent the steam generator from fulfilling its intended safety function. The inspectors reviewed HNP-P/LR-0604, the license renewal program description for ensuring steam generator tube integrity. One enhancement was made to the program in order to be consistent with the GALL (NUREG-1801). This change was to enhance the wording in the program document to specifically state that degraded tube plugs and secondary side components are evaluated for corrective actions. The inspectors verified that this change was made in procedure EGR-NGGC-0208, Steam Generator Integrity Program.

The licensee had submitted a request which was approved by the NRC for a change to the Technical Specifications in accordance with TSTF-449, Revision 4. The NRC approval letter was reviewed by the inspectors. These new Technical Specifications require implementation of a steam generator program in accordance with the intent of NEI 97-06, Revision 2. The licensee's current program has already been implementing the guidance of NEI 97-06. This program includes requirements for inspection, assessment, monitoring, maintenance and repair activities performed in accordance with appropriate industry standards (i.e., EPRI guidance documents). The inspectors held discussions with the steam generator program coordinator and reviewed program activities and found that the program was being implemented in accordance with its description. Additionally, the NRC concluded by letter dated May 19, 2005 (regarding Generic Letter 2004-01), that the licensee's SG tube inspection practices were in compliance with existing tube inspection requirements. The inspectors concluded that the existing Steam Generator Tube Integrity Program is being effectively implemented, includes the elements described in the LRA, and there is reasonable assurance that this program will effectively manage the effects of aging during the period of extended operation.

22. Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program

This program, as described in Section B.2.24 of the LRA, is a new program consistent with the GALL (NUREG-1801). This program involves the visual inspection for evidence of degradation on internal surfaces of piping, piping

elements, ducting, and components not within the scope of other aging management programs. Such degradation may include a change in material properties, cracking, flow blockage, loss of material, or reduction of heat transfer. This inspection program will be accomplished, in large part, using existing predictive maintenance, preventive maintenance, surveillance testing, and periodic testing activities that provide an opportunity to perform an internal surface visual inspection.

The licensee has begun development of this new program by identifying the piping and components within the scope of this program and has categorized these items into different Component Groups based on the item's material, environment, and aging mechanism. Within each Component Group, the licensee will select a sample for inspection that will be representative of the most susceptible location(s) and therefore bound the entire Group. For inspections required by this program that can not be accomplished in accordance with existing work order tasks (e.g. preventive maintenance or surveillance testing activities), the first such inspection will be conducted before the period of extended operation. The results of these inspections will be evaluated to determine future inspection intervals. If evidence of degradation is found, the condition will be addressed through the corrective action process.

Since this is a new program, it has not yet been fully developed. Specifically, the sample size and specific methodology for sample selection within each Component Group has not been fully determined. However, when this program is implemented as conceptually developed and intended, there is reasonable assurance that it will effectively manage the effects of aging within the scope of the program.

23. Lubricating Oil Analysis Program

The Lubricating Oil Analysis Program, described in Section B.2.25 of the LRA, is an existing program that will be enhanced to formalize additional requirements in program documents/procedures. These requirements include oil analysis for particle count and moisture, and additional analyses for viscosity, neutralization number, and flash point if oil is not changed in accordance with the component manufacturer's recommendations. Additionally, when particle counts are high, procedures will require ferrography or elemental analysis to identify wear or corrosion products. These requirements are currently performed in the existing program, however, they have not been formally included in program documents.

The Lubricating Oil Analysis Program does not have specific particle count thresholds for acceptance criteria of oil analysis results. The program relies on the Lubricating Oil Program Engineer and the oil sample technologists to review all analysis parameters to identify trends or signs of equipment problems. The inspectors reviewed the database maintained for tracking and trending oil sample results. The program engineer is required to complete specific lube oil training requirements to ensure he/she possesses the technical knowledge to identify adverse trends or equipment problems based on these oil analyses. The

inspectors verified the training record for the current program engineer. Additionally, the inspectors reviewed the most recent calibration certification for the oil particulate counter instrument. A sample of corrective action documents were also reviewed to ensure that appropriate actions were taken in response to adverse trends in oil sample results. A review of plant operating experience did not identify any equipment failures due to lube oil contamination.

Based upon review of this aging management program, supporting documents, and discussions with licensee personnel, there is reasonable assurance that the Lubricating Oil Analysis Program will effectively manage plant aging issues within the scope of this program during the period of extended operation.

24. Fire Protection Program

The HNP Fire Protection Program is an existing program that provides aging management of the diesel-driven fire pump fuel oil supply line and credited fire barrier assemblies including fire doors, penetration seals, fire wrap, barrier walls, barrier ceilings and floors, and seismic joint filler. The program is implemented through various plant procedures. The inspectors reviewed Calculation HNP-P/LR-0612, Rev. 1 License Renewal Aging Management Program Description of the Fire Protection Program. The document states that the HNP Fire Protection Program with certain enhancements will be consistent with NUREG-1801, Section XI.M26. The procedure for periodic inspections of penetration seals will be enhanced to include inspections for signs of degradation. The program will include a periodic test procedure for inspections of barrier walls, ceilings, and floors on at least an 18-month interval. The enhanced procedure will specify that if any fire barrier wall, ceiling or floor fails to meet the acceptance criteria, the Unit Senior Control Operator shall be immediately notified and if the fire barrier cannot be returned to an operable status within 1 hour, mitigating actions shall be implemented. Also the monthly operability test procedure for the diesel-driven fire pump will be enhanced to include a visual inspection of the insulated fuel oil supply piping for signs of leakage. Additionally the enhanced procedures will include minimum qualification requirements for inspectors. The inspectors reviewed Action Request (AR) 1888047-20, Action Plan - Fire Protection Program Implementation Plan, which tracks the commitments to perform these future procedure enhancements.

As operating experience history, the inspectors reviewed numerous applicant Nuclear Assurance Section (NAS) assessments dating back to 1999. These were critical assessments and records show that corrective actions were taken where appropriate. The inspectors reviewed a sample of the quarterly system health reports. The inspectors reviewed the open AR that documents the failure of HEMYC fire wrap to fully meet performance criteria during NRC sponsored testing and the future action plan to perform further testing to demonstrate adequate HEMYC performance. The NRC has previously been presented the applicants action plan for resolving these issues and found them satisfactory.

The inspectors examined the records of a sample of various fire protection equipment periodic surveillance tests. The records were retrievable and reflect that equipment passed the tests or corrective actions were taken and a successful retest performed. The inspectors concluded that the fire protection program is functioning as intended.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

25. Fire Water System Program

The Fire Water System Program includes system pressure monitoring, fire protection piping wall thickness evaluations, periodic flow and pressure testing in accordance with applicable National Fire Protection Association commitments and periodic visual inspection of overall system condition. The inspectors reviewed Calculation HNP-P/LR-0611, Rev 1, License Renewal Aging Management Program Description of the Fire Water System Program. The document states that this is an existing program that, following enhancement, will be consistent with NUREG-1801, Section XI.M27. Enhancements include revising the program to incorporate a requirement to perform non-intrusive baseline pipe thickness measurements at various locations, prior to the expiration of current license and trending periodic measurements through the period of extended operation. The inspection intervals will be determined by engineering evaluations performed after each inspection of the fire protection piping, to detect degradation prior to the loss of the system capability. Also the applicant will either replace the sprinkler heads prior to reaching their 50 year service life, or revise site procedures to perform field service testing by a recognized testing laboratory of representative samples from one or more sample areas. The inspectors reviewed AR NTM - 1888047-17, Fire Water System Program Implementation Plan, which tracks the commitments to perform these future procedure enhancements.

The inspectors reviewed a sample of the system health reports for the Fire Water system. The reports reflected adequate system performance with no piping leaks indicating degradation.

The inspectors examined the trending data records of the fire water system periodic surveillance flow tests since 1999. The records reflect that equipment passed the tests and shows no signs of degrading. The inspectors concluded that the fire water system program is functioning as intended.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be

appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

26. Boric Acid Corrosion Program

This is an existing program to ensure that leaking borated coolant does not lead to the degradation of the leakage source or adjacent mechanical, electrical and structural components susceptible to boric acid corrosion. This includes visual inspection of external surfaces and implementing appropriate corrective actions. The program is described in Section B.2.4 of the LRA and calculation HNP-P/LR-0601. The implementation plan is described in AR 188048-01. The inspectors reviewed the program documentation, discussed the program with responsible station staff, reviewed self-assessments, and reviewed existing procedures which implemented the scope and actions of this program. Additionally, the inspectors reviewed several samples of evaluation reports and action report documents. The inspectors also reviewed NRC inspection report 05000400/2006003 which documents the most recent boric acid corrosion program inspection conducted at the site. This report documented samples of engineering evaluations completed for evidence of boric acid found on systems containing borated water to verify that the minimum design code required section thickness had been maintained for the affected components. The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

27. External Surfaces Monitoring Program

This existing program with enhancements is a condition monitoring program for piping, piping components, ducting, and other equipment. The program is described in Section B.2.22 of the application and calculation HNP-P/LR-0614. The implementation plan is described in AR 188047-11. The inspectors reviewed the program documentation, discussed the program with responsible applicant personnel, and reviewed existing procedures which implemented the scope and actions of this program. The program will be enhanced to include a specific list of systems to be managed by the program which will be added to the program document. Other enhancements will include the incorporation of a checklist for evaluating inspection findings and the commitment to perform inspections of inaccessible components during intervals that will provide reasonable assurance that the effects of aging will be managed. During the inspection, the inspectors noted that the proposed changes to this program did not clearly specify the periodicity at which the inaccessible components would be inspected or the method by which they would be inspected. As a result, the licensee proposed to revise procedure TMM-117, System Walkdowns and Observations to clearly define inaccessible components and specify periodicity of walkdowns.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

28. Inspection of Overhead Heavy Load and Light Load Handling Systems Program

The HNP Inspection of Overhead Heavy Load and Light Load Handling Systems Program is described in LRA section B.2.13 and calculation HNP-P/LR-0628. The program is an existing program that will be enhanced. The implementation plan is described in AR 188047-09. The inspectors reviewed crane inspection records, procedures and work orders. The inspectors also verified that issues pertaining to aging management were appropriately addressed such as those identified during inspections of the cranes. For license renewal, the following cranes were identified as being within the scope of license renewal: polar crane, reactor cavity manipulator crane, jib cranes, and the fuel handling building cranes. The applicant plans to include requirements to inspect for bent or damaged members, loose bolts/components, broken welds, abnormal wear of rails, and corrosion of steel members and connections to ensure that aging effects are monitored and managed.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

29. Structures Monitoring Program

The Structures Monitoring Program (SMP) is an existing program which the applicant plans to enhance for LR. The program is described in Section B.2.31 of the LRA and calculation HNP-P/LR-0608. The implementation plan is described in AR 188047-07. Some of the enhancements include identifying the complete list of systems and structures that credit the SMP for aging management, requiring notification of the responsible engineer when below-grade concrete is exposed, requiring periodic ground water monitoring, and requiring periodic inspection of inaccessible surfaces of concrete pipe. The applicant's existing program consists of periodic inspections and monitoring of accessible areas of structures. The SMP, specifically procedure CMP-012, Plant Area Excavation and Backfill, will be enhanced to notify the responsible engineer when below grade concrete is exposed, so an inspection can be performed prior to backfill.

The inspectors reviewed AMP description documents for the SMP, selected plant inspection data, engineering documents, site procedures, drawings, corrective action documents, inspection reports and procedure EGR-NGGC-0351, "Condition Monitoring of Structures," which provides the guidance and periodicity required to manage the effects of aging. The inspectors also discussed the applicable programs with responsible personnel and reviewed personnel qualifications.

The inspectors conducted general walkdowns of the site, including the reactor building, auxiliary building, service water intake structure, diesel generator building, and other applicable structures, systems or components related to the SMP. The inspectors verified that areas where signs of degradation such as spalling, cracking, leakage through concrete walls, corrosion of steel members, deterioration of structural materials and other aging effects had been previously identified were addressed adequately by the SMP and/or the corrective action program. The applicant maintains comprehensive inspection reports containing photographic and written documentation of areas inspected, thus facilitating adequate monitoring of structural commodities and components.

During a review of inspection records, the inspectors noted a minor issue that during a past performance of procedure EPT-168, Emergency Service Water Intake and Screening Structures Inspection for the emergency service water screening structure bay 8, an area of spalled concrete was not appropriately dispositioned. The size of the spalled concrete area met the criteria to require additional engineering review. In accordance with EGR-NGGC-0351, a responsible engineer should have reviewed the dimensions of the spalled area identified by the diver during inspection. The applicant initiated AR 0024040 to address this issue.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is a reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

30. RG 1.127- Inspection of Water-Control Structures Associated with Nuclear Power Plants Program

The Water-Control Structures Program includes inspection and surveillance activities for dams, slopes, canals, and other water-control structures. This program is described in Section B.2.32 of the LRA and calculation HNP-P/LR-0638. The implementation plan is described in AR 188047-10. The program will be enhanced to include administrative controls to document visual inspections of the miscellaneous steel at the main dam and spill way, and revised to require an evaluation of concrete deficiencies. In addition, the applicant plans to require the initiation of a nuclear condition report for degraded plant conditions. The inspectors conducted walkdowns of the Emergency Service Water Intake

Structure, Emergency Service Water Screening Structure, Emergency Service Water Discharge Structure, the Main and Auxiliary Dams, and Spillways. There were no signs of abnormal seepage, erosion, unusual settlement or displacement of the areas inspected.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is a reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

31. Masonry Wall Program

The Masonry Wall Program is an existing program implemented through the Maintenance Rule structures monitoring procedure EGR-NGGC-0351, "Condition Monitoring of Structures." This program is described in Section B.2.30 of the LRA and calculation HNP-P/LR-0645. The implementation plan is described in AR 188047-05. The inspectors reviewed masonry wall inspection procedures and inspection reports and discussed these with responsible personnel. The applicant will continue to address masonry wall considerations consistent with NRC IE Bulletin (IEB) 80-11, "Masonry Wall Design" and NRC Information Notice (IN) 87-67, "Lessons Learned from Regional Inspections of Licensee Actions in Response to IE Bulletin 80-11." The applicant inspects, documents and photographs masonry walls that appear to show signs of degradation on a periodic basis. The inspectors noted some areas where minor cracking was visible on some masonry walls, all of which had been previously identified by the applicant.

Overall, the inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that through the use of the existing programs (i.e. SMP, RG 1.127 and the Masonry Wall Programs) the intended function of the SSCs will be maintained through the period of extended operation.

32. 10 CFR Part 50, Appendix J Program

This program is described in LRA Section B.2.29 and calculation HNP-P/LR-0615. The program is an existing program requiring an enhancement to describe the evaluation and corrective actions to be taken when leakage rates do not meet their specified acceptance criteria. The implementation plan is described in AR 188047-15. This existing program monitors leakage rates through the containment liner/welds, penetrations, fittings, and access openings to detect degradation of the pressure boundary. Acceptance criteria for leakage rates are defined in plant technical specifications.

The inspectors also reviewed and discussed with plant personnel the previous outage reports, leak rate test results, and applicable procedures. This program follows guidance established in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," September 1995 and Nuclear Energy Institute (NEI) Guidelines 94-01, "Industry Guideline for Implementing Performance Based Option of 10 CFR Part 50, Appendix J." In addition, the applicant's performance based integrated leak rate testing (ILRT) monitors and trends its test results to provide predictability of the extent of degradation and ensure timely corrective action. ASME Section XI IWE and IWL programs address SSCs where aging degradation is detected as a result of leak rate testing. During a review of the May 1997 ILRT records, the inspectors noted that the applicant had identified that there was a potential for having a valve lineup that was not in accordance with Table 6.2.4.1 of the FSAR. This error was realized prior to the performance of the ILRT in 1997, however, operating experience and lessons learned were not considered nor documented to preclude future valve lineup errors during ILRTs. As a result, the applicant issued AR 00240847 to address this issue through the corrective action program.

Implementation of the Appendix J Program provides reasonable assurance that the aging effects will be managed such that components and commodities associated with the containment pressure boundary will continue to perform their intended functions during the period of extended operation.

C. Review of Electrical Aging Management Programs

The HNP LRA concluded that the only electrical components that require an aging management program are electrical cables and connectors, metal enclosed electrical busses, and a group of HNP site specific oil filled cables. Electrical equipment, including cables, that are already subject to the 10 CFR 50.49 environmental qualification (EQ) program are age managed by that program. The applicant considers the EQ program subject to a Time Limited Aging Analysis (TLAA) to demonstrate that EQ components' qualified life can be extended an additional 20 years or to ensure that they will be replaced at the appropriate time.

The AMPs proposed by the applicant are as follows:

1. Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program

The inspectors reviewed document HNP-P/LR-0664 which provides a description of the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program. This program is credited for aging management of cables and connections not included in the HNP EQ Program. Accessible electrical cables and connections installed in adverse localized environments will be visually inspected at least once every 10 years for cable and connection jacket surface anomalies, such as embrittlement, discoloration, cracking, swelling, or surface contamination, which are precursor indications of conductor insulation aging degradation from heat, radiation, or

moisture. An adverse localized environment is defined as a condition in a limited plant area that is significantly more severe than the specified service condition for the electrical cable or connections. The aging effects of concern are reduced insulation resistance leading to electrical failure. The sampling will consider the location of cables and connections inside and outside primary containment as well as any other known adverse localized environments. The applicant intends to identify hot spots and adverse localized environments through operating experience review, conversations with maintenance personnel and the use of environmental surveys. The inspectors reviewed AR 188046-1 Non-EQ Cable Aging Management Program Implementation Plan which tracks the commitments to develop and implement this new program prior to the period of extended operation.

This is a new program yet to be developed and thus there is no performance history. However, the commitments are identical to ones described in NUREG-1801 which the NRC has found acceptable.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

2. Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program

The inspectors reviewed document HNP-P/LR-0665, Rev. 2, which provides a description of the Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program. This program is credited for the aging management of radiation monitoring and neutron flux monitoring instrumentation cables not included in the EQ Program. Exposure of electrical cables to adverse localized environments caused by heat or radiation can result in reduced insulation resistance (IR). A reduction in IR is a concern for circuits with sensitive, low-level signals such as radiation monitoring and nuclear instrumentation circuits since it may contribute to signal inaccuracies. For radiation monitoring instrumentation circuits, the results of routine calibration tests will be used to identify the potential existence of cable aging degradation. This review will be performed at least once every 10 years, with the first review to be completed prior to the period of extended operation.

For the Excore nuclear instrumentation system, field cables will be tested at least once every 10 years with the first testing to be completed prior to the period of extended operation. Testing may include IR tests, time domain reflectometry tests, current versus voltage testing, or other testing judged to be effective in determining cable insulation condition. The inspectors also reviewed AR 188046-2 Non-EQ Instrument Cable Aging Management Program Implementation Plan which tracks the commitments to develop and implement

this new program prior to the period of extended operation.

This is a new program yet to be developed but the description is consistent with NUREG-1801, Section XI.E2, with exception that direct cable testing will be performed as an alternative to instrument loop calibrations for neutron flux monitoring instrumentation circuits. The acceptance criteria will be determined based on the type of test selected for these cables.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

3. Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program

The inspectors reviewed document HNP-P/LR-0666 which provides a description of the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program. This program is credited for aging management of cables not included in the EQ Program. In-scope, medium-voltage cables exposed to significant moisture and significant voltage will be tested at least once every 10 years to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, polarization index, or other testing that is state-of-the-art at the time the test is performed. Significant moisture is defined as periodic exposures that last more than a few days (e.g., cable in standing water). Significant voltage exposure is defined as being subjected to system voltage for more than 25% of the time. This is a new program yet to be developed and its description is consistent with NUREG-1801, Section XI.E3.

The inspectors asked if periodic actions are being taken such as inspection for and removal of water collected in cable vaults and manholes containing normally energized safety related cables. The inspectors were told that a preventive maintenance task is in place to quarterly measure the as found water level and pump out the water from both safety related cable vaults and non-safety related manholes on a rotating basis. The inspectors were also told that safety related cable vaults are opened and visually inspected every ten years as part of the structures monitoring program.

The inspectors observed the water removal PM being performed for two safety related cable vaults M523 and M72. The inspectors noted the workers were measuring and recording the as-found water level on the PM data sheet but there was no trending of that information. The applicant promptly changed the PM instructions to specify that the completed work order will be sent to the cable

system engineer for his trending use. The inspectors later participated with the applicant in opening and examining the same two safety related cable vaults. The vaults contained a very small amount of water after the previous days pumping. The cables and supports were in satisfactory condition. The inspector examined plant drawings which showed the number and location of all cable vaults and manholes on the site.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

4. Metal Enclosed Bus Aging Management Program

The inspectors reviewed document HNP-P/LR-0667 which provides a description of the Metal Enclosed Bus (MEB) Aging Management Program. This program is credited for aging management of the isophase bus as well as all non-segregated 6.9 kV and 480 V MEB within the scope of License Renewal. The program involves various activities conducted at least once every 10 years to identify the potential existence of aging degradation. In this aging management program, a sample of accessible bolted connections will be checked for loose connection by using thermography or by measuring connection resistance using a low range ohmmeter. In addition, the internal portions of the bus enclosure will be visually inspected for cracks, corrosion, foreign debris, excessive dust buildup, and evidence of moisture intrusion. The bus insulation will be visually inspected for signs of embrittlement, cracking, melting, swelling, or discoloration, which may indicate overheating or aging degradation. The internal bus supports will be visually inspected for structural integrity and signs of cracks. Industry operating experience has shown that a phase bus exposed to appreciable ohmic or ambient heating during operation may experience loosening of bolted connections related to the repeated cycling of connected loads or of the ambient temperature environment. This is a new program yet to be developed and its description is consistent with NUREG-1801, Section XI.E4. The inspectors also reviewed AR 188046-4 Metal Enclosed Bus Aging Management Program Implementation Plan which tracks the commitments to develop and implement this new program prior to the period of extended operation.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

5. Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program

The inspectors reviewed document HNP-P/LR-0668 which provides a description of the program. This program is credited for aging management of cable connections not included in the HNP EQ Program. The program will be implemented as a one-time inspection on a representative sample of non-EQ cable connections within the scope of License Renewal prior to the period of extended operation to provide an indication of the integrity of the cable connections. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting loose connections, such as thermography, contact resistance testing, bridge balance testing, or other appropriate testing judged to be effective in determining cable connection integrity. The aging effect/mechanism of concern is loosening of bolted cable connections. The factors considered for sample selection are application (high, medium and low voltage), circuit loading (high loading), and location (high temperature, high humidity, vibration, etc.) in both indoor and outdoor environments. The technical basis for the sample selections of cable connections to be tested will be provided. In addition, the program will include the bolted connections on the overhead transmission conductors from the high voltage bushings on the main power transformers to the switchyard bus. This program is to be implemented by the existing HNP preventive maintenance work request program.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

6. Oil-Filled Cable Testing Program

The inspectors reviewed document HNP-P/LR-0669 which provides a description of the program. This program is credited for aging management of the high-voltage, oil-filled cables which connect the HNP 230 kV Switchyard to the Startup Transformers. These cables are in scope for license renewal because they would be the path used to recover off site power following a station blackout event. Periodic cable testing will be performed at least once every four years to provide an indication of the condition of the cables insulation properties. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system, such as

power factor (Doble), partial discharge, or other testing that is state-of-the-art at the time the test is performed. The program will verify that the effects of aging from a loss of dielectric strength caused by thermal/ thermoxidative degradation of organics, voltage (partial discharge), moisture, or the presence of other impurities will be managed during the period of extended operation. The inspectors also reviewed AR 188046-16 Oil-Filled Cable Testing Program Implementation Plan which tracks the commitments to develop and implement this new program prior to the period of extended operation.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

4OA6 Meetings, Including Exit

On July 27, 2007, the inspectors presented the inspection results to Mr. C. L. Burton and other members of the applicant staff in an exit meeting open for public observation at the New Horizons Fellowship facility, 820 East Williams St., Apex NC. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Applicant Personnel

T. Atkinson, License Renewal
C. Baker, License Renewal
W. Bichlmeir, License Renewal
C. Burton, Director of Site Operations
R. Duncan, Site Vice President
M. Fletcher, License Renewal
J. Hans, HNP Communications
R. Kitchen, Manager of Licensing
C. Mallner, License Renewal, Mechanical Lead
E. McCartney, Plant General Manager
A. Ploplis, License Renewal, Electrical Lead
R. Reynolds, License Renewal, Civil Lead
B. Schneidman, License Renewal, Mechanical
K. Stacy, Licensing Engineer
R. Stewart, Supervisor, License Renewal
S. Talley, License Renewal
J. Terrell, License Renewal
R. Turner, ISI Coordinator

Members of the Public Attending Exit Meeting

B. Lynch
S. Stodt
M. Turner

NRC personnel

R. Hannah, Public Affairs Officer
M. Heath, NRR Project Manager, License Renewal
M. King, Resident Inspector
P. O'Bryan, Senior Resident Inspector
J. Shea, Director Division of Reactor Safety

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Program Descriptions:

HNP-P/LR- 0632, License Renewal Aging Management Program Description of the One Time Inspection Program, Rev. 2.

HNP-P/LR- 0633, License Renewal Aging Management Program Description of the Selective Leaching of Materials Program, Rev. 1

HNP-P/LR-0634, License Renewal Aging Management Program Description of the Buried Piping and Tanks Inspection Program, Rev. 1

HNP-P/LR-0600, License Renewal Aging Management Program Description of the Water Chemistry Program, Rev. 1

HNP-P/LR-0631, License Renewal Aging Management Program Description of the Fuel Oil Chemistry Program, Rev. 3

HNP-P/LR-0610, License Renewal Aging Management Program Description of the One Time Inspection Program of ASME Code Class 1 Small Bore Piping, Rev. 2

HNP-P/LR-0627, License Renewal Aging Management Program Description of the Closed-Cycle Cooling Water System Program, Rev. 3

HNP-P/LR-0602, License Renewal Aging Management Program Description of the Open-Cycle Cooling Water System Program

HNP-P/LR-0644, License Renewal Aging Management Program Description of the Boraflex Monitoring Program, Rev. 1

HNP-P/LR-0103, License Renewal Screening Calculations, Attachment 31, Security Power, Rev. 2

HNP-P/LR-0007, 10 CFR 54.4(A)(2) Scoping Calculation, Rev. 4

HNP-P/LR-0622, License Renewal Aging Management Program Description of the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenetic Stainless Steel, Rev. 02

HNP-P/LR-0657, License Renewal Aging Management Program Description of the Susceptiblity Evaluation of Cass for Thermal Aging Embrittlement, Rev. 0

HNP-P/LR-0613, License Renewal Aging Management Program Description of the Reactor Vessel Surveillance Program, Rev. 2

HNP-P/LR-0617, License Renewal Aging Management Program Description of the ASME Section XI, Subsection IWL

HNP-P/LR-0618, License Renewal Aging Management Program Description of the ASME Section XI, Subsection IWF

HNP-P/LR-0616, License Renewal Aging Management Program Description of the ASME Section XI, Subsection IWE

HNP-P/LR-0606, License Renewal Aging Management Program Description of the ASME Section XI, Subsection IWB, IWC, IWD Inservice Inspection Program

HNP-P/LR-0613, License Renewal Aging Management Program Description of the Reactor Vessel Surveillance Program

HNP-P/LR-0619, License Renewal Aging Management Program Description of the Reactor Vessel Closure Stud Program

HNP-P/LR-0607, License Renewal Aging Management Program Description of the Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors Program

HNP-P/LR-0609, License Renewal Aging Management Program Description of the Reactor Vessel Flux Thimble Inspection Program

HNP-P/LR-0620, License Renewal Aging Management Program Description of the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program, Rev. 2

HNP-P/LR-0604, License Renewal Aging Management Program Description of the Steam Generator Tube Integrity Program, Rev. 1

HNP-P/LR-0603, License Renewal Aging Management Program Description of the Flow-Accelerated Corrosion Program, Rev. 1

HNP-P/LR-0621, License Renewal Aging Management Program Description of the Lubricating Oil Analysis Program, Rev. 0

HNP-P/LR-0625, License Renewal Aging Management Program Description of the Bolting Integrity Program, Rev. 1

HNP-P/LR-0612, License Renewal Aging Management Program Description of the Fire Protection Program, Rev. 1

HNP-P/LR-0611, License Renewal Aging Management Program Description of the Fire Water System Program, Rev 1

HNP-P/LR-0628, License Renewal Aging Management Program Description of the Inspection of Overhead Heavy Load and Light Load Handling Systems Program

HNP-P/LR-0601, License Renewal Aging Management Program Description of the Boric Acid Corrosion Program

HNP-P/LR-0614, License Renewal Aging Management Program Description of the External Surfaces Monitoring Program

HNP-P/LR-0645, License Renewal Aging Management Program Description of the Masonry walls Program

HNP-P/LR-0638, License Renewal Aging Management Program Description of the RG 1.127-Inspection of Water-Control Structures Associated with Nuclear Power Plants Program

HNP-P/LR-061, License Renewal Aging Management Program Description of the 10 CFR Part 50, Appendix J Program

HNP-P/LR-0664 License Renewal Aging Management Program Description of the Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, Rev. 0

HNP-P/LR-0665, License Renewal Aging Management Program Description of the Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program, Rev. 2

HNP-P/LR-0666 License Renewal Aging Management Program Description of the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, Rev 1

HNP-P/LR-0667 License Renewal Aging Management Program Description of the Metal Enclosed Bus (MEB) Aging Management Program, Rev 0

HNP-P/LR-0668 License Renewal Aging Management Program Description of the Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, Rev. 1

HNP-P/LR-0669 License Renewal Aging Management Program Description of the Oil-Filled Cable Testing Program

Implementation Plans

AR-188046-13, One Time Inspection Program Implementation Plan

AR 188046-07, Selective Leaching of Materials Program Implementation Plan

AR-188046-06, Buried Piping and Tanks Inspection Program Implementation Plan

AR 1888048-03, Water Chemistry Program Implementation Plan

AR-188047-13, Fuel Oil Chemistry Program Implementation Plan

AR-188046-09, One Time Inspection of ASME Code Class 1 Small Bore Piping Program Implementation Plan

AR188048-06, Closed-Cycle Cooling Water System Program Implementation Plan

AR 188048-09, Open-Cycle Cooling Water System Program Implementation Plan

AR 188046-11, Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program Implementation Plan

NTM Action Request No.188048-04, ASME Section XI, Subsection IWL Program Implementation Plan

NTM Action Request No.188048-07, ASME Section XI, Subsection IWF Program Implementation Plan

NTM Action Request No.188047-16, ASME Section XI, Subsection IWE Program Implementation Plan

NTM Action Request No.188048, ASME Section XI, Subsection IWB, IWC, IWD Program Implementation Plan

AR 188047-08, Reactor Vessel Surveillance Program Implementation Plan

AR 188048-05, Reactor Head Closure Studs Program Implementation Plan

AR 188047-12, Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors Program Implementation Plan

AR 188047-04, Flux Thimble Tube Inspection Program Implementation Plan

AR 188046-10, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program Implementation Plan

AR 188047-03, Flow Accelerated Corrosion (FAC) Program Implementation Plan

AR 188047-01, Steam Generator Tube Integrity Implementation Plan

AR 188047-14, Lubricating Oil Analysis Program Implementation Plan

AR 188047-18, Bolting Integrity Program Implementation Plan

AR 1888047-20, Action Plan - Fire Protection Program Implementation Plan

AR NTM - 1888047-17, Fire Water System Program Implementation Plan

AR 188048-01 Boric Acid Corrosion Program Implementation Plan

AR 188047-11 External Surfaces Monitoring Program Implementation Plan

AR 188047-09 Inspection of Overhead Heavy Load and Light Load Handling Systems Program Implementation Plan

AR 188047-07 Structures Monitoring Program Implementation Plan

AR 188047-10 RG 1.127- Inspection of Water-Control Structures Associated with Nuclear Power Plants Program Implementation Plan

AR 188047-05 Masonry Wall Program Implementation Plan

AR 188047-15 10 CFR Part 50, Appendix J Program Implementation Plan

AR 188046-1 Non-EQ Cable Aging Management Program Implementation Plan

AR 188046-2 Non-EQ Instrument Cable Aging Management Program Implementation Plan

AR 188046-3 Inaccessible Medium-Voltage Cable Aging Management Program Implementation Plan

AR 188046-16 Oil-Filled Cable Testing Program Implementation Plan

Plant and Corporate Procedures

CMP-012, HNP Plant Area Excavation and Backfill, Rev. 12

EGR-NGGC-0513, LR Buried Piping and Tanks Inspection Procedure, Rev. 0

PLP-715, System Chemistry Strategic Plan, Rev.4

ERC-007, Chemistry Data Tracking and Trending program, Rev.0

ERC-004, E&C Conduct of Operations, Rev. 17

ERC-008, Chemistry Action Level Response Program, Rev. 4

CHE-NGGC-0023, Suspended Particulate Matter in Fuels, Rev. 3

CRC-383, Microorganisms in Fuel Oil, Rev. 7

CRC-210, Diesel Fire Pump Engine Fluid Chemistry Monitoring, Rev. 13

MST-M0006, EDG Fuel Oil Tank Inspection, Rev. 15

ISI-100, Control of In Service and Testing Activities

HNP-ISI Program Plan - 2nd Interval, Rev. 2

CRC-001, HNP Environmental and Chemistry Sampling and Analysis Program, Rev. 45

OSR-1216, Component Cooling Water System Operability, Quarterly Interval Modes 1-2-3-4, Rev. 21

MPT-M0038, EDG Lube Oil Heat Exchanger Inspection and Cleaning, Rev. 11

EC 54848, GL 89-13 Testing and Inspection Results, 11/03/04

EC 49074, RFO 10 GL 89-13 Test/Inspection Evaluation, 11/04/02

PLP-620, Service Water Program (GL 89-13), Rev. 12

EPT-099, Boraflex Integrity Test and Boraflex Coupon String Movement, Rev. 6

CRC-001, HNP Environmental and Chemistry Sampling and Analysis Program, Rev. 43

EPT-114, Eddy Current Testing Requirements for the Incore Instrument Thimbles, Rev. 07

EST-924, ASME Section XI Subsection IWE General Visual Examination, Rev. 02

EGR-NGGC-0015, Containment Inspection Program, Rev. 03

HNP ISI 2nd Interval Plan. Rev. 02

ISI-100, Inservice Inspection Program, Rev. 26

Nuclear Generation Group Alloy 600 Strategic Plan, Rev. 0

PLP-605, ASME Section XI Repair and Replacement program, Rev. 24

PLP-652, ASME Boiler and Pressure Vessel Code Section XI Pressure Test Program

PLP-106, Technical Specification Equipment List Program and Core Operating Limits Report, Rev. 40

HNP IWE/IWL - 001, First Containment Inspection Interval Containment Inspection Program Rev. 0

EGR-NGGC-0208, Steam Generator Integrity Program, Rev. 0

TMM-114, Predictive Maintenance, Rev. 8

ESG0034N, Lubrication Technology Training Guide, Rev. 0

CHE-NGGC-0009, Particle Count in Lubricating Oils, Rev. 3

EGR-NGGC-0207, Boric Acid Corrosion Control

HNP POM EST-201, ASME System Pressure Tests, Rev. 15.

HNP POM, OPT-1519, Containment Visual Inspection for Boron and Evaluation of Containment Sump Inleakage Every Refueling Outage Shutdown. Mode 3, Rev. 8

EGR-NGGC-0351, Condition Monitoring of Structures

EGR-NGGC-0010, System and component trending program and system notebooks

Maintenance Management Manual (MMM)-020, POM for Operation, Testing, Maintenance, and Inspection of Cranes and Special Lifting Devices

Preventative Maintenance (PM)-M0079, POM for Containment Circular Bridge Crane Inspection and
Lubrication

PM-M0097, POM for Cask Handling Crane Inspection

EGR-NGGC-0351, Condition Monitoring of Structures

EPT-811, HNP Dam/Dike/Retaining Wall Monitoring Procedure

TMM-117, System Walkdowns and Observations

CMP-012, Plant Area Excavation and Backfill

ADM-NGGC-101, Maintenance Rule Program

EPT-168, Emergency Service Water Intake and Screening Structures Inspection

EST-210, Periodic Containment Integrated Leak Rate Testing (Type A Test)

EPT-011, ILRT Instrument Systems In-Situ Calibration and Checkout, Revision 8

EPT-133, Pre-ILRT Instrument Placement Survey Procedure, Revision 3

SPP-0600, Integrated Leak Rate Test Depressurization Flow Path, Revision 3

EST-209, Type B Local Leak Rate Tests, Revision 15

EST-222, Procedure for the Type B LLRT of the Personnel Air Lock Barrel (Overall Test), Revision 14

EST 212, Type C Local Leak Rate Tests, Revision 40

EST-220, Type C LLRT of Containment Purge Exhaust Penetration (M-58), Revision 10

EST-221, Type C LLRT of Containment Purge Make-up Penetration (M-57), Revision 12

ISI-113, Local Leak Rate Testing Program, Revision 8

EGR-NGGC-0015, Containment Inspection Program, Revision 3

EPT-221, Special Local Leak Rate Tests, Revision 6

Plant Drawings

Drawing CAR-2165-G-214m Yard Piping Diesel Oil Storage Tank Area, Rev. 12

Drawing 8-G-0497-S01-LR, HVAC Non-Essential Services Chilled Water Distribution Flow Diagram, Rev. 9

Drawing 5-G-0308-LR, Flow Diagram Cooling Tower Blowdown, Make-up & Intake Structure Screenwash Systems, Unit 1, Rev. 1

Drawing 5-G-0271-LR, Security Bldg. #1 Flow Diagram and Piping Details, Rev 1

Drawing 5-G-005, General Arrangement Turbine Building - Ground Floor, Rev. 25
Security Diesel Power System

Test and Inspection Results

ESR 9800010, Results of the Fuel Oil Tanks Inspections During RFO 7, 1/19/98

ESR 99-00380, Security Diesel Underground Storage Tank Replacement, Rev. 1

In-Service Inspection Summary, 1st Interval, 1st Period, 1st RFO, 10/14/88

EPT-168, ESW Intake and screening structures inspection performed on 12/13/06

EPT-811, Inspection Log 4/20/99

EPT-811, Inspection Log 7/20/99

EPT-811, Inspection Log 10/26/99

EPT-811, Inspection Log 1/13/00

EPT-811, Inspection Log 4/05/00

EPT-811, Inspection Log 6/21/00

EPT-811, Inspection Log 9/18/00

EPT-811, Inspection Log 12/11/00

EPT-811, Inspection Log 3/21/01

EPT-811, Inspection Log 2/4/03

EPT-811, Inspection Log 6/24/03

EPT-811, Inspection Log 9/29/03

EPT-811, Inspection Log 1/06/04

EST-209, Leak Rate Test Results from 2006

EST-210, Leak Rate Test Results from 1997

EST-219, Leak Rate Test Results from 4/26/07

EST-219, Leak Rate Test Results from 5/24/07

EST-220, Leak Rate Test Results from 5/30/07

EST-219, Leak Rate Test Results from 12/14/06

EST-219, Leak Rate Test Results from 2/06/07

Audit, Inspections, and Self Assessments

NRC Systematic Assessment of Licensee Performance (SALP) NRC Inspection Reports 50-400/92-20, 50-400/94-01

Progress Energy HNP Nuclear Assessment, H-ERC-01-02, Environmental & Chemistry and Radiation Control Assessment, June 28, 2002

Assessment No. 56308, Self Assessment of GL 89-13 Program, 6/3-6/02

Assessment AR 110791, Effectiveness of Spent Fuel Program, 4/27/04

NRC Integrated Inspection Report, Shearon Harris Nuclear Plant, Report No. 50-400/01-04

NRC Integrated Inspection Report, Shearon Harris Nuclear Plant, Report No. 50-400/06-03, Maintenance Effectiveness Portion and RPV Head Inspection portion.

H-ISI-07-01, Harris Inservice Inspection and Testing Assessment, Dated July 19, 2007

178624, Harris Inservice Inspection Program Self Assessment

NTM 111319, Formal Benchmark Report

AR 00178629, Self-Assessment of CR3, HNP and RNP FAC Program, Completed 11/27/06

Maintenance Rule Cycle 12 Periodic Assessment

H-ES-01-01, HNP Engineering Functional Area Assessment dated 5/30/01

H-ES-05-01, HNP Engineering Functional Area Assessment dated 5/13/05

H-ES-99-01, HNP Engineering Functional Area Assessment dated 6/4/99

Assessment 0056316, LLRT, 11/12/02-11/14/02

Appendix J Health Report, 2/27/06

Appendix J Health Report, 2/21/07

Work Orders

WO 998105, SUT-1A Stop gap bushing seal oil leak

WO 992505, Fire Protection Pipe

WO 00606531, Crane Inspection

WO 00803955, Crane Inspection

WO 00605942, Crane Inspection

WO 00636197, Crane Inspection

WO 00403113, Crane Inspection

WO 00665326, Crane Inspection

WO 00186027, Crane Inspection

WO 00413586, Crane Inspection

WO 00634340, Crane Inspection

WO 00762073, Crane Inspection

WO 00605942, Crane Inspection

WO 122343-01, Manhole inspections

WO 122343-02, Manhole inspections

WO 01067141, 1FP-OJFP, Hanger Base Bolts

Corrective Action Documents

AR 132130, Inadequate Response to GL 96-04

AR 55010, Oil sample contained high particle counts

AR 203164, Oil samples have shown oil viscosity trending down

AR 65663, Main turbine lube oil sample showed high particulates

AR 079228, Fire and ground associated with motor driven fire pump

AR 025688, Manhole/Raceway/Cable inspections for MR impact

AR 112933, Pump out 6.9 kV “A” train safety related manholes

AR 112363, Inspect “A” train safety-related cable manholes

AR 151959, Minor oil leak on oil filled cable termination

AR 217897, SUT-1A, Phase B transformer yard 230 kV oil leak

AR 165204, B SUT oil filled cable minor leak

AR 240494, SUT-1A Phase B oil pressure Close to alarm setpoint

AR 140327, AR associated with valve 1RH-40 (RCS Loop to RHR Pump B Isolation Valve)

AR 140797, Small inactive boric acid deposits HHSI branch flow orifice flanges

AR 140809, Review for HNP for the cycle beginning after R11 and running through R12.
AR 68113, Self Assessment of Boric Acid Corrosion Control Programs

AR 113075, Self Assessment of Boric Acid Corrosion Control Programs

AR 130041, Self Assessment of Boric Acid Corrosion Control Programs

AR 121839, Self Assessment of Boric Acid Corrosion Control Programs

AR 146292, Self Assessment of Boric Acid Corrosion Control Programs

AR 00156321, H-ES-05-01 Issue 1 – Trending

AR 00156321, Assignment 01, Significant Adverse Condition Investigation Report, April 13, 2005

AR 00001118, Moisture observed during ISI examination

AR 117120, Corrosion on traveling screens

AR 00205508, Maintenance Rule users group meeting

AR 00205481, Determine extent of condition and conduct Structures Inspections of applicable Non-Safety
Related structures – EGR-NGGC-0351

AR 00205481, Structures inspections

AR 00205481, Address the R-16 structures inspection of the underwater portions

Corrective Action Documents Generated During This Inspection

NCR 239585, CSIP Lube Oil Cooler Anode Plugs Corrosion

NCR 240408, Spalled Concrete In ESWSS Bay 8

AR 240847, Improvement In Integrated Leak Rate Test Procedure To Prevent Valve Misalignment

WR 296240, DGB Roof Hatch Covers Require Material Upgrade

AR 241288, Cause of Oil filled Cable Leaks

Miscellaneous Documents

Regulatory Guide 1.137, Fuel Oil Systems for Standby Diesel Generators, Rev. 1

NRC Bulletin 88-08, Thermal Stresses in Piping Connected to Reactor Coolant Systems, 6/22/88

GL 89-13, Service Water System Problems Affecting Safety-Related Equipment, 7/18/89

CP&L Responses to GL 91-18, 1/26/90 and 3/23/90

CP&L Letter from R.Lebotz to D. Hawley, RE: Deletion of EPT-174, CCW Heat Exchanger Performance Test, from the Service Water Program, 8/3/98

Safety Evaluation Report for TS Amendment Request 121 (Modify Requirements for PWR Boraflex Fuel Storage Racks), 3/10/06

CP&L Letter - James Scarola to United States Nuclear Regulatory Commission, dated Sept. 12, 2002, 30 day Response to NRC Bulletin 2002-2, Reactor pressure Vessel and Vessel Head Penetration Nozzle Inspection Programs .

CP&L Letter - CPL to NRC, Shearon Harris Nuclear Power Plant Reactor Vessel Material Supplemental Information and Reactor Vessel Integrity Database Update, October 12, 2000

NRC Information Notice 2004-17, Loose Part Detection and Computerized Eddy Current Data Analysis in Steam Generators

Letter to J. Scarola of Carolina Power & Light from C. Patel of NRC, “Shearon Harris Nuclear Power Plant, Unit No. 1- Response to Generic Letter 2004-01, Requirements for Steam Generator Tube Inspections,” dated May 19, 2005

NRC Generic Letter 88-05: Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR plants, dated March 17, 1988

CP&L Letter, L. W. Eury to the NRC, Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants (Generic Letter 88-05), NLS-88-110, May 27, 1988.

NRC Letter, R. Lo to CP&L, Response to Generic Letter 88-05, 8809070121, September 1, 1988

NGG Program Health Report for Boric Acid Corrosion Control Program dated 8/9/06

Maintenance Rule Health Report, 4/22/05

Engineering Service Request (ESR)-9800321, Operability Determination for Electrical Manhole 70

AGING MANAGEMENT PROGRAMS SELECTED FOR REVIEW

ASME Section XI, Inservice Inspection, Subsections IWB, IWC, And IWD Program
Reactor Head Closure Studs Program
Nickel-Alloy Penetration Nozzles Welded To The Upper Reactor Vessel Closure Heads Of Pressurized Water Reactors Program
Thermal Aging And Neutron Irradiation Embrittlement Of Cast Austenitic Stainless Steel (CASS) Program
Steam Generator Tube Integrity Program
Boraflex Monitoring Program
Reactor Vessel Surveillance Program
Flux Thimble Tube Inspection Program
ASME Section XI, Subsection IWE Program
ASME Section XI, Subsection IWL Program
ASME Section XI, Subsection IWF Program
Reactor Coolant Pressure Boundary Fatigue Monitoring Program (TLAA)
Flow-Accelerated Corrosion Program
Bolting Integrity Program
Inspection Of Internal Surfaces In Miscellaneous Piping And Ducting Components Program
Lubricating Oil Analysis Program
Water Chemistry Program
Open-Cycle Cooling Water System Program
Closed-Cycle Cooling Water System Program
Fuel Oil Chemistry Program
One-Time Inspection Program
Selective Leaching Of Materials Program
Buried Piping And Tanks Inspection Program
One-Time Inspection Of ASME Code Class 1 Small-Bore Piping Program
Boric Acid Corrosion Program
Inspection Of Overhead Heavy Load And Light Load Handling Systems Program
External Surfaces Monitoring Program
10 CFR Part 50, Appendix J Program
Masonry Wall Program
Structures Monitoring Program
RG 1.127, Inspection Of Water-Control Structures Associated With Nuclear Power Plants Program
Fire Protection Program
Fire Water System Program
Electrical Cables And Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program
Electrical Cables Not Subject T0 10 CFR 50.49 Environmental Qualification Requirements Used In Instrumentation Circuits Program
Inaccessible Medium-Voltage Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program
Metal Enclosed Bus Program
Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements Program

LIST OF ACRONYMS USED

AMP	Aging Management Program
AR	Action Request
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
CASS	Cast Austenitic Stainless Steel
CCCW	Closed Cycle Cooling Water System
DDFP	Diesel Driven Fire Pump
EDG	Emergency Diesel Generator
EPRI	Electric Power Research Institute
EQ	Environmental Qualification Program
FAC	Flow Accelerated Corrosion
FP	Fire Protection
GALL	Generic Aging Lessons Learned document - NUREG-1801
GL	Generic Letter
HNP	Harris Nuclear Plant
ILRT	Integrated Leak Rate Test
IN	Information Notice
IR	Insulation Resistance
ISI	Inservice Inspection
LR	License Renewal
LRA	License Renewal Application
MEB	Metal Enclosed Bus
NAS	Nuclear assurance Section
NDE	Non Destructive Examination
NRR	NRC Office of Nuclear Reactor Regulation
OCCW	Open Cycle Cooling Water System
OE	Operating Experience
PWR	Pressurized Water Reactor
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal System
RV	Reactor Vessel
RVS	Reactor Vessel Head
SBO	Station Blackout Event
PWSCC	Primary Water Stress Corrosion Cracking
SFP	Spent Fuel Pool
SMP	Structures Monitoring Program
SSC	Systems, Structures, and Components
TLAA	Time Limited Aging Analysis
UFSAR	Updated Final Safety Analysis Report
WO	Work Order