December 5, 2003

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, QUAD CITIES NUCLEAR POWER STATION, NRC AGING MANAGEMENT PROGRAM INSPECTION REPORT 05000237/2003010(DRS); 05000249/2003010(DRS); 05000254/2003014(DRS); 05000265/2003014(DRS)

Dear Mr. Skolds:

On October 22, 2003, the NRC completed an inspection regarding your application for license renewal for your Dresden and Quad Cities facilities. The enclosed report documents the inspection findings, which were discussed on October 22, 2003, with members of your staff in an exit meeting open for public observation at the Exelon Midwest Regional Operating Group offices in Warrenville, IL.

The purpose of this inspection was an examination of activities that support your application for a renewed license for the Dresden and Quad Cities facilities. The inspection consisted of a selected examination of procedures and representative records, and interviews with personnel regarding the 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 conducted as described in your License Renewal Application and that documentation supporting your application is in an auditable and retrievable form. The inspection also concluded that existing aging management programs are functioning adequately and that when all the programs are implemented as described in your License Renewal Application, there is reasonable assurance that the intended functions of vital plant systems, structures, and components will be maintained through the period of extended operation.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Laura C. Kozak at 630-829-9604.

Sincerely,

/RA by Roy Caniano Acting for/

Cynthia D. Pederson, Director
Division of Reactor Safety

Docket Nos. 50-237; 50-249
50-254; 50-265

License Nos. DPR-19; DPR-25
DPR-29; DPR-30

Enclosure: Inspection Report 05000237/2003010(DRS); 05000249/2003010(DRS); 05000254/2003014(DRS); 05000265/2003014(DRS)

cc w/encl: Site Vice President - Dresden Nuclear Power Station
Site Vice President - Quad Cities Nuclear Power Station
Dresden Nuclear Power Station Plant Manager
Quad Cities Nuclear Power Station Plant Manager
Regulatory Assurance Manager - Dresden
Regulatory Assurance Manager - Quad Cities
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional
Operating Group
Vice President - Mid-West Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional
Operating Group
Manager Licensing - Dresden and Quad Cities
Senior Counsel, Nuclear, Mid-West Regional
Operating Group
Vice President - Law and Regulatory Affairs
Mid American Energy Company
Document Control Desk - Licensing
M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer, State of Illinois
State Liaison Officer, State of Iowa
Chairman, Illinois Commerce Commission
W. Leach, Manager of Nuclear
MidAmerican Energy Company
D. Tubbs, Manager of Nuclear
MidAmerican Energy Company

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Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional Operating Group
Manager Licensing - Dresden and Quad Cities
Senior Counsel, Nuclear, Mid-West Regional Operating Group
Vice President - Law and Regulatory Affairs Mid American Energy Company
Document Control Desk - Licensing
M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer, State of Illinois
State Liaison Officer, State of Iowa
Chairman, Illinois Commerce Commission
W. Leach, Manager of Nuclear MidAmerican Energy Company
D. Tubbs, Manager of Nuclear MidAmerican Energy Company

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REGION III

Docket Nos:	50-237; 50-249 50-254; 50-265
License Nos:	DPR-19; DPR-25 DPR-29; DPR-30
Report Nos:	05000237/2003010(DRS); 05000249/2003010(DRS); 05000254/2003014(DRS); 05000265/2003014(DRS)
Licensee:	Exelon Generation Company
Facility:	Dresden Nuclear Power Station, Units 2 and 3 Quad Cities Nuclear Power Station, Units 1 and 2
Location:	4300 Winfield Road Warrenville, IL 60555
Dates:	September 29 through October 22, 2003
Inspectors:	M. J. Farber, Senior Reactor Inspector Z. Falevits, Senior Reactor Inspector L. C. Kozak, Senior Reactor Inspector C. A. Julian, Senior Project Manager, RII V. P. Lougheed, Senior Reactor Inspector J. E. Neurauter, Reactor Inspector P. R. Pelke, Reactor Inspector T. J. Kim, Senior Project Manager, NRR H. Wang, Senior Operations Engineer, NRR K. Corp, Operations Engineer, NRR
Approved by:	Julio F. Lara, Chief Electrical Engineering Branch Division of Reactor Safety

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SUMMARY OF FINDINGS

IR 05000237/2003010(DRS); 05000249/2003010(DRS); 05000254/2003014(DRS); 05000265/2003014(DRS); 09/29/2003 - 10/22/2003; Dresden Nuclear Power Station, Units 2 and 3; Quad Cities Nuclear Power Station, Units 1 and 2; License Renewal Aging Management Program.

This inspection of License Renewal (LR) activities was performed by seven regional office engineering inspectors, and one staff member from the Office of Nuclear Reactor Regulation. The inspection program followed NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any "findings" as defined in NRC Manual Chapter 0612.

Documentation from the existing aging management programs was of good quality, detailed, thorough, and understandable. The following minor exceptions were noted:

- Revisions to the compressed air monitoring program are needed to incorporate the Dresden compressed air containment isolation valves into the aging management program and to resolve a question regarding monitoring done on portions of the system that were outside the license renewal scope. The inspectors were unable to confirm that the chosen locations bounded the in-scope portion of the piping, based on the past performance of the system at those locations. The NRC will review the applicant's changes to the compressed air monitoring program in a future inspection.

- Because of two examples where the action tracking system was not accurately tracking the necessary enhancements to the aging management program, the inspectors determined that further followup inspection of the applicant's tracking of the aging management program implementing activities would be conducted after the applicant completed a planned audit of the tracking system.

- The applicant issued change notice LRCR-2003-286 on October 15, 2003, committing to issue a stand alone procedure for walkdowns of the nitrogen system and tanks at both sites. Review of these changes, with emphasis on the new procedure, will be reviewed by the NRC in a future inspection.

- Review of enhancements to the structures monitoring program, with emphasis on the inspection of unearthed concrete and steel structures and inspection of the normally inaccessible area, will be conducted by the NRC in a future inspection.

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

Attachment 1 of this report lists the applicant personnel contacted and the documents reviewed. A list of acronyms used in this report is provided as Attachment 2. A list of inspection questions from the Office of Nuclear Reactor Regulation review staff is provided as Attachment 3.

REPORT DETAILS

I. Inspection Scope

This inspection was conducted by NRC Region III inspectors and members of the NRR staff 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. The inspectors reviewed supporting documentation and interviewed applicant personnel to confirm the accuracy of the LRA conclusions. For those programs which the applicant indicated were consistent with the Generic Aging Lessons Learned (GALL) report, the inspectors confirmed that the applicant's program included the GALL attributes. Attachment 1 of this report lists the applicant personnel contacted and the documents reviewed. A list of acronyms used in this report is provided in Attachment 2. A list of inspection questions from the Office of Nuclear Reactor Regulation review staff is provided as Attachment 3. For a sample of plant systems, inspectors performed visual examination of accessible portions of the systems to observe any effects of equipment aging.

II. Findings

A. Visual Observation of Plant Equipment

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

- Dresden Isolation Condenser and Attached Piping;
- Dresden Service Water Pumps;
- Dresden Fire Pumps;
- Dresden Intake Structure;
- Dresden Electrical Transformer Area;
- Dresden High Pressure Coolant Injection Pump;
- Dresden Core Spray Pump;
- Dresden Low Pressure Coolant Injection Heat Exchanger;
- Quad Cities Stator Water Cooling System;
- Quad Cities Recirculation Pump Motor Generator Set Oil Piping;
- Quad Cities Emergency Diesel Generator and Station Blackout Diesel Generator Fuel Oil Day Tanks;
- Dresden Station Blackout Diesel Generator Fuel Oil Day Tanks;
- Quad Cities Emergency Diesel Generator, Station Blackout Diesel Generator, and Reactor Building Closed Cooling Water Systems; and
- Quad Cities Refueling Platforms

B. Review of Mechanical Aging Management Programs

1. ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD (B.1.1)

The inservice inspection (ISI) program is an existing program credited in the LRA for managing cracking, loss of pre-load, loss of closure integrity, loss of material, and reduction of fracture toughness in several systems which require inspections in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI (ASME Section XI).

The inspectors reviewed the applicable LR evaluation, reviewed applicable procedures, reviewed the latest ISI program plan approved by the Office of Nuclear Reactor Regulation and reviewed the latest ISI baseline inspection report for the Dresden site.

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

2. Water Chemistry (B.1.2)

The water chemistry aging management program activities consist of measures that are used to manage aging of components exposed to reactor water, condensate and feedwater, control rod drive water, demineralized water storage tank water, condensate tank water, torus water (pressure suppression pool), and spent fuel pool water. The program activities provide for monitoring and control of water chemistry using station procedures and processes based on EPRI TR-103515, “BWR Water Chemistry Guidelines,” 2000 Revision, for the prevention or mitigation of loss of material and cracking aging effects.

The inspectors reviewed the program procedures, discussed the program with chemistry staff and reviewed trends of sampling results. The inspectors concluded that the water chemistry aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that components in the scope of license renewal will be maintained in their desired environment during the period of extended operation, which mitigates the aging effects of loss of material and cracking.

3. Reactor Head Closure Studs (B.1.3)

The reactor head closure studs aging management program provides for condition monitoring and preventive activities to manage stud cracking and loss of material. The program includes inservice inspection (ISI) in conformance with the requirements of the ASME Code, Section XI, Subsection IWB, Table

IWB 2500-1. Reactor head closure stud inspections are implemented through station procedures. The inspectors reviewed station procedures, interviewed Dresden and Quad Cities ISI Coordinators, and concluded that the reactor head closure studs aging management program was in place, had been implemented, and included the elements identified in the LRA.

4. BWR Vessel ID Attachment Welds (B.1.4)

The BWR vessel inside diameter (ID) attachment welds aging management program provides for mitigation of cracking through water chemistry and monitoring for cracking through invessel examinations. The program includes: (a) inspection and flaw examination in accordance with the guidelines of staff-approved boiling water reactor vessel and internals project (BWRVIP-48), and (b) monitoring and control of reactor coolant water chemistry in accordance with the guidelines of BWRVIP-29 (EPRI TR-103515) to ensure the long-term integrity and safe operation of BWR vessel ID attachment welds. Reactor vessel attachment weld inspections are implemented through station procedures. The inspectors reviewed station procedures, interviewed Dresden and Quad Cities ISI Coordinators, and concluded that the BWR vessel ID attachment welds aging management program was in place, had been implemented, and included the elements identified in the LRA.

5. BWR Feedwater Nozzle (B.1.5)

The BWR feedwater nozzle aging management program provides for monitoring of feedwater nozzles for cracking. The program includes: (a) enhanced ISI in accordance with the ASME Code, Section XI, Subsection IWB, Table IWB 2500-1 and the recommendation of General Electric (GE) NE-523-A71-0594; and (b) system modifications to mitigate cracking. BWR feedwater nozzle inspections are implemented through station procedures in accordance with the recommendations of GENE-523-A71-0594. The Dresden and Quad Cities feedwater nozzles have been modified to mitigate cracking by removing the stainless steel cladding. The inspectors reviewed station procedures, interviewed Dresden and Quad Cities ISI Coordinators, and concluded that the BWR feedwater nozzle aging management program was in place, had been implemented, and included the elements identified in the LRA.

6. BWR Control Rod Drive Return Line Nozzle (B.1.6)

The control rod drive return line nozzle aging management program consists of inservice inspections and previously implemented system modifications to manage the aging effect of cracking in the control rod drive return line nozzles. Dresden and Quad Cities have cut and capped the control rod drive return line nozzles. Inservice inspections are performed consistent with ASME Section XI requirements. No augmented inspections are required. The inspectors concluded that the BWR control rod drive return line nozzle aging management program was in place, had been implemented, and included the elements identified in the LRA.

7. BWR Stress Corrosion Cracking (B.1.7)

The BWR stress corrosion cracking aging management program mitigates intergranular stress corrosion cracking (IGSCC) in stainless steel reactor coolant pressure boundary components and piping four inches and greater nominal pipe size. The program includes: (a) preventive measures to mitigate IGSCC; and (b) inspection and flaw evaluation to monitor IGSCC and its effects. Preventive measures include monitoring and controlling of water impurities by water chemistry program activities and providing stainless steel component material resistant to IGSCC. The BWR stress corrosion cracking program is implemented through station procedures.

The inspectors confirmed that the resolutions to the open items of NRC letter to the industry BWRVIP group, dated May 14, 2002, have been implemented in the program, and the use of factors of improvement (FOI) in the licensee's hydrogen water chemistry (HWC) program is not being used (refer to section F.4). The inspectors reviewed station procedures, interviewed Dresden and Quad Cities ISI Coordinators, and concluded that the BWR stress corrosion cracking aging management program was in place, had been implemented, and included the elements identified in the LRA.

8. BWR Penetrations (B.1.8)

This is one of several areas covered under the ISI program. The inspectors verified that the components discussed in the LRA were addressed in the ISI program. See Section II.B.1 (ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD (B.1.1)) for further information.

9. BWR Vessel Internals (B.1.9)

The vessel internals program is an existing program which is being expanded and credited in the LRA for managing effects of stress corrosion cracking (SCC), inter-granular stress corrosion cracking (IGSCC), and irradiation assisted stress corrosion cracking (IASCC) in reactor pressure vessel internals. The program relies upon the water chemistry program described in Section II.B.2 (Water Chemistry (B.1.2)) and upon expanded ISI activities promulgated by the boiling water reactor vessel internals program (BWRVIP) working group and approved by the NRC.

The inspectors reviewed the applicable LR evaluation, the existing procedures, and confirmed that the licensee had commitments in place for writing additional procedures prior to the start of the period of extended operation. The inspectors concluded that the BWRVIP, as planned, should provide reasonable assurance that the reactor vessel internals will remain functional throughout the period of extended operation.

10. Flow-Accelerated Corrosion (B.1.11)

The flow-accelerated corrosion (FAC) aging management program predicts, detects, and monitors wall thinning in piping, fittings and valve bodies due to FAC. The program includes performing: (a) an analysis to determine critical locations; (b) limited baseline inspections to determine the extent of thinning at these locations; and (c) follow-up inspections to confirm the predictions, or repairing, or replacing components as necessary. Flow-accelerated corrosion inspections are implemented through station procedures. The inspectors reviewed station procedures, reviewed analyses that determined critical locations, interviewed Dresden and Quad Cities FAC Coordinators, and concluded that the FAC aging management program was in place, had been implemented, and included the elements identified in the LRA.

11. Bolting Integrity (B.1.12)

The bolting integrity aging management program provides for condition monitoring of selected pressure retaining bolted joints and external surfaces for piping and components within the scope of license renewal. The program consists of visual inspections for external surface degradation that may be caused by loss of material, or cracking of the bolting, or by an adverse environment. The program includes periodic inspection of closure bolting for indication of loss of preload, cracking, and loss of material due to corrosion or rust. Bolting integrity inspections are implemented through station procedures. Inspection of ISI Class 1, 2, and 3 components is conducted in accordance with ASME Section XI.

The inspectors performed plant walkdowns with licensee ISI Coordinators and structural engineers. Bolting for pipe flanges, emergency diesel generators, station blackout diesel generators was inspected for indications of loss of preload (loose bolts), cracking, and loss of material.

The inspectors reviewed station procedures, interviewed Dresden and Quad Cities ISI Coordinators and structural engineers, and concluded that the bolting integrity aging management program was in place, had been implemented, and included the elements identified in the LRA.

12. Open-Cycle Cooling Water System (B.1.13)

The Dresden and Quad Cities open-cycle cooling water system aging management program primarily consists of the station's Generic Letter 89-13 programs that include chemical and biocide injection, system testing, periodic inspections and nondestructive examinations, component preventive maintenance, plant surveillance testing, inservice inspection, and inspections. These activities provide for management of loss of material (without credit for protective coatings), cracking, flow blockage, and buildup of deposit (including fouling from biological, corrosion product, and external sources) aging effects in system components exposed to a raw water environment.

The inspectors reviewed the program procedures. The Dresden Station Generic Letter 89-13 Program Basis Document stated that heat transfer testing will serve as the principal basis for determining acceptable thermal performance of the low pressure coolant injection (LPCI) heat exchangers - 2(3)1503A and B. However, Dresden performs inspection/cleaning of the LPCI heat exchangers to meet its Generic Letter 89-13 commitments because the system configuration and operating constraints for torus temperature prevent application of a suitably large heat load for effective testing under most plant operating conditions. This issue had been previously reviewed in NRC inspection reports 50-237/93-008; 50-249/93-008 and 50-237/94-003; 50-249/94-003. The applicant initiated condition report number 178646 to address the error in the Generic Letter 89-13 Program Basis Document. The inspectors concluded that the open-cycle cooling water system aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that components in the scope of license renewal will be maintained in their desired environment during the period of extended operation.

13. Closed-Cycle Cooling Water System (B.1.14)

The closed-cycle cooling water system aging management program activities manage loss of material, cracking, and buildup of deposit aging effects in system components in the scope of license renewal exposed to closed-cycle cooling water environments. The program provides for preventive, performance monitoring and condition monitoring activities that are implemented through station procedures. Preventive activities include measures to maintain water purity and the addition of corrosion inhibitors to minimize corrosion based on EPRI TR-107396, "Closed Cooling Water Chemistry Guidelines." Performance monitoring provides indications of degradation in closed-cycle cooling water systems, with plant operating conditions providing indications of degradation in normally operating systems. In addition, station maintenance inspections and nondestructive examination provide condition monitoring of heat exchangers exposed to closed-cycle cooling water environments.

Heat exchanger activities are based on EPRI Report 1003056, "Non Class 1 Mechanical Implementation Guideline and Mechanical Tools," Revision 3, November 2001, Appendix G, "Heat Exchangers," Sandia National Laboratory Report SAND 93-7070 UC-523, "Aging Management Guideline for Commercial Nuclear Power Plants – Heat Exchangers," and ASME OM-S/G-2000, Part 21, "Inservice Performance Testing of Heat Exchangers in Light-Water Reactor Power Plants."

The inspectors reviewed the program procedures. The components within the scope of license renewal that are subject to closed-cycle cooling water system aging management program activities are included in the Dresden shutdown cooling, reactor building closed cooling water, instrument air, turbine building closed cooling water, emergency diesel generator and station blackout diesel generator systems; and the Quad Cities reactor building closed cooling water, emergency diesel generator and station blackout diesel generator systems. The

inspectors walked down the Quad Cities emergency diesel generator, station blackout diesel generator, and reactor building closed cooling water systems. During the walkdown, the inspectors identified light surface corrosion on all three emergency diesel generators' cooling water piping and apparent galvanic corrosion on the station blackout jacket water radiator inlet piping flanges on all four radiators. The applicant initiated condition report numbers 181466 and 181480 to evaluate and correct these issues.

The inspectors concluded that the closed-cycle cooling water system aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that components in the scope of license renewal will be maintained in their desired environment during the period of extended operation.

14. Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems (B.1.15)

This aging management program provides for visual inspections of overhead heavy load and light load (related to refueling) handling systems. The program, which is implemented through station procedures, manages loss of material of bridge and trolley structural components for systems within the scope of 10 CFR 54.4 and other load handling systems within the scope of license renewal.

The inspectors reviewed the program procedures and discussed the program with Engineering staff. The inspectors reviewed the completed work order for the Dresden Unit 2 pre-refueling inspection of the refueling platform completed in April 2003. The inspectors walked down the Quad Cities refueling platforms. The inspectors concluded that the inspection of overhead heavy load and light load (related to refueling) handling systems aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that the crane structural components and rails and rail systems intended functions will be maintained during the period of extended operation.

15. Compressed Air Monitoring (B.1.16)

The applicant stated that the compressed air monitoring aging management program consisted of inspection, monitoring, and testing of the entire in-scope system, including: (1) pressure decay testing, visual inspections, and walkdowns of various system locations; and (2) preventive monitoring that checked air quality at various locations in the system to ensure that dewpoint, particulates, and suspended hydrocarbons were kept within the specified limits. The supplement to the UFSAR stated that, prior to the period of extended operation, the program would be enhanced to include blowdown of instrument air distribution piping.

The applicant had not yet prepared the procedures for performing inspections of the in-scope portion of the system at either Quad Cities or Dresden. However,

action requests were written for these activities and, if implemented as planned, they should meet the intent of the aging management program.

The applicant had updated the procedures for the pressure decay tests on the MSIV and safety/relief valve pneumatic systems to document that the procedures were part of the aging management process. For Quad Cities, this also included the leak rate testing procedures for the containment isolation valves on the compressed air system. However, during the inspection, it was discovered that the Dresden containment isolation valves were not covered by an aging management procedure and had been inadvertently omitted from the aging management program.

The inspectors reviewed the procedures which the applicant planned to use to provide preventive monitoring of the system for corrosion. For both plants, the applicant was relying on monitoring done on portions of the system that was outside the license renewal scope of the system. The inspectors were unable to confirm that the chosen locations bounded the in-scope portion of the piping, based on the past performance of the system at those locations. Additionally, as stated above, a portion of the Dresden compressed air system was identified as not being monitored under the aging management program.

These two issues regarding the Compressed Air Monitoring Program were identified as an item for followup during a future NRC inspection.

16. Reactor Water Cleanup System (B.1.17)

This is one of several areas that is covered under the ISI program. The inspectors verified that the components discussed in the LRA were addressed in the ISI program. See Section B.1 (ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD (B.1.1)) for further information.

17. Fire Water System (B.1.19)

The inspectors reviewed a program elements document that described the fire water system aging management program. The program consisted of the existing fire protection program with several enhancements. The enhancements included:

- Inspection of the submerged portions of the vertical fire pumps as part of periodic pump bay inspections;
- Exterior surface inspections of system components during transformer deluge system tests;
- Visual inspections of external above ground portions of station fire hydrants;
- Sampling and testing of sprinklers prior to being in service 50 years and then repeated on a frequency not to exceed 10 years; and

- Non-intrusive wall thickness measurements for fire protection system piping prior to the end of the current term and repeated on a frequency not to exceed 10 years.

The applicant had completed procedure changes to incorporate the external inspections of components during the transformer deluge system tests and the visual inspections of fire hydrants into existing station procedures. The other enhancements to the fire protection program had not yet been incorporated into station procedures. The inspectors reviewed the licensee's action tracking items for the outstanding enhancements. The action tracking item for the sprinkler testing although still open had been updated in error to indicate that the procedure change had been completed. The action tracking item for the wall thickness measurements did not specify how the implementing procedure would be changed and in fact, the procedure had already been updated without including this enhancement. Because of these two examples where the action tracking system was not accurately tracking the necessary enhancements to the aging management program, the inspectors determined that further followup inspection of the applicant's tracking of the aging management program implementing activities would be conducted after the applicant completed a planned audit of the tracking system.

The inspectors also reviewed several existing surveillance test activities including system flow tests and intake bay inspections which were used to ensure the fire water system remained operational. The tests and inspections were completed satisfactorily. The inspectors concluded that the fire water aging management program, when implemented as described, would adequately managing the effects of aging.

18. Fuel Oil Chemistry (B.1.21)

The fuel oil chemistry aging management program provides for preventive activities that manage the aging effects of loss of material and buildup of deposits in license renewal components that are exposed to fuel oil. Program activities assure that contaminant levels are maintained at acceptable levels in fuel oil for systems within the scope of license renewal. A biocide is added to the fuel oil storage tanks during each new fuel delivery. Fuel oil sampling and analysis are performed in accordance with procedures. Emergency diesel generator fuel oil analysis acceptance criteria are contained in the Technical Specifications and are based on the requirements of industry standard ASTM D975. Diesel fuel oil storage tanks are periodically cleaned and inspected for evidence of internal corrosion.

The inspectors reviewed the program procedures, discussed the program with Maintenance staff and reviewed trends of sampling results. The inspectors questioned the applicant as to why there were no predefined activities to clean the Dresden and Quad Cities emergency diesel generator, station blackout diesel generator and diesel driven fire pump fuel oil day tanks when there were predefined activities to clean the Dresden isolation condenser make up pump diesel day tanks, and the Dresden Unit 1 diesel fire pump day tank. The

applicant responded that cleaning of the remaining day tanks was not justified because the inventory is turned over during diesel runs, the tanks are supplied from the diesel fuel oil storage tanks which are periodically cleaned and inspected, and the day tanks are periodically sampled. Additionally, in response to NRC questions, the applicant issued license renewal change request No. 2003-298 to remove from the program documents an incorrect statement that the day tanks are routinely flushed by partially draining the contents and refilling the tanks.

The inspectors walked down the Dresden station blackout diesel generator day tanks during the current inspection. The Dresden emergency diesel generator and isolation condenser makeup pump day tanks were previously walked down during resident inspections. No signs of leakage or corrosion were observed. The inspectors also walked down the Quad Cities Units 1 and 2 emergency diesel generator and the station blackout diesel generator day tanks and observed no signs of leakage or corrosion.

The inspectors concluded that the fuel oil chemistry aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that contaminant levels will be maintained at acceptable levels in fuel oil systems within the scope of license renewal.

19. Reactor Vessel Surveillance (B.1.22)

The reactor vessel surveillance program is an existing program which is being expanded to address aging management. The program, as currently implemented, conforms to the requirements of 10 CFR 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements." Neutron embrittlement for the period of extended operation will be predicted using chemistry tables and Position 1.3 limitations as described in Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials."

The inspectors reviewed the applicable LR evaluation, the existing procedures, and confirmed that the licensee had commitments in place for writing additional procedures or revising the current procedures prior to the start of the period of extended operation.

The inspectors concluded that the vessel surveillance program, as currently implemented and with planned activities, should provide reasonable assurance that the reactor vessel will remain functional throughout the period of extended operation.

20. Selective Leaching of Materials (B.1.24)

Selective Leaching of Materials is a new proposed aging management program. This program is a one-time inspection program which includes visual inspections and follow-up examination or evaluation of selected components when indications of selective leaching are identified. The GALL report specifies a one-

time visual inspection and hardness measurement; however, the applicant only proposed a one-time visual inspection. NRR staff issued request for additional information (RAI) B1.24 on this issue and the applicant's response to this RAI is currently under staff evaluation.

The applicant committed to develop 20 predefined activities (10 for each site) to address the selective leaching of materials. The inspectors selected 4 predefines to review (2 from each site); work orders (WO) 588921 (selective leaching for cast iron) and 588923 (selective leaching for brass/bronze) from Quad Cities and 596675 (selective leaching for brass/bronze) and 596685 (selective leaching for cast iron) from Dresden. WO 588921 stated that it was a license renewal commitment to perform a one-time visual inspection of the stator cooling service water discharge from heat exchanger 1B valve 1-3999-129/VIS for evidence of leaching, corrosion, and loss of material. The WO also directed inspection of the internal and external surfaces of the component. Examinations were to be performed consistent with ASME Section XI VT-1 visual inspection requirements. WO 588923 had the same instructions only the component was the Reactor Building Closed Cooling Water (RBCCW) heat exchanger service water outlet inboard drain valve 1-3999-265B/VIS. For Dresden, the WOs contained exactly the same instructions with different components. WO 596675 specified the inspection of the Unit 1 fire protection supply valve 1-4100-F-37/VIS and WO 596685 was for the fire protection header supply valve 2/3-4110-502/VIS.

When implemented as described, the inspectors concluded that the selective leaching program would adequately manage the effects of aging.

21. ASME Section XI, Subsection IWE (B.1.26)

The ISI program is an existing program credited in the LRA for inspecting the primary containment for loss of material in accordance with ASME Section XI.

The inspectors reviewed the applicable LR evaluation, reviewed applicable procedures, reviewed the latest ISI program plan approved by the Office of Nuclear Reactor Regulation and reviewed a preventive maintenance request for inspection of the Dresden 3 containment at the sand pocket region.

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

22. ASME Section XI, Subsection IWF (B.1.27)

The ASME Section XI, Subsection IWF aging management program provides for visual examination of component and piping supports within the scope of license renewal for loss of material and loss of mechanical function aging effects.

10CFR50.55a imposes the ISI requirements of ASME Code Section XI, for Class 1, 2, 3, and MC component and their associated supports. ISI of supports for ASME piping and components is addressed in Section XI, Subsection IWF.

The current licensee ISI program is implemented through station procedures, which provide for visual examination in accordance with the requirements of ASME Section XI, Subsection IWF, 1989 Edition and Code Case N-491-1. For license renewal, the licensee has committed to change to ASME Section XI, Subsection IWF, 1995 Edition and addenda through the 1996 Addenda. The inspectors reviewed station procedures, interviewed Dresden and Quad Cities ISI Coordinators, and concluded that the ASME Section XI, Subsection IWF aging management program was in place, had been implemented, and included the elements identified in the LRA.

23. Metal Fatigue of Reactor Coolant Pressure Boundary (B.1.34)

The applicant has a current thermal fatigue management program which is being enhanced for the period of extended operation. The applicant's program consists of a computer software program which provides for a combination of transient cycle counting and cumulative usage factor calculations. The applicant has loaded the program with plant data based on current plant thermal cycles and cumulative usage factors derived from the Dresden Unit 3 stress analysis. The program has been enhanced to project analyses through the 60 year license extension period.

The inspectors reviewed the basis calculation for establishing the program parameters, the licensee procedures and the latest completed surveillances at both Dresden and Quad Cities. The inspectors determined that the program was generally consistent with the license application, although some features were still to be implemented.

The inspectors concluded that the thermal fatigue monitoring program was in place, had been implemented, was an on-going program which was being enhanced for the period of extended operation. The inspectors concluded it included, or would include, the elements identified in the LRA. If implemented as planned, there should be reasonable assurance that adequate thermal fatigue monitoring will be performed through the period of extended operation.

24. Boraflex Monitoring (B.1.35)

The Quad Cities Boraflex monitoring program is based on EPRI TR-108761, "A Synopsis of the Technology Developed to Address the Boraflex Degradation Issue." (Note: Boraflex monitoring is not applicable to Dresden because the station utilizes Boral as the neutron absorbing material in the spent fuel racks rather than Boraflex). The Quad Cities Boraflex monitoring program consists of condition monitoring activities based on the maintenance rule and implemented at a predefined frequency. Station procedures provide for testing and analysis of the Boraflex neutron absorbing capability to assure that the 5 percent subcriticality margin is maintained. Degradation monitoring is accomplished by

obtaining a computer-generated (RACKLIFE) value of boron loss, which is evaluated against the acceptance criteria. RACKLIFE provides calculated peak and average percent loss of boron carbide in the neutron absorber sheets. The evaluation is performed every year. The RACKLIFE program was validated through neutron attenuation testing (blackness testing), and boron areal density testing using the BADGER device.

The inspectors reviewed the program procedures, discussed the program with Reactor Engineering, Maintenance Rule, and Chemistry staff, and reviewed silica sampling results, maintenance rule performance criteria, and recent output of the RACKLIFE program. The peak panel boron loss is approximately two percent which is significantly less than the amount of degradation assumed in the criticality analysis (10 percent). The applicant has established its maintenance rule condition based monitoring criterion at six percent peak boron loss. The applicant's program requires that between RACKLIFE evaluations, spent fuel pool silica levels will be monitored by the Chemistry department and if an adverse trend is identified then a condition report would be generated and the cause would be investigated. The inspectors questioned the applicant regarding what threshold the Chemistry department used to identify an adverse trend. The applicant subsequently identified that the Chemistry department was not aware of corporate procedure NF-AA-610, "On-site Wet Storage of Spent Nuclear Fuel," which stated that a transient of reactive silica greater than 1 ppm is reason to contact the Nuclear Fuels Spent Fuel Senior Staff Engineer or Manager, Spent Fuel and Decommissioning Strategy, as appropriate. The applicant initiated a condition report to link the requirements of NF-AA-610 with the corporate procedure for controlling BWR spent fuel pool chemistry, CY-AB-120-300, "Spent Fuel Pool." Additionally, the applicant issued License Renewal Change Request 2003-299 to credit NR-AA-610 as a license renewal commitment.

The inspectors concluded that the Boraflex monitoring aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that no unexpected degradation of the Boraflex material would compromise the criticality analysis in support of the design of the spent fuel storage racks.

25. Periodic Testing of Drywell and Torus Spray Nozzles (B.2.4)

The periodic testing of drywell and torus spray nozzles addresses a NUREG-1801, Section V.D2.5 concern that flow orifice and spray nozzles in the drywell and torus spray subsystems are subject to plugging by rust from carbon steel piping components. The Dresden and Quad Cities drywell and torus spray nozzles are bronze. There are no carbon steel flow orifices in the system piping within the scope of license renewal. However, upstream piping is subject to possible general corrosion. The periodic testing of drywell and torus spray nozzles is implemented through station procedures. The inspectors reviewed station procedures, Dresden and Quad Cities operating experience, resolution of foreign material found in Quad Cities spray nozzles, and concluded that the periodic testing of drywell and torus

spray nozzles aging management program was in place, had been implemented, and included the elements identified in the LRA.

26. Lubricating Oil Monitoring Activities (B.2.5)

The lubricating oil monitoring activities manage loss of material and cracking in lubricating oil heat exchangers in the scope of license renewal. These activities include measures to minimize corrosion and to mitigate loss of material and cracking in heat exchangers by monitoring lubricating oil properties. Sampling, testing, and trending verify lubricating oil properties and ensure that the intended functions of the heat exchangers are not lost. Oil analysis permits identification of specific wear mechanisms, contamination, and oil degradation within operating machinery. The activities manage physical and chemical properties in lubricating oil.

The inspectors reviewed the program procedures, discussed the program with Maintenance staff and reviewed trends of sampling results. The inspectors concluded that the lubricating oil monitoring aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that intended functions of the lubricating oil heat exchangers within the scope of license renewal will be maintained during the period of extended operation.

27. Heat Exchanger Test & Inspection Activities (B.2.6)

The heat exchanger test and inspection activities described in this program are new activities, not previously covered in the licensee's program. They consist of periodic inspections and testing of heat exchangers which are oil filled or otherwise not covered under the Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," program.

The inspectors reviewed the LR evaluation and confirmed that the newly written procedures addressed those commitments. The inspectors concluded that, if the procedures were implemented as planned, there should be reasonable assurance that heat exchanger monitoring will be performed through the period of extended operation.

28. Generator Stator Water Chemistry Activities (B.2.7)

The generator stator water chemistry program is a Quad Cities specific non-GALL aging management program. The Quad Cities chemistry activities manage aging in components exposed to stator cooling water and provide for monitoring and controlling of water chemistry using procedures and processes that are based on General Electric Company Document GEK 45942B, Design Data, which provides guidelines for stator water chemistry control.

Stator water is continuously monitored for purity by an installed conductivity cell. The conductivity cell will annunciate an alarm in the event water purity decreases to a predetermined limit. Stress corrosion cracking of stator water components

is unlikely as contaminants are maintained at very low levels and the system is normally operated at temperatures less than 140 degrees Fahrenheit. The system is equipped with a resin bed that continuously filters a portion of the system flow. Site procedures provide a feed and bleed operation if the dissolved oxygen concentration approaches predetermined limits.

The inspectors reviewed the program procedures, discussed the program with Chemistry staff and reviewed trends of sampling results. The inspectors reviewed Unit 1 and 2 stator water dissolved oxygen trends from February 1999 to present which indicated that the parameter is generally maintained within the applicant's 3 - 7 ppm goal. The inspectors reviewed Unit 1 and 2 stator water conductivity trends from February 1999 to present which indicated that the parameter is maintained less than the applicant's .25 µS/cm upper limit. The inspectors walked down portions of the Unit 1 and 2 generator stator water system and observed no signs of leakage or corrosion. The inspectors concluded that the generator stator water chemistry aging management program was in place, had been implemented, and included the elements identified in the LRA. When implemented as described, there is reasonable assurance that intended functions of the generator stator water system within the scope of license renewal will be maintained during the period of extended operation.

C. Review of Electrical Systems Aging Management Programs

1. Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.1.33)

The aging management program for electrical cables and connections not subject to 10 CFR 50.49 environmental qualification requirements manages cables and connections within the scope of license renewal that are subject to an adverse environment. This is a new program yet to be developed. Cables and connections subject to an adverse environment are managed by inspection of a sample of these components. They are inspected for signs of accelerated age-related degradation. Samples of cables and connections found to be located in adverse localized areas will be inspected prior to the period of extended operation, with an inspection frequency of at least once every 10 years. The scope of this program includes all accessible fuse holders, accessible connections and terminal blocks insulating material located within localized adverse environments.

The inspectors reviewed a document titled, "B.1.33 Non-EQ Electrical Cables and Connections Not Subject to 10 CFR 50.49 EQ Requirements," Revision 2. The document contained a table comparing the ten GALL attributes for this AMP with the corresponding ten attributes of the applicant's AMP. No further description of this AMP was available for review.

2. Electrical Cables Used in Instrument Circuits and Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.1.37)

This is a new aging management program yet to be developed. Section XI.E2 of the GALL report states that exposure of electrical cables to adverse localized environments caused by heat, radiation, or moisture can result in reduced insulation resistance (IR). Reduced IR causes an increase in leakage currents between conductors and from individual conductors to ground. A reduction in IR is a concern for circuits with sensitive, low-level signals such as radiation monitoring and nuclear instrumentation since it may contribute to inaccuracies in instrument circuits. In this GALL proposed aging management program, calibration results of routine established surveillance testing programs would be used to identify the potential existence of aging degradation. For example, when an instrumentation circuit is found to be out of calibration, an additional evaluation of the circuit could be performed to determine if the cause is cable degradation. This aging management program applies to non-EQ, high-range-radiation and neutron flux monitoring instrumentation cables used in high voltage, low-level signal applications that are sensitive to reduction in insulation resistance.

In RAI 3.6-9, the NRC noted that the aging management activity described in LRA Table 3.6-1, did not utilize the calibration approach for non-EQ electrical cables used in circuits with sensitive, low level signals. Instead, these cables were simply combined with all other non-EQ cables under the visual inspection activity. In response Exelon stated that they will develop a program that is consistent with NUREG 1801 Aging Management Program XI.E2 to manage the aging of these cables and that this program will be implemented prior to entering the period of extended operation.

The inspectors reviewed a document titled, “B.1.37 Electrical Cables Not Subject to 10 CFR 50.49 EQ Requirements Used in Instrumentation Circuits,” Revision 2. The document contained a table comparing the ten GALL attributes for this AMP with the corresponding ten attributes of the applicant’s AMP. The document states that for Source Range and Intermediate Range nuclear instrumentation channels the AMP would perform I/V electronic testing to verify the insulation resistance integrity of the cables inside the drywell along with the detectors and connectors.

For the Local Power Range Monitoring channels the applicant credits technical specification required testing and states that the acceptability of the LPRM cables/detectors/connectors is verified through this calibration and this calibration adjusts for loss in sensitivity of the circuit. For the Drywell High Range Radiation Monitors the applicant credits technical specification required testing. In that calibration, a calibrated radiation source is used to expose the detector to a gamma radiation field and it is verified that acceptable readings result on the radiation meter. For the Steam Jet Air Ejector Radiation Monitoring and the Main Steam Line Radiation Monitoring the applicant credits loop checks which expose the detectors to radiation sources to verify that the radiation meter response is as expected.

The inspectors were shown draft markup changes to the calibration procedures to implement this AMP. The inspectors observed that the only proposed changes to the procedures were to annotate in the margin certain performance steps with a note “CM-1" and to an item CM-1 to the commitment list in the back of the procedure, referencing an Action Tracking item AR number. The inspectors expressed concern that these actions will not accomplish the intent of the GALL proposed AMP because they would not cause the performing technician to do any specific evaluation of the test results for cable degradation, nor forward the results to other plant staff to do so. The inspectors expressed the opinion that test data should be trended, or the procedure text modified to alert the performer that this test is looking for cable degradation as well as simple calibration, or other appropriate actions taken to accomplish the GALL AMP intent.

The applicant’s response was that GALL does not require trending of test results for this AMP. The GALL item states, “5. *Monitoring and Trending:* Trending actions are not included as part of this program because the ability to trend test results is dependent on the specific type of test chosen. Although not a requirement, test results that are trendable provide additional information on the rate of degradation.” Therefore the applicant believed no further action was needed. This matter will be referred to NRR for further consideration.

D. Review of Structural Component Aging Management Programs

1. Aboveground Carbon Steel Tanks (B.1.20)

The applicant has two predefined activities to address the inspection of the aboveground carbon steel tanks. Predefine 10179-01, “D2 3M PM Pumpback/N2 Storage Tank/System 85 Walkdown by System Engineer” addresses the Dresden outdoor carbon steel tanks and predefine 168992-01, “Outdoor N2 System and Tanks Walkdown” addresses the Quad Cities tanks. The predefines stated that Exelon document ER-AA-2030, “Conduct of Plant Engineering Manual,” Revision 1, was the guide for the system engineers to conduct their quarterly walkdowns. The predefines do not contain the 10 elements of an aging management program as the GALL report specified. While reviewing two of the most recent Dresden system walkdown reports of the Pumpback/N2 system (May 15, 2002 and August 15, 2003), the inspectors noted that these were generic walkdown check lists that did not specifically address inspection of the carbon steel tanks. The applicant issued license renewal change request LRCR-2003-286 on October 15, 2003, committing to issue a stand alone walkdown procedure documenting the walkdown details for the N2 system and tanks at both sites. Review of these procedure changes will be conducted in a future NRC inspection.

2. Buried Piping and Tanks Inspection (B.1.25)

The applicant described the buried piping and tanks inspection program for aging management as consisting of preventive and condition monitoring measures to manage loss of material due to corrosion from external

environments. The program is an existing program and the applicant intends to enhance it to include one-time internal UT of buried steel tanks of both sites, periodic leakage checks of the Quad Cities buried carbon steel fuel oil storage tanks, and a one-time visual inspection of the external surface of a section of buried ductile iron fire main piping. The applicant also mistakenly included the one-time UT of the bottom of the outdoor aluminum storage tanks as an enhancement in this program. This mistake has been corrected by the issuance of license renewal change request LRCR-2003-265.

The following are some of the preventive and condition monitoring activities included in the buried piping and tanks inspection program:

- Dresden Procedure DFPS 4123-08, "Fire Water System Flow Test," Revision 13, provides a method to determine the condition of underground fire protection piping. This procedure tests underground pipe resistence (pressure drop) and compares the measured pressure with the allowable pressure from the design analysis.

- Quad Cities Procedure QCTS 0850-05, "Fire System 'C' Factor Test," Revision 6, outlines the steps necessary to perform the "C" Factor (Flow Coefficient) test of the fire protection yard systems.

- Dresden Procedure DOS 0040-03, "Inspection of Oil Containing Vessels and Transfer Facilities," Revision 13, provides checklists for various inspections in accordance with EN-MW-402-0003, "Spill Prevention, Control and Countermeasure Plans." This will help to ensure that oil is not discharged/leaked into navigable waters.

The applicant has made a revision to procedure SA-AA-117, "Excavation, Trenching, and Shoring," Revision 2 to Section 4.7.1, to indicate that, "If underground piping is exposed during excavation, engineering should be informed to perform an inspection."

There are many predefined activities at both sites to perform various cleaning/inspection of fuel oil and fire water tanks. These predefines were created by the applicant to perform a one-time inspection of various buried components and pipes in case those components/pipes were never exposed during excavation.

Predefines 15871-09, "Q0 3Y Fire System Flow Test," uses Model W/O 97089647 to perform the Quad Cities fire system "C" factor test specified in QCTS 0850-05. The inspectors reviewed the test report for the November 2000 test which was the most recent test. The test procedure had an acceptance criterion of a "C" factor of 80. On page 23 of the attachment, a "C" factor of 67 was calculated. There was no indication on the test procedure if the flow test was declared a failure. The inspectors discussed the results of the test with the Quad Cities Fire Protection Engineer. An engineering evaluation had been performed to show that a "C" factor of 67 was acceptable. The applicant indicated that the acceptance criterion for the test was under revision.

Predefine 15839-02, “Q0 10Y EDG Fuel Oil Storage Tank Cleaning and Inspection,” specifies cleaning and inspection of the Emergency Diesel Fuel Oil Tank. The most recent cleaning and inspection was conducted in April 2003, per Work Order 99281877. The inspectors reviewed the contractor’s report and found that the activity was properly performed and the tank remained operable.

Predefine 592929 is a new predefine which specifies the one-time inspection of the Quad Cities Units 1 and 2 EDG and SBO diesel generators underground fuel oil storage tanks. This inspection will verify the effectiveness of the current chemistry control program by performing an ultrasonic inspection of the bottom half of one fuel oil storage tank for the presence of corrosion.

3. 10 CFR Part 50, Appendix J (B.1.28)

The containment leakage program is an existing program which is being used, essentially unchanged, to address aging management. The program, as currently implemented, conforms to the requirements of 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors.” The program consists of an integrated leak rate test of primary containment and local leak rate tests performed on isolation valves and containment access penetrations in accordance with the requirements of 10 CFR Part 50 Appendix J, Option B.

The inspectors reviewed the applicable LR evaluation, the existing procedures, and confirmed that the licensee had commitments in place to ensure continuity of the program through the period of extended operation. The inspectors concluded that the containment leakage program, as currently implemented, should provide reasonable assurance that primary containment will remain functional throughout the period of extended operation.

4. Masonry Wall Program (B.1.29)

The masonry wall program is part of the structures monitoring program (B.1.30). The applicant stated in the LRA that the masonry wall program is based on guidance provided in IE Bulletin 80-11 and IN 87-67.

Section 3 of Attachment 1 of procedure ER-MW-450, “Structures Monitoring,” Revision 1, specifies that masonry walls located in structures determined to be within scope of maintenance rule should be examined. Section 3 of Attachment 2 of ER-MW-450 details the examination criteria for masonry walls. Attachment 3 of ER-MW-450 specifies the evaluation of results and hence the acceptance criteria. Attachment 4 of ER-MW-450 indicates what constitutes a masonry wall failure. Attachment 5 specifies the examination frequency to be five years. The inspectors concluded that the masonry wall program, as currently implemented, should provide reasonable assurance that masonry walls will remain functional throughout the period of extended operation.

5. Structures Monitoring Program (B.1.30)

Procedure ER-MW-450, "The Structures Monitoring Program," Revision 1, was developed to meet the requirements of the Maintenance Rule. The program will provide visual inspections of structures and components with enhancements to meet the requirements of license renewal. The enhancements are: inspections of structural steel components, review of chemistry data for below grade water to confirm the environmental condition, inspections of non-insulated indoor piping external surface, special insulation inspections criteria for existing cold weather preparation, outdoor insulation, and indoor piping and equipment insulation, inspection for non-structural joints, and inspection criteria for concrete, structural steel, masonry walls, equipment foundations, and component supports.

Attachment 1 to ER-MW-450 identifies the structural elements to be monitored by this program. These elements are concrete, steel, masonry walls, equipment foundations, roofing, component supports, buried piping, structural isolation gaps, water tight doors and flood seals, and building siding. The inspectors were concerned that this program did not address inaccessible areas such as under grade concrete or steel elements. The applicant issued license renewal change LRCR-2003-287 on 10/02/03 to address this concern.

Section 4.7.1 of SA-AA-117, "Excavation, Trenching, and Shoring," Revision 2, had been previously revised to add, "If underground piping is exposed during excavation, notify engineering to inspect piping for evidence of coating degradation or corrosion." In response to the inspectors questions regarding other structures that are normally inaccessible that become unearthed, the applicant issued LRCR-2003-280 to revise Section 4.7.1 of SA-AA-117 to read, "If underground piping, steel components, or concrete are exposed during excavation, then perform the following:

4.7.1.1 Notify Engineering to inspect piping, steel components, or concrete for evidence of coating degradation, or corrosion, concrete cracking, or spalling, sign of corrosion in steel, etc.

4.7.1.2 Engineering inspect piping, steel components, or concrete for coating degradation (if coated pipe or steel components) or corrosion (if uncoated metal pipe or steel component). Record results of inspection in Action Tracking and record the Action Tracking in the Comment Section of the Excavation Permit."

The inspectors planned to perform a follow up inspection to review the applicant's procedure changes.

Attachment 6 to ER-MW-450, "Structures Matrix," identifies all structures under the Structures Monitoring Program for all Exelon Midwest plants (Byron, Braidwood, Dresden LaSalle, Quad Cities, Clinton, and Zion). The first two entries are Reactor Containment and Reactor Building which, according to the matrix, are applicable to Dresden and Quad Cities. However, Dresden and Quad Cities refer to these structures as Primary Containment and Secondary

Containment. The applicant issued LRCR-2003-297 on October 16, 2003, to clarify the names of these two structures and also to review the entire attachment to ensure that all structures at each site are properly named.

The inspectors also identified that the Quad Cities underwater weir was not listed in Attachment 6 of ER-MW-450, as a structure to be monitored. The applicant had indicated that the weir was not listed as in-scope of license renewal. During the scoping and screening inspection, LRCR-2003-104 was issued on July 14, 2003, to add the Quad Cities weir as a structure within the scope of license renewal. That LRCR will add the weir to the Attachment 6 when completed.

The inspectors reviewed the recent structures walkdown report for Quad Cities (1998). In general, the walkdown did not identify any significant degradation, only minor metal corrosion and concrete cracking were reported. The inspectors walked down (both sites) the outdoor storage tanks, the crib house, and the switchyard and found that material condition of the structures was acceptable. The inspectors concluded that the structures monitoring program had been implemented and would provide reasonable assurance that the effects of aging would be adequately monitored through the period of extended operation.

6. RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants (B.1.31)

Regulatory Guide (RG) 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants at Dresden and Quad Cities is part of the structures monitoring program. The scope of this program includes the Dresden Unit 2/3 crib house, a portion of the Dresden Unit 1 crib house, and the Quad Cities crib house and discharge canal weir. The accessible portion of the structures covered under this program will be visually inspected through the Structures Monitoring Program and the under water portion of the structures will be inspected with Dresden Procedure DTS 3900-07, “Crib House/Intake Structure Inspections,” Quad Cities Procedure QCMPM 4400-11, ”RHR Service Water Intake Bay Inspection,” and QCMPM 4400-12, “Circulating Water Intake Bay Inspection.”

DTS 3900-07, “Crib House/Intake Structure Inspections,” Revision 7, states that the purpose of this procedure is to outline the requirements for inspection of the Intake Structure including structural integrity of concrete and steel components, condition monitoring of concrete components in contact with river water, silt or debris accumulation, microbiological fouling, and Zebra Mussel settlement. Attachment A to this procedure specifies the inspection details of concrete components in contact with river water. The Attachment specifies sample selection, frequency of inspection (every five years), aging effects to be detected, and inspection techniques. Acceptance criteria are listed in Section H.2 of the procedure.

The most recent underwater inspections of the Dresden Station were conducted in January through February of 2003. On January 29, 2003, divers inspected the 2A Circulating Water Pump (CWP) Bay and concluded that, “all walls 100 percent clean. No cracking or spalling was detected and the floor was pumped clean and

showed no defects." On February 4, 2003, Bay 13 was inspected and the report concluded that, "the bay floor had a light dusting of silt. The walls had very light marine growth, not enough to put a measurement to." The 3C CWP Bay was inspected on February 5, 2003. The post cleaning and biocide inspection concluded that, "All walls were 100 percent clean. No cracking or spalling was detected. The floor was pumped clean and showed no defect." The 2B CWP Bay was inspected on February 13, 2003. The report concluded that, "all walls were cleaned 100 percent. Diver did find four areas of spalling on the west wall, all three were 1-1/2-inch wide, 1-1/2-inch high and 1-inch deep. Did not find any cracking or any damage to the other walls." The last inspection was performed on February 18, 2003 to the 3B CWP Bay. The pre-cleaning inspection of the bay walls and floor found, "the bay walls were 100 percent covered with marine growth which average 3/4-inch to 1-inch thick. This was consistent with all walls including the key way. Sand or silt were two to three inches thick cover 60 percent of the floor and some spot it was up to 7-inches." None of the conditions identified caused an operational concern.

QCMPM 4400-11, "RHR Service Water Intake Bay Inspection," Revision 5, and QCMPM 4400-12, "Circulating Water Intake Bay Inspection," Revision 6, outline the requirements for inspection of the respective water intake bays to assure the pump suction lines or system heat exchanger do not become blocked with silt or debris from the river.

The recent underwater inspections at Quad Cities were from December 2002 to January 2003. Predefine 17674-01 specifies that the frequency of inspection as yearly and Work Order 395851 carried out this task. The first inspection was for the 1C CWP Bay and was conducted on December 3, 2002. This inspection found thick (6-inch) sediment deposit in the bay. A total of eight truck loads were pumped out of the bay. However, the walls were 100 percent intact with very little degradation. The 2A and 1B CWP Bays were inspected on December 10, 2002 and December 17, 2002, respectively. The results of these inspections were contained in one report. Many truck loads of sediment deposit were pumped out but the report concluded that the bay walls were 100 percent intact with very little degradation. The 2C, 1A and the Center Bay were inspected on January 7, 2003, January 15, 2003 and January 17, 2003, respectively. The report concluded that no defects were found at the time of inspection such as cracking or spalling of the concrete walls. The 2B CWP Bay was inspected on January 23, 2003, and the report did not indicate any significant degradation.

In general, the inspectors were satisfied that this program was being implemented and will manage the aging effects of the water control structures at Dresden and Quad Cities.

7. Protective Coating Monitoring and Maintenance Program (B.1.32)

The protective coating monitoring and maintenance program provides for aging management of Service Level I coatings inside primary containment. Such coatings are used in areas where the coating failure could adversely affect the operation of post-accident fluid systems and thereby impair safe shutdown. The

program provides for visual inspections to identify any condition that adversely affects the ability of the coating film to function as intended. It is implemented through procedures based on the technical and quality requirements of Regulatory Guide 1.54, Revision 0, “Quality Assurance Requirements for Protective Coatings Applied to Water Cooled Nuclear Power Plants,” and ANSI N101 4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities," and the guidance provided in EPRI TR-109937, "Guidelines on Nuclear Safety-Related Coating."

The applicant has periodically conducted inspections of the coatings inside containment, taken corrective actions when deficiencies were identified, and recoated the torus at both Dresden units and Quad Cities Unit 1. To ensure that the effects of aging on containment coatings is properly managed, the applicant has committed to enhance the current inspection program with procedure revisions to ensure inspection results are reviewed, that deficiencies are analyzed, and that sumps or screens associated with the emergency core cooling system are carefully inspected.

The inspectors reviewed the applicable LR evaluation, the existing procedures, and confirmed that the licensee had commitments in place to ensure continuity of the program through the period of extended operation. The inspectors concluded that the protective coating monitoring and maintenance program, as currently implemented, should provide reasonable assurance that primary containment will remain functional throughout the period of extended operation.

E. <u>One-Time Inspections</u>

The one-time inspection aging management program commits to inspections that manage aging effects of identified components within the scope of license renewal. The purpose of the program is to perform inspections on a representative sample of plant equipment to determine if aging is occurring. The following components will be inspected under this program.

- Inspect a sample of Class I piping less than four inch NPS exposed to reactor coolant for cracking.

- Inspect a sample of torus saddle Lubrite baseplates for galvanic corrosion, wear, and lockup to confirm the condition of the inaccessible drywell radial beam Lubrite baseplates.

- Inspect a sample of spent fuel pool cooling and demineralizer system (Dresden only) components for corrosion in stagnant locations to verify effective water chemistry control.

- Inspect a sample of piping exposed to the containment atmosphere (safety relief valve discharge piping and HPCI turbine exhaust sample locations) for loss of material.

- Inspect a sample of condensate and torus water components for corrosion in stagnant locations to verify effective water chemistry control.

- Inspect a sample of compressed gas system piping components for corrosion and a sample of compressed gas system flexible hoses for elastomer degradation.

- Inspect a sample of lower sections of carbon steel fuel oil and lubricating oil tanks for reduced thickness.

- Inspect a sample of fuel oil and lubricating oil piping and components for corrosion.

- Inspect a sample of main control room ventilation, emergency diesel generator ventilation, SBO building ventilation, reactor building ventilation and standby gas treatment system components for loss of material.

- Inspect a sample of stainless steel standby liquid control (SBLC) system components not in the reactor coolant pressure boundary section of the SBLC system for cracking, to verify effective water chemistry control. The effectiveness of the water chemistry program will be verified by a one-time VT-3 inspection of a Quad Cities SBLC pump casing and a Dresden SBLC pump discharge valve.

- Inspect a sample of HPCI turbine lubricating oil hoses for age-related degradation.

- Inspect a sample of non-safety related vents and drains including their valves and associated piping.

The inspectors reviewed a Program Elements document that described the inspection program. One time inspections are proposed for a High Pressure Coolant Injection (HPCI) suction check valve, a HPCI booster pump casing a safety relief valve discharge pipe in the torus and four sets of control rod drive scram valves as representative of emergency safeguards equipment. The applicant credits these same inspections as being representative of auxiliary systems and steam and power conversion systems. The inspectors commented that the equipment chosen for inspection did not appear to be representative of the materials - environment combination of auxiliary systems or steam and power conversion systems. A similar question was posed by NRR in a request for information (RAI) number 3.2-1. During the inspection, the applicant provided a sample basis document for one-time inspections and also increased the sample sizes for several of the one-time inspections. The inspectors reviewed the expanded population and the basis documented and concluded that the sample size was adequate. This issue will be discussed further with NRR to determine if a larger sample of equipment more representative of the material - environment combinations of auxiliary and steam and power conversion systems is appropriate.

F. Inspection Items From NRR Staff Review

The NRR staff reviewed the Dresden and Quad Cities license renewal application and the associated responses to requests for additional information (RAIs). The staff

requested that the inspectors inspect, confirm, or verify certain items that it had identified during its reviews. The following items are in response to the staff's request.

1. BWR Vessel ID Attachment Weld Inspection Guidelines

In LRA Appendix B.1.4, the applicant states that the inspection guidelines for the BWR vessel attachment welds program are consistent with BWRVIP-48. The staff approved version of BWRVIP-48 recommends enhanced VT-1 (EVT-1) for furnace-sensitized (from post weld heat treatment (PWHT)) welds, Alloy 182 welds, and the welds attaching certain components to the vessel.

The staff inspections need to confirm whether the applicant's program is consistent with the staff-approved version of BWRVIP-48 and whether Dresden and Quad Cities plants are bounded by that version. To facilitate the staff's review, vessel ID attachment welds, weld materials, welds that are furnace sensitized, and attachment welds that will be inspected with enhanced VT-1 need to be identified.

In response, the applicant stated that BWRVIP-48, "Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines," (Paragraph 3.2.1) recommends an enhanced VT-1 (EVT-1) for the core spray bracket welds and jet pump riser brace welds. Additionally, the BWRVIP recommends an EVT-1 for the steam dryer brackets and feedwater sparger brackets when the welds are furnace-sensitized stainless steel or are made of Alloy 182 filler materials. BWRVIP-48 (Table 3.2) recommends no additional inspections above those specified in ASME Section XI for the surveillance sample holder attachments. As indicated below, Dresden and Quad Cities examine the Vessel ID Attachment Welds as recommended by BWRVIP-48.

Attachment Weld	Plant/Unit(s)	Weld Material	Furnace Sensitized	Inspection Method
Steam Dryer Support Bracket	Dresden 2 Dresden 3 Quad Cities 1 & 2	E308 E308 E308	YES NO NO	EVT-1 EVT-1 EVT-1
Steam Dryer Lower Guide Rod Bracket	Dresden 2 Dresden 3 Quad Cities 1 & 2	E308 E308 E308	YES NO NO	EVT-1 EVT-1 EVT-1
Core Spray Bracket	Dresden 2 Dresden 3 Quad Cities 1 & 2	E308 E308 E308	YES NO NO	EVT-1 EVT-1 EVT-1
Feedwater Sparger Bracket	Dresden 2 Dresden 3 Quad Cities 1 & 2	E308 E308 E308	YES NO NO	EVT-1 EVT-1 EVT-1

Jet Pump Riser Brace	Dresden 2	E308, ER308, E308L, ER308L, E308Si, E308LSi	NO	EVT-1
	Dresden 3	E308, ER308, E308L, ER308L, E308Si, E308LSi	NO	EVT-1
	Quad Cities 1 & 2	E308L, ER308L	NO	EVT-1
Secondary Jet Pump Riser Brace, Double Leaf	Dresden 3 Only	E308L, ER308L	NO	EVT-1
Surveillance Sample Holder	Dresden 2 Dresden 3 Quad Cities 1 & 2	E308 E308 E308	YES NO NO	VT-1 VT-1 VT-1

2. E-VT(1) Crack Inspection

The staff approved version of BWRVIP-48 recommends enhanced VT-1 (EVT-1) for furnace-sensitized (from post weld heat treatment (PWHT)) welds, Alloy 182 welds, and the welds attaching certain components to the vessel.

The staff inspections need to confirm that the inspection program for detecting cracks in BWR Vessel ID attachment welds used EVT-1 visual inspection as stated in BWRVIP-48. To facilitate the staff's review, vessel ID attachment welds, weld materials, welds that are furnace sensitized, and attachment welds that will be inspected with enhanced VT-1 need to be identified.

The applicant's response to this staff question was addressed in above item F.1.

3. Cast Austenitic Stainless Steel (CASS) Piping and Fittings

LRA Table 3.1.110 states that CASS piping does not exist at Dresden or Quad Cities and, therefore, does not experience loss of fracture toughness due to thermal aging.

However, fittings (e.g., elbows and tees) in the austenitic stainless steel piping in BWR recirculation systems are typically made of CASS. The staff questioned whether the material for fittings in recirculation piping was CASS.

In response, the applicant reviewed appropriate piping design tables (PDT) for Dresden and Quad Cities recirculation systems. CASS was not identified for pipe fittings.

The inspectors then questioned whether fittings in other systems was CASS. In response, the applicant reviewed PDTs for other reactor coolant piping systems. CASS was not identified for pipe fittings.

When reviewing the applicable PDTs, the inspectors noted that stainless steel valve bodies were typically made of CASS. In response, the applicant acknowledged that the valve material was CASS, but valves were being managed separately under the components program. The Inspectors reviewed a table of CASS valves for Dresden Units 2 and 3 and Quad Cities Units 1 and 2 that were listed as AMR Component Type "Valve."

4. Factors of Improvement

The applicant credits LRA Appendix B.1.7, BWR Stress Corrosion Cracking Program, for managing crack initiation and growth due to stress corrosion cracking in austenitic stainless steel recirculation system piping and related components. The applicant also states that the BWR Stress Corrosion Cracking Program is based on BWRVIP-75, "Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules."

The staff inspections need to confirm that the resolutions to the open items of NRC letter to the industry BWRVIP group, dated May 14, 2002, have been implemented in the program, and the use of factors of improvement (FOI) in the licensee's hydrogen water chemistry (HWC) program is not being used as required by this NRC letter.

The applicant's response stated that the ISI Program at Dresden and Quad Cities have incorporated BWRVIP-75, "Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules," including the resolutions to the open items of NRC letter to the industry BWRVIP group, dated May 14, 2002. In addition, Dresden and Quad Cities do not use the factors of improvement for hydrogen water chemistry.

The inspectors interviewed Dresden and Quad Cities ISI Coordinators to confirm that the open items of the final safety evaluation of EPRI Report TR-113932 (letter to the industry BWRVIP group) dated May 14, 2002) have been implemented into their respective programs. Quad Cities has revised UFSAR Paragraph 5.2.3.5 to document compliance. Also, the respective ISI Coordinators confirmed that FOIs in the licensee's HWC program are not being used as required by the May 14, 2002 letter.

5. Exceptions to Guidance for Testing Intervals

LRA AMP B.1.13 states that, "The open-cycle cooling water aging management program activities provide for management of loss of material, cracking, buildup of deposits and flow blockage aging effects in cooling water systems that are tested and inspected in accordance with guidelines of GL 89-13." Section B.1.13 of the LRA takes the following exception to NUREG-1801:

"NUREG-1801 indicates that program testing and inspections are performed annually and during refueling outages. The Dresden and Quad Cities open-cycle cooling water system aging management program activities provide for adjustment of inspection intervals due to specific inspection results as stated in the response to GL 89-13."

It is not clear if the program is taking exceptions to NUREG-1801 concerning testing intervals to establish heat transfer capabilities. GL 89-13 requires a minimum final

testing frequency be once every five years. The staff questioned whether there are any exceptions to NUREG-1801 or GL 89-13 concerning test intervals.

In response, the applicant stated that the exceptions to the NUREG-1801 open-cycle cooling water aging management program are in two areas, one dealing with piping and other components, the second dealing with heat exchangers.

The first exception applies to the testing and inspection of service water system piping and components. The periodicity of the various credited testing and inspection activities is not on an annual or refueling outage interval, but rather was established by Engineering and is adjusted based on specific test/inspection results. This provides the necessary test/inspection frequencies for the early detection of specific components.

For heat exchanger testing and inspections, the applicant stated that the original Dresden and Quad Cities commitments under the GL 89-13 program for all of the open cycle cooling systems were to implement “testing and/or inspection/cleaning” to monitor heat exchanger performance (Commonwealth Edison letter to the NRC dated January 29, 1990). Testing and/or inspection/cleaning frequencies vary for each heat exchanger included in the open-cycle cooling water aging management program. The NUREG-1801 statement of testing/inspections “annually and during refueling outages” is not consistent with the GL 89-13 requirements. AMP B.1.13 therefore took exception to the frequencies as specified in NUREG-1801, XI.M.20. The AMP complies with the existing GL 89-13 program requirements concerning inspection/testing frequencies, which requires testing and or inspection/cleaning intervals not to exceed five years.

The inspectors reviewed the Dresden Station, “Generic Letter 89-13 Program Basis Document,” dated March 3, 2003, and verified that all open-cycle cooling water heat exchangers are required to be cleaned and/or inspected at intervals less than five years.

6. GALL Exceptions for Closed-Cycle Cooling Water Heat Exchangers

LRA AMP B.1.14 states that, "With enhancements, the closed-cycle cooling water system aging management program is consistent with the 10 elements of aging management program XI.M21, "Closed-Cycle Cooling Water System," specified in NUREG-1801." The LRA also states that heat exchanger activities are based on EPRI Report 1003056 Appendix G, SAND 93-7070 UC-523 and ASME OM-S/G-2000.

Since GALL XI.M21 does not reference or endorse these reports/standards, the staff requested that the applicant identify any exceptions to GALL XI.M21 for parameters monitored, detection of fouling, frequency of testing and acceptance criteria applied to closed-cycle cooling water heat exchangers.

In response, the applicant stated that NUREG-1801, XI.M21, “Closed-Cycle Cooling Water System,” specifically credits EPRI TR 107396 as an acceptable AMP. The NUREG does not specify any other requirements for aging management in closed cooling water systems. Exelon AMP B.1.14 is consistent with the NUREG-1801, XI.M21 AMP without any exceptions. Aging management activities include chemistry controls, performance monitoring, inspections, and flushing (as needed) of all heat exchangers in the scope of license renewal at Dresden and Quad Cities. The purpose of these

activities is to manage loss of material, cracking and buildup of deposits. Heat exchanger aging management is summarized in EPRI 1003056, Non Class 1 Mechanical Implementation Guideline and Mechanical Tools, Appendix G - Heat Exchangers, that includes the abbreviated table from Sandia National Laboratory Report SAND93-7070 UC-523, "Aging Management Guideline for Commercial Nuclear Power Plants - Heat Exchangers," dated June 1994. ASME OM-S/G-2000, Part 21, establishes the requirements for inservice performance testing of heat exchangers in light-water reactor power plants.

Exit Meeting Summary

The results of this inspection were discussed on October 22, 2003, with members of the Exelon Generation staff in an exit meeting open for public observation at the Exelon Midwest Regional Operating Group offices in Warrenville, IL. The applicant acknowledged the findings presented and presented no dissenting comments.

ATTACHMENT 1
Supplemental Information
Partial List of Persons Contacted

Applicant

R. Bauman, Dresden ISI Owner
J. Brownell, Quad Cities Station Fire Protection Engineer
K. Chhablani, Dresden, Structural Engineer
R. Hebeler, Quad Cities Operational Chemistry Supervisor
G. Houldson, Quad Cities Reactor Engineer
K. Johnson, Quad Cities ISI Owner
M. Kluge, LR Project Owner
G. Knapp, Quad Cities FAC Owner
D. Oakley, Dresden Engineering Programs
D. Patel, Quad Cities Station Structural Engineer
J. Patel, LR Project Owner
N. Rhoe, Dresden Maintenance Programs
J. Rund, Dresden Chemistry Department
C. Schneider, Quad Cities Reactor Engineer
R. Sisk, Dresden FAC Owner
J. VanPelt, Quad Cities Maintenance Rule Coordinator

NRC

C. Pederson, Director, Division of Reactor Safety, RIII
J. Lara, Chief, Electrical Engineering Branch, RIII

Public

C. Settles, Illinois Emergency Management Agency

List of Documents Reviewed

Engineering Documents

NUREG-1801	Generic Aging Lessons Learned (GALL); Revision 2
--	Inservice Inspection Classification Basis Document; Revision 0
--	Inservice Inspection Program Plan; Fourth Ten-year Inspection Interval; Revision 1
SIR-02-065	Report on System Review and Recommendations for a Transient and Fatigue Monitoring System at the Quad Cities and Dresden Nuclear Power Stations; dated July 2002

License Renewal Aging Management Reviews

AMR S02	Primary Containment and Structural Steel Components
AMI-01	NRC Aging Management Inspection Information Request; dated October 1, 2003
AMI-02	NRC Aging Management Inspection Information Request; dated September 30, 2003
AMI-03	Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program; dated September 30, 2003
AMI-04	NRC Aging Management Inspection Information Request; dated October 1, 2003
AMI-06	Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program; dated September 30, 2003
AMI-07	Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program; dated September 30, 2003
AMI-08	Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program; dated September 30, 2003
AMI-20	Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program; dated October 2, 2003
AMI-21	NRC Aging Management Inspection Information Request; dated October 1, 2003
AMI-31	Metal Fatigue of Reactor Coolant Pressure Boundary Aging Management Program; dated October 15, 2003
AMI-39	NRC Aging Management Inspection Information Request; dated October 16, 2003

-- Exelon Aging Management Program Ten Element Review for ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD (B.1.1); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for BWR Penetrations (B.1.8); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for BWR Vessel Internals (B.1.9); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for Compressed Air Monitoring (B.1.16); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for Reactor Water Cleanup System (B.1.17); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for Reactor Vessel Surveillance (B.1.22); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for ASME Section XI, Subsection IWE (B.1.26); dated October, 2003

-- Exelon Aging Management Program Ten Element Review for Heat Exchanger Test & Inspection Activities (B.2.6); dated October, 2003

B.1.20 Aboveground Carbon Steel Tanks

B.1.24 Selective Leaching of Materials

B.1.25 Buried Piping and Tanks Inspection

B.1.29 Masonry Wall Program

B.1.30 Structures Monitoring Program

B.1.31 RG 1.127, Inspection of Water Control Structures Associated with Nuclear Power Plants

<u>License Renewal Basis Documents</u>

APPENDIX A Updated Final Safety Analysis Report Supplement

APPENDIX B Aging Management Programs Evaluated in NUREG-1801

LRCR-2003-104 Add the Weir in Discharge Flume at Quad Cities to the Scope of the Rule; dated July 7, 2003

LRCR-2003-280 Revise Procedure SA-AA-117, Revision 2, Sections 4.7, 4.7.1, 4.7.1.1, and 4.7.1.2; dated September 9, 2003

LRCR-2003-287	Revise Procedure ER-MW-450 to Include Inaccessible Areas; dated October 10, 2003
LRCR-2003-297	Revise Procedure ER-MW-450 Attachment 6, 'Structures Matrix' to Clear BWR Terminology; dated October 16, 2003

Existing Plant/Corporate Procedures and Programs

CY-AA-120-400	Closed Cooling Water Chemistry, Revision 5
CY-AA-120-440	Stator Cooling Water Chemistry, Revision 1
CY-AB-120-100	Reactor Water Chemistry, Revision 5
CY-AB-120-110	Condensate and Feedwater Chemistry, Revision 6
CY-AB-120-120	BWR Startup Chemistry, Revision 2
CY-AB-120-200	Storage Tanks Chemistry, Revision 4
CY-AB-120-300	Spent Storage Pool, Revision 3
CY-AB-120-300	Control Rod Drive Water Chemistry, Revision 2
CY-AB-120-310	Suppression Pool Chemistry, Revision 2
CY-QC-110-601	Sampling Miscellaneous Plant Systems and Equipment, Revision 4
CY-QC-110-607	Sampling of Residual Heat Removal Heat Exchanger, Revision 1
CY-QC-110-608	Reactor/Turbine Building Sample Panel Collection, Revision 3
CY-QC-110-630	Diesel Fuel Oil Sampling, Revision 1
CY-QC-130-700	Diesel Fuel Oil Testing, Revision 6
DCP 1008-04	Heat Exchanger Inspection Program, Revision 6
DCP 2103-05	Chemical Addition to the Diesel Generator Cooling Water, Revision 9
DCP 2104-03	Diesel Fuel Oil, Revision 3
DFPS 4123-052/3	Diesel Fire Pump Operability, Revision 31
DMP 1500-03	Containment Cooling (LPCI) Heat Exchanger Maintenance, Revision 23
DMP 1501-04	Containment Cooling Service Water (CCSW) Pump Maintenance, Revision 14

DMP 5700-04	LPCI and HPCI Room Cooler Maintenance, Revision 9
DMS 0800-01	Refueling Platform Pre-Refueling Mechanical Inspection, Revision 5
DMS 5800-02	Overhead and Gantry Cranes, Annual Inspection and Preventive Maintenance, Revision 7
DMS 5800-05	Jib, Monorail, and Underhung Cranes Without Integral Hoisting
DMS 6600-02	Diesel Generator Inspection and Preventative Maintenance, Revision 22
DMS 6600-04	SBO Diesel Generator Mechanical Inspection and Preventive Maintenance Procedure, Revision 07
DOP 3900-03	Reversing Service Water Flow through HPCI Room Coolers, Revision 3
DOS 0040-02	Operator Oil Sampling for Offsite Laboratory Analysis, Revision 52
DOS 1500-14	LPCI Torus Spray Test, Revision 01
DOS 1600-28	Air Operated Valve Fail Safe and Accumulator Integrity Test, Revision 9
DOS 2300-03	High Pressure Coolant Injection System Operability Verification, Revision 78
DOS 6600-01	Diesel Generator Surveillance Tests, Revision 80
DOS 6620-07	SBO 2(3) Diesel Generator Surveillance Testing, Revision 16
DOS 7100-02	Leakage Test of Target Rock Pneumatic System, Revision 3
DTP 07	Records of Operational Cycles for Dresden Units 2 and 3, Revision 12
DTP 47	Dresden Leak Rate Testing Program
DTS 0200-03	RPV Invessel Internal Examination, Revision 03
DTS 1500-03	LPCI Containment Spray Test, Revision 03
DTS 1600-06	Drywell Liner Leakage Inspection, Revision 6
DTS 0200-02	Reactor Pressure Vessel In Vessel Visual Examination Procedure, Revision 3
DTS 4700-01	Sampling Unit 2 (3) Instrument Air, Revision 5
ER-AA-330	Conduct of Inservice Inspection Activities, Revision 2
ER-AA-330	Conduct of Inservice Inspection Activities, Revision 3

ER-AA-330-001	Section XI Pressure Testing, Revision 3
ER-AA-330-001	Section XI Pressure Testing, Revision 4
ER-AA-330-002	Inservice Inspection of Section XI Welds and Components, Revision 2
ER-AA-330-002	Inservice Inspection of Section XI Welds and Components, Revision 3
ER-AA-330-003	Inservice Inspection of Section XI Component Supports, Revision 3
ER-AA-330-007	Visual Examination of Section XI Class MC Surfaces and Class CC Liners, Revision 2
ER-AA-330-009	Asme Section XI Repair and Replacement Program, Revision 1
ER-AA-330-09	ASME Section XI Repair/Replacement Program, Revision 2
ER-AA-335-004	Manual Ultrasonic Measurement of Material Thickness, Revision 4
ER-AA-370	Ferratic Reactor Coolant Pressure Boundary Integrity, Revision 1
ER-AA-380	ComEd Integrated and Local Leakage Rate Test
ER-AA-470	Fatigue and Transient Monitoring Program, Revision 0
ER-AA-430	Conduct of Flow Accelerated Corrosion Activities, Revision 1
ER-AA-430-1001	Guidelines for Flow Accelerated Corrosion Activities, Revision 1
ER-AA-430-1002	Feedwater Heater Shell Inspection for Detection of Flow Accelerated Corrosion, Revision 1
ER-AB-331	BWR Reactor Internals Management Program Activities, Revision 1
ER-AB-331	BWR Reactor Internals Management Program Activities, Revision 2
ER-AA-2030	Conduct of Plant Engineering Manual, Revision 1
ER-MW-450	Structural Monitoring, Revision 0
ER-MW-450	Structures Monitoring, Revision 1
GE-PDI-UT-5	PDI Generic Procedure for Straight Beam Ultrasonic Examination of Bolts and Studs, Revision 2
MA-AA-716-23	Predictive Maintenance Program, Revision 1
MA-AA–716-230-1001	Used Oil Data Interpretation Guidelines, Revision 2

MA-DR-MM-5-58001	Visual Inspection and Preventive Maintenance of Jib, Monorail, and Underhung Cranes With Integral Hoisting Mechanisms, Revision 1
MA-MW-736-600	Torquing and Tightening of Bolted Connections, Revision 0
NF-AA-610	Onsite Wet Storage of Spent Nuclear Fuel, Revision 3
QCAP 0400-17	Station Lubrication Program, Revision 24
QCAP 1500-01	Administrative Requirements for Fire Protection, Revision 19
QCFHP 0500-22	Annual/Biannual Inspection of Refueling Platform, Revision 1
QCFHP 0500-22	Annual/Biannual Inspection of the Refueling Platform, Revision 1
QCOS 0201-08	Reactor Vessel and Class One Piping Leak Test, Revision 32
QCTP 0130-01	Quad Cities Leak Rate Testing Program
QCTP 0500-10	Reactor Vessel Designed Cycles, Revision 4
QCTP 0820-10	Heat Exchanger and Room Cooler Inspection, Revision 3
QCTS 4700-01	Instrument Air Analysis, Revision 1
QCTS 0740-04	Reactor Pressure Vessel In-vessel Visual Examination, Revision 5
QCMMS 4100-12	Exterior Hydrant Flush and Valve Cycle Test, Revision 10
QCMMS 4100-22	Sprinkler/Water Spray Header and Nozzle and Cardox System Inspection, Revision 10
QCMMS 4100-28	Unit 1(2) Transformers Deluge System Functional Test (Grinnell Multimatic Valves) and Multimatic Supply Strainer Flushes, Revision 9
QCMMS 6600-03	Emergency Diesel Generator Periodic Preventive Maintenance Inspection, Revision 18
QCMMS 6600-06	Emergency Diesel Generator Twelve Year Preventive Maintenance Inspection, Revision 4
QCMMS 6620-03	Station Blackout Diesel Generator (SBO) Periodic Preventive Maintenance Inspection, Revision 8
QCMPM 4400-11	RHR Service Water Intake Bay Inspection, Revision 5
QCMPM 4400-12	Circulating Water Intake Bay Inspection, Revision 6

QCMPM 5700-24	Station Blackout Building Battery Room Air Handling and Condensing Units, Revision 0
QCMPM 5800-02	Periodic Inspection and Preventive Maintenance Program for Overhead Cranes, Jib Cranes, and Monorail Systems, Revision 18
QCMPM 5800-02	Periodic Inspection and Preventive Maintenance Program for Overhead Cranes, Jib Cranes and Monorail Systems, Revision 18
QCMPM 6600-03	Diesel Fuel Oil Storage Tank Cleaning, Revision 1
QCOS 6600-03	Diesel Fuel Oil Transfer Pump Monthly Operability, Revision 16
QCOP 1100-04	Water Addition to SLC Tank to Increase Tank Level, Revision 7
QCOP 1100-07	Increasing SLC Tank Boron Concentration, Revision 8
QCOS 2300-05	Quarterly HPCI Pump Operability, Revision 48
QCOS 6600-41	Unit 1 Diesel Generator Load Test, Revision 16
QCOS 6600-42	Unit 2 Diesel Generator Load Test, Revision 14
QCOS 6600-43	Unit ½ Diesel Generator Load Test, Revision 14
QCOS 6620-01	SBO DG 1(2) Quarterly Load Test, Revision 22
QCOP 5300-05	Monitoring Dissolved Oxygen Concentration in the Stator Cooling System, Revision 5
QCTP 0820-10	Heat Exchanger and Room Cooler Inspection, Revision 3
QCTS 0320-02	Suppression Chamber Spray Header and Nozzle Water Spray Test, Revision 6
QCTS 0704-04	RPV In-Vessel Visual Examination, Revision **xx**
QCTS 0320-03	Drywell Spray Header and Nozzle Air Test, Revision 8
SA-AA-117	Excavation, Trenching, and Shoring, Revision 2
<u>Plant Records</u>	
950063962-02	Clean Inside of Units 2/3 Diesel Fuel Oil Storage Tank; dated September 9, 1996
99219953-01	Perform UT Inspection of Drywell Liner, October 11, 2002
00364124	D2 2Y PM Pre-Refueling Inspection of Refuel Grapple

00375432-01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated January 2, 2002
00399310-01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated March 28, 2002
00432387-01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated June 27, 2002
00493177-01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated January 9, 2003
00535055-01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated March 27, 2003
00561578-01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated June 26, 2003
00560790 01	Q2R17 FAC - Perform Pipe Prep & Support Activities, Quad Cities Unit 2
00570206 01	Instrument Air Sample (GL 88-14); dated July 18, 2003 (Quad Cities)
00558635 01	Flow Accelerated Corrosion Inspections, Quad Cities Unit 2
00594455 01	Dresden 2/3 Quarterly Preventive Maintenance Air Sample of Instrument Air; dated September 25, 2003
00598628 01	Instrument Air Sample (GL 88-14); dated October 15, 2003 (Quad Cities)
588923	One-time Visual Inspection of 1B Reactor Building Component Cooling Water Heat Exchanger Service Water Outlet Inboard Drain Valve 1-3999-265B/VIS
596685	One-time Visual Inspection of Fire Protection Header Supply Valve 2/3-4110-502/VIS
588921	One-time Visual Inspection of Stator Cooling Service Water Discharge from Heat Exchanger 1B Valve 1-3999-129/VIS
596675	One-time Visual Inspection of Unit 1 Fire Protection Supply Valve 1-4100-F-37/VIS
592853	One-time UT Inspection of the Bottom of CCST 0-3303-A/T05; dated July 3, 2003
116292	Fix Leak on the Crib House Ceiling Near 2A Traveling Screen; dated October 16, 2003

101562	Action Tracking, Visual Inspection of External Surfaces of Buried Piping Section and Tanks
168992-01	Predefine, Outdoor N2 System and Tanks Walkdown
10179-01	Predefine, D2 3M PM Pumpback/N2 Storage Tank/System 85 Walkdown by System Engineer
15871-09	Predefine, Fire System Flow Test
15839-02	Predefine, EDG Fuel Oil Storage Tank Cleaning and Inspection
QCTS 0850-05	Fire System C Factor Test; dated November 30, 2000
QCMPM 4400-11	RHR Service Water Intake Bay Inspection; dated July 10, 2003
QCMPM 4400-12	Circulating Water Intake Bay Inspection; dated December 5, 2002
QCH-98	Structures Monitoring Report of Quad Cities; 1998
QCTS 0850-05	Fire System 'C' Factor Test, Revision 3

Condition Reports

00181471	Procedures CY-AB-120-300 and NF-AA-610 Not Linked; dated October 17, 2003
00181466	Light Surface Corrosion on all 3 EDG's Cooling Water Piping; dated October 17, 2003
00181480	SBO Diesel Jacket Water Radiator Piping Galvanic Corrosion; dated October 17, 2003

Plant Drawings

M-24	Diagram of Instrument Air Piping, Reactor Building, Sheet 12, Revision E (Quad Cities)
M-37	Diagram of Instrument Air Piping, Sheet 2, Revision RT (Dresden)
M-37	Diagram of Instrument Air Piping, Sheet 3,Revision AI (Dresden)
M-37	Diagram of Instrument Air Piping, Sheet 5, Revision AJ (Dresden)
M-37	Diagram of Instrument Air Piping, Sheet 7, Revision E (Dresden)
M-37	Diagram of Instrument Air Piping, Sheet 8, Revision L (Dresden)
M-37	Diagram of Instrument Air Piping, Sheet 9, Revision L (Dresden)

M-367	Diagram of Instrument Air Piping for 3A and 3B Compressors, Sheet 1, Revision BA (Dresden)
M-367	Diagram of Instrument Air Piping, Sheet 3, Revision AD (Dresden)
M-367	Diagram of 3C Instrument Air Piping, Sheet 4, Revision K (Dresden)

Miscellaneous Documents

---	License Renewal Application, Dresden and Quad Cities Nuclear Power Stations; dated January 3, 2003
--	Dresden Station; Generic Letter 89-13 Program Basis Document; dated March 3, 2003
--	Commonwealth Edison Letter to the NRC; Response to Generic Letter 89-13; dated January 29, 1990
--	Dresden Station Underwater Inspection Reports; 2003
--	Dresden Station; N2/Pumpback - U2 85 - System/Component Walkdown Report; 2003
--	GE Report No. Q2R16-8 Examination Summary Sheet, Weld 02BD-F9, Pipe to Valve; dated February 27, 2002
--	Ultrasonic Testing Data Sheet Q1R17-0008 Flow Accelerated Corrosion Program, Component 1FD04D; dated November 7 2002
--	Letter from Exelon to NRC; Request for Approval of Pipe Flaw Evaluation, RS-02-039; dated February 22, 2002
--	Letter from Exelon to NRC; Additional Information Supporting Request for Approval of Pipe Flaw Evaluation, RS-02-046; dated February 26, 2002
--	Letter from Exelon to NRC; Supplemental Information Supporting Request for Approval of Pipe Flaw Evaluation on QCNPS Unit 2, RS-02-053; dated March 14, 2002
--	ISI Program Plan, Fourth Ten Year Inspection Interval, Dresden Nuclear Power Station Units 2 and 3, Revision 1
--	Safety Evaluation by Office of Nuclear Reactor Regulation; Request for Approval of Pipe Flaw Evaluation for a Circumferential Crack in the B-Loop Recirculation Pipe Weld, Quad Cities Nuclear Power Station Unit 2; Docket No. 50-265; dated June 6, 2002

--	ASME Boiler and Pressure Vessel Code, 1995 Edition with 1996 Addenda, Section XI; Rules for Inservice Inspection of Nuclear Power Plant Components
--	Report of Operational Cycles for Dresden Units 2 and 3, July 23, 2003
NEI 95-10	Industry Guideline for Implementing Requirements of 10 CFR Part 54 - The License Renewal Rule, Revision 3
Letter 047-39008-3	Quarterly Instrument Air Performed 7/18/03, from PSI to Exelon; dated July 21, 2003
QCTP 0500-10	Reactor Vessel Designed Cycles; completed October 1, 2003
ASME OM-S/G-2000	Standards and Guides for Operation and Maintenance of Nuclear Power Plants; dated December 15, 2000
EPRI TR-107396	Closed Cooling Water Chemistry Guideline; dated October 1997
--	Quad Cities Station Underwater Inspection Reports; 2002 - 2003
94-5.4-01	FAC Program Basis Document, Dresden Nuclear Station, Revision 0
94-5.4-02	FAC Program Basis Document, Quad Cities Nuclear Station, Revision 0
94-5.4-05	Susceptible Non-Modeled FAC Program, Dresden Nuclear Station, Revision 0
94-5.4-08	Susceptible Non-Modeled FAC Program, Quad Cities Nuclear Station, Revision 0
030679-01	FAC System Susceptibility Evaluation (SSE), Dresden Unit 2 and Unit 3, Revision 0
030679-02,	FAC Susceptible Non-Modeled Program (SNM), Dresden Unit 2 and Unit 3, Revision 0
1046-244-CLC-03	FAC Program System Susceptibility Evaluation, Quad Cities Station, Revision 0

ATTACHMENT 2

LIST OF ACRONYMS USED

AMP	Aging Management Program
AMR	Aging Management Review
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
BWRVIP	Boiling Water Reactor Vessel Internals Program
CASS	Cast Austenitic Stainless Steel
CR	Condition Report
CCST	Contaminated Condensate Storage Tank
CST	Condensate Storage Tank
CWP	Circulating Water Pump
EDG	Emergency Diesel Generator
EQ	Environmental Qualification
FAC	Flow Accelerated Corrosion
FOI	Factors of Improvement
GALL	Generic Aging Lessons Learned Report
HPCI	High Pressure Coolant Injection
IASCC	Irradiation Associated Stress Corrosion Cracking
IGSCC	Intergranular Stress Corrosion Cracking
ISI	Inservice Inspection
LR	License Renewal
LRA	License Renewal Application
NRR	NRC Office of Nuclear Reactor Regulation
PM	Preventive Maintenance
RAI	Request for Additional Information
RBCCW	Reactor Building Closed Cooling Water
RCS	Reactor Coolant System
RG	Regulatory Guide
RV	Reactor Vessel
SBLC	Standby Liquid Control
SSC	Systems, Structures, and Components
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Test
WO	Work Order

ATTACHMENT 3

NRR Inspection Questions

Review of the Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2, Application for License Renewal

Reactor Coolant System - INSPECTION QUESTIONS:

3.1.2.3.2-1
The applicant states that the inspection guidelines for the BWR vessel ID attachment welds program (LRA Appendix B.1.4) are consistent with BWRVIP-48. The staff inspections needs to confirm whether the applicant's program is consistent with the staff-approved version of BWRVIP-48 and whether its plant is bounded by that version.

3.1.2.3.2-5
Confirm that the inspection program for detecting cracks in BWR Vessel ID attachment welds used E-VT(1) visual inspection as stated in BWRVIP-48.

3.1.2.4.3-3

In LRA Table 3.1.1.10, Reference No. 3.1.1.10, the applicant states that CASS piping does not exist at Dresden or Quad Cities and, therefore, the piping does not experience loss of fracture toughness due to thermal aging. However, fittings (e.g., elbows and tees) in the austenitic stainless steel piping in the BWR recirculation system are typically made of CASS. The staff inspections needs to confirm whether the material for the fittings in the recirculation piping, is not CASS. If the material is CASS, what is the an aging management program for managing loss of fracture toughness in those fittings?

3.1.2.4.3-6

The applicant credits LRA Appendix B.1.7, BWR Stress Corrosion Cracking Program, for managing crack initiation and growth due to stress corrosion cracking in austenitic stainless steel recirculation system piping and related components. The applicant also states that the BWR Stress Corrosion Cracking Program is based on BWRVIP-75, "Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules." Confirm that the resolutions to the open items of NRC letter to Terry (BWRVIP), dated May 14, 2002 have been implemented in the program, and that the use of factors of improvement (FOI) in the licensee's HWC program is not being used as required by this NRC letter.

Auxiliary Systems - Potential Inspection Items

Open-Cycle Cooling Water System

LRA AMP B.1.13 states that, "The OCCW aging management program activities provide for management of loss of material, cracking, buildup of deposits and flow blockage aging effects in cooling water systems that are tested and inspected in accordance with guidelines of

GL 89-13." As further stated in the exceptions, "NUREG-1801 indicates that program testing and inspection intervals are performed annually and during refueling outages." This AMP further identifies exceptions regarding inspection intervals, but it is not clear if the program is taking exceptions to NUREG-1801 concerning testing intervals to establish heat transfer capabilities. GL 89-13 requires a minimum final testing frequency be once every five years. Determine if there are any exceptions to NUREG-1801 or GL 89-13 concerning test intervals and, if so, determine whether they are acceptable.

Closed-Cycle Cooling Water System

LRA AMP B.1.14 states that, "With enhancements, the closed-cycle cooling water system aging management program is consistent with the ten elements of aging management program XI.M21, "Closed-Cycle Cooling Water System," specified in NUREG-1801." LRA also states that heat exchanger activities are based on EPRI Report 1003056 Appendix G, SAND 93-7070 UC-523 and ASME OM-S/G-2000. Since GALL XI.M21 does not reference or endorse these reports/standards, identify any exceptions to GALL XI.M21 for parameters monitored, detection of fouling, frequency of testing and acceptance criteria applied to closed-cycle cooling water heat exchangers and determine whether they are acceptable.

Inspection of AMP B.1.17 (BWR Reactor Water Cleanup System)

The EMEB staff requests that an inspection of LRA AMP B.1.17 be included in the NRC Inspection List.

The purpose of the inspection is to verify that the criteria delineated in GALL AMP XI.M25 are met for the Dresden and Quad Cities plants so that the AMP B.1.17 is consistent with GALL AMP XI.M25 (with the exception of Water Chemistry program) as stated in AMP B.1.17 in Appendix B of the LRA by the applicant.

In AMP B.1.17, the applicant also stated that the inspection of RWCU piping is not required because Dresden and Quad Cities (D & QC) have satisfactorily completed all actions requested in NRC GL 89-10, and have replaced the RWCU system piping with piping that is resistant to IGSCC in accordance with NRC GL 88-01. (The applicant claimed that this met the GALL criteria of not requiring IGSCC inspection).

The following examples are to be examined and verified:

a. The applicant stated that D & QC have replaced the RWCU system piping with piping that is resistant to IGSCC in accordance with NRC GL 88-01. Clarify that:

   (i) Whether the entire RWCU system piping was replaced with IGSCC-resistance material or only portions of the RWCU system piping for each plant was replaced.

   (ii) If the entire RWCU system piping was replaced, does it include **all** the RWCU welds inboard and outboard of the second isolation valves? Does the selection of materials of the replaced piping and weld metal meet the material compositions as described in GALL AMP XI.M25?

(iii) If only portions of the RWCU system piping was replaced, verify that the entire RWCU system piping meet the screening criteria, 1 (a), (b), and (c), of GALL AMP XI.M25, and that the replaced portions of the RWCU system piping meet the material specifications as delineated in Item 2 of GALL AMP XI.M25.

- Please verify the documentation of the basis for applicant's statement that the inspection of RWCU system piping is not required.

- Based on the results of Items 1 and 2 above, confirm that the 10 elements of aging management program XI.M25 specified in NUREG-1801 (GALL) (with the exception of Water Chemistry program) are applicable to D & QC, and that the applicant's claim, that its AMP B.1.17 is consistent with GALL AMP XI.X25 with the stated exceptions, is acceptable.