September 15, 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 LICENSE RENEWAL SCOPING/SCREENING INSPECTION REPORT 50-237/03-04 (DRS); 50-249/03-04 (DRS); 50-254/03-04 (DRS); 50-265/03-04 (DRS)

Dear Mr. Skolds:

On August 1, 2003, the NRC completed an inspection regarding the application for license renewal for your Dresden and Quad Cities facilities. The enclosed report documents the inspection findings, which were discussed on August 1, 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 the 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 process of scoping and screening plant equipment to select equipment subject to an aging management review.

The inspection concluded that the scoping and screening portion of license renewal activities were conducted as described in the License Renewal Application and that documentation supporting the application is in an auditable and retrievable form. With the exception of the items identified in this report, your scoping and screening process was successful in identifying those systems, structures, and components required to be considered for aging management.

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 Martin J. Farber at 630-829-9734.

Sincerely,

/RA/

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

cc: 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
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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:	50-237/03-04; 50-249/03-04; 50-254/03-04; 50-265/03-04
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:	July 28 through August 1, 2003
Inspectors:	M. J. Farber, Senior Reactor Inspector Z. Falevits, Senior Reactor Inspector M. S. Holmberg, Senior Reactor Inspector 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 Lara, Chief Electrical Engineering Branch Division of Reactor Safety

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SUMMARY OF FINDINGS

IR 0500237/2003-004 (DRS); 0500249/2003-004 (DRS); 0500254/2003-004 (DRS); 0500265/2003-004 (DRS); 07/28/2003 - 08/01/2003; Exelon Generation Company; Dresden Nuclear Power Station, Units 2 and 3, Quad Cities Nuclear Power Station, Units 1 and 2; License Renewal Inspection Program, Scoping and Screening.

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

The overall conclusion of this inspection was that there was reasonable assurance that the applicant had properly conducted license renewal scoping and screening for systems, structures, and components at Dresden and Quad Cities Nuclear Power Stations. The inspection revealed the following issues:

- The applicant's methodology for establishing system boundaries where nonsafety-related piping was attached to safety-related piping was not consistent with the guidance provided by the NRC staff in the interim staff guidance letter. Specifically, the applicant developed the concept of an "equivalent anchor" which included restraints at multiple locations rather than the traditional definition of an "anchor" as a three dimensional, six degrees of freedom restraint (pipe displacements and pipe rotations) at the same physical location. This was considered an open item pending evaluation by the Office of Nuclear Reactor Regulation technical staff.

- At the close of the inspection, the applicant was evaluating the switchyard buses for inclusion within the scope of the rule. The applicant's decision on this matter will be evaluated during the forthcoming aging management inspection.

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 results of the applicant's scoping of plant systems and screening of components within those systems to identify the list of components that need evaluation for aging management. The team selected a sample of plant systems, structures, and components (SSC) from the LRA scoping results to verify the adequacy of the applicant's scoping and screening documentation and implementation activities. For the selected in-scope systems/structures, the associated boundary drawings, and the active/passive and short/long lived determinations of the selected SSCs were reviewed to confirm the accuracy of the applicant's results. In addition to the in-scope systems and structures, some systems that the applicant had determined not to be in scope for license renewal were selected for inspection. The inspectors reviewed supporting documentation and interviewed applicant personnel to confirm the accuracy of the LRA conclusions. The SSCs selected for review during this inspection are listed in Attachment 2 to this report.

II. Findings

A. Evaluation of Scoping and Screening of Mechanical Systems

The inspectors evaluated the applicant's scoping and screening process for mechanical components by reviewing a number of plant systems that the applicant determined to be either within or out of the scope of license renewal (LR). The applicant performed scoping at the system level by first identifying safety-related (SR) mechanical systems via review of current licensing basis documentation. In addition, through walkdowns and review of other licensing basis information, nonsafety-related (NSR) mechanical systems which could adversely affect SR systems were identified as were systems committed to support the four NRC-regulated events in 54.4(a)(3).

After system scoping, screening was accomplished by: establishment of LR system boundaries by creating from official station drawings highlighted license renewal boundary flow diagram drawings; identifying components and component groups subject to an aging management review (AMR) using a list of all passive, long-lived, mechanical components; and identification of intended function(s) of each mechanical component. The screening process and results were documented in individual system LR scoping and screening books.

During the applicant's scoping and screening effort, additional NRC guidance was issued for consideration of the effects of NSR systems on SR systems, such as via spray, leakage, pipe whip, jet impingement, flooding, and displacement/falling. The inspectors reviewed the applicant's methodology for inclusion of NSR mechanical systems in scope which could affect SR systems. The applicant's methodology consisted of: determining all areas where SR and NSR systems were located; considering all NSR systems within these areas to be in scope for LR; and evaluating via documentation and walkdowns which NSR systems could damage SR systems for screening considerations.

For an NSR system, structure or component that is connected to a SR system, structure or component, NRC guidance is that the NSR system, structure or component should be included within the scope of license renewal up to the first seismic anchor past the safety/non-safety interface. NRC considers an anchor to be a three dimensional, six degrees of freedom restraint (pipe displacements and pipe rotations) at the same physical location. The applicant's technical instructions, LRTI-16, specified that the NSR piping be "anchored" in three dimensions past the safety/non-safety interface. Discussions with the applicant's staff determined: 1) a pipe displacement restraint was considered to be a dimensional anchor; 2) three dimensions of pipe displacement restraint was considered to be an "equivalent anchor;" and 3) the three dimensions of pipe displacement restraint need not be at the same physical location. Therefore, for NSR piping physically connected to SR piping, the applicant only included within the scope of license renewal the NSR system, structures and components up to the "equivalent anchor" past the safety/non-safety interface. Further discussions revealed that this issue had not been previously identified and would require resolution by NRR. This is an open item (50-237/03-04-01; 50-249/03-04-01; 50-254/03-04-01; 50-265/03-04-01).

The following mechanical systems were reviewed:

1. Reactor Vessel

The reactor vessel contains the reactor core, the reactor internals, and the reactor core coolant-moderator. It serves as a high-integrity barrier against leakage of radioactive materials to the drywell.

The reactor vessel is a vertical, cylindrical pressure vessel with hemispherical heads. The cylindrical shell and bottom hemispherical head of the reactor vessel are of welded construction and are fabricated of low alloy steel plate. The removable top head is attached to the cylindrical shell flange by bolting. The major safety function for the reactor vessel is to provide a radioactive material barrier. The vessel also provides a floodable core volume, contains the moderator, and provides support for the reactor vessel internals.

The boundary evaluated by the applicant for the reactor vessel included the vessel shell and flange, top head and flange, bottom head, vessel closure studs and nuts, vessel nozzles (recirculation, main steam, feedwater and others), nozzle safe ends, vessel penetrations (control rod drive (CRD) stub tubes, in-core instrument housings and others), vessel skirt, vessel shell course welds and vessel attachment welds. The applicant considered all of the reactor vessel components to be in scope of LR. The inspectors reviewed LR boundary drawings, the Updated Final Safety Analysis Report (UFSAR), engineering documentation, and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for the reactor vessel and identified the mechanical components subject to aging management in accordance with the methodology described in the LRA and the rule. However, NRR staff had identified open questions on the scope of vessel components associated with the vessel penetration nozzles (reference NRC letter dated August 4, 2003; ADAMS accession number ML0321803282).

2. Reactor Internals

Reactor internals are installed to properly distribute the flow of coolant delivered to the vessel, to locate and support the fuel assemblies (evaluated separately) and control blades (evaluated separately), and to provide an inner volume containing the core that can be flooded following a break in the nuclear system process barrier external to the reactor vessel.

The reactor internals include a core shroud, which is a stainless steel cylinder surrounding the reactor core that provides a barrier separating the upward flow of the coolant through the reactor core from the downward recirculation flow. Bolted on top of the shroud is the steam separator assembly which forms the top of the core discharge plenum. This provides a mixing chamber before the steam-water mixture enters the steam separator. The recirculation outlet and inlet plenum are separated by the baffle plate (part of the shroud support structure) joining the bottom of the shroud to the vessel wall. The jet pump diffuser sits on, and is welded to, the baffle plate, making the jet pump diffuser section an integral part of the baffle plate. The baffle plate supports carry all the vertical weight of the shroud, steam separator and dryer assembly, top guide and bottom core plate (core grids), peripheral fuel assemblies, and jet pump components carried on the shroud. The control rod guide tubes extend up from the CRD housing through holes in the core plate. Each tube is designed as a lateral guide for the control rod and as the vertical support for the fuel support piece which holds the four fuel assemblies surrounding the control rod.

The boundary evaluated by the applicant for the reactor vessel internals included all components that are inside the reactor vessel except the fuel assemblies and the control blades, both of which were short-lived components and evaluated separately. The applicant considered most of the component internal components to be within the scope of LR. Examples of components which were not within the scope of license renewal included steam separators, feedwater spargers, shroud head bolts and jet pump sensing lines. The inspectors reviewed LR boundary drawings, the UFSAR and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for the reactor vessel internals and identified the mechanical components subject to aging management in accordance with the methodology described in the LRA and the rule. However, the NRR staff had identified open questions on the scope of vessel internals components such as thermal sleeves, feedwater spargers and internal standby liquid control piping (reference NRC letter dated August 4, 2003; ADAMS accession number ML0321803282).

The steam separator and dryer assembly provides dry saturated steam for use by the main turbine and the high pressure coolant injection (HPCI) system turbines. The applicant evaluated the steam separator assembly and determined that it was not in-scope. However, the applicant had not performed an analysis to demonstrate that failure of the separator assembly and resultant moisture carryover, would not impact operation of the HPCI turbine driven pump. The applicant continued an investigation of this issue at the conclusion of the inspection. The applicant’s preliminary conclusion was that the scoping of the steam separator and dryer was correct. This conclusion was based upon a preliminary evaluation from the nuclear steam supply system vendor based upon the expected initiation of the HPCI system following a reactor scram. The applicant's vendor had concluded that following a scram, the power level, steam flow through the dryer, and differential pressure across the dryer are well below the conditions where high moisture carryover had been observed (e.g., at Quad Cities following a dryer crack event at full power). Therefore, the applicant's conclusion was that, under these conditions, operation of the HPCI system would not be affected by failure of the steam dryer assembly. This issue was referred to NRR for review of a applicant's analysis of this condition. NRR subsequently concluded that the analysis adequately supported exclusion of the steam separator assembly from the scope of LR.

3. Reactor Vessel Head Vent System

The head reactor vessel head vent (RVHV) system serves to remove non-condensable gases from the steam dome of the reactor vessel. During power operation, a two-inch line provides a vent from the reactor head to the main steam line.

The boundary evaluated by the applicant for the RVHV system extended from the flange at the vessel head and associated piping to normally shut isolation valves. No components of this system were outside the scope of LR for Dresden. For Quad Cities, the licensee determined that portions of a nonsafety-related drain line attached to this system was outside of the scope of LR based on piping being downstream of an anchor point. The inspectors reviewed LR boundary drawings, the UFSAR and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for the RVHV system and identified the mechanical components subject to aging management in accordance with the methodology described in the LRA and the rule.

4. Head Spray System

For Dresden 2 and 3, the reactor vessel head spray (HS) system is used to spray cool water into the steam bubble, causing condensation of steam and reduction of pressure and temperature in the head region. The HS system can also be used for cold hydrostatic testing.

The boundary evaluated by the applicant for the HS system consisted of selected components from the CRD system, the head spray line and associated valves and head spray element. The applicant scoped this system into the LR, except for the head spray nozzle and spray element internal to the vessel. The inspectors reviewed LR boundary drawings, the UFSAR and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for HS system and identified the mechanical components subject to aging management in accordance with the methodology described in the LRA and the rule.

5. Nuclear Boiler Instrumentation System

The nuclear boiler instrumentation (NBI) system provides trip signals to the reactor protection system, emergency core cooling systems (ECCS), primary containment isolation logic, recirculation pump trip, and alternate rod insertion. It also provides the operator with indications of the reactor level, pressure, and temperature during normal and transient operation and for guidance in following emergency procedures and supporting post-accident operation. Parameters monitored by NBI are reactor vessel temperature, reactor vessel pressure, reactor vessel water level, reactor internal differential pressure, and reactor vessel flange leakage.

The system includes all associated piping, condensing chambers, inline manual isolation globe valves, flow limiting check valves, local instrument racks, and mounted instruments for parameters monitored. Also included are all piping associated with the reactor vessel level indication system backfill subsystem, valves, filters, flow regulators, and flow indicators in piping connecting with the CRD water header. The NBI system scope also includes the thermocouples monitoring vessel temperature and the piping, valves, instruments and controls used for monitoring reactor vessel head leakage. For Quad Cities only, components associated with the electro-chemical potential probe in the hydrogen addition system are included with the NBI system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the nuclear boiler instrumentation system in accordance with the methodology described in the LRA and the rule.

6. Core Spray System

The core spray (CS) system provides core cooling for intermediate and large line break sizes. Two independent CS loops are provided to ensure adequate core cooling. Each core spray loop is designed to operate in conjunction with low pressure coolant injection (HPCI) and either the automatic depressurization system (ADS) or high pressure coolant injection (HPCI) system to provide adequate core cooling over the entire spectrum of liquid or steam break sizes. The normal water source is supplied from the suppression chamber (evaluated with the primary containment structure). An alternate water source is the condensate storage system (evaluated with the condensate and condensate storage system). The CS system delivers water directly to the reactor vessel (evaluated with the reactor vessel) onto the top of the fuel assemblies through the CS spargers (evaluated with reactor internals). Each CS loop is equipped with a test return line to the suppression chamber to permit functional testing and a minimum flow bypass line to the suppression chamber for pump protection.

The system evaluation boundary begins with the suction lines from the suppression chamber and condensate storage system and continues through the pump and discharge lines from each pump to the point where it interfaces with the reactor vessel nozzles. All associated piping, components and instrumentation, contained within flow paths and subsystems described above are included in the system evaluation boundary. The discharge path includes a minimum flow bypass line and test return line for each loop. The emergency core cooling system (ECCS) keep fill system is also included and is comprised of an ECCS keep fill pump with its suction and discharge lines. At Dresden only, the ECCS keep fill boundary includes a safety related isolation valve that separates the ECCS keep fill system from the condensate and condensate storage back up supply line. At Quad Cities only, the core spray boundary includes a safety related isolation valve from the high radiation sampling system. A room cooler maintains the equipment below the maximum equipment temperature limits. This room cooler is evaluated with the ECCS corner room heating, ventilation and air conditioning (HVAC) system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the CS system in accordance with the methodology described in the LRA and the rule.

7. Residual Heat Removal System

The residual heat removal (RHR) system at Quad Cities has three modes of operation. The Low Pressure Coolant Injection (LPCI) mode of RHR is the only engineered safety feature function of the system and operates to restore water level in the reactor vessel. The containment cooling mode furnishes spray to the drywell and suppression chamber to aid in reducing containment pressure following a loss of coolant accident (LOCA). This mode also provides suppression chamber cooling to reduce water temperatures during operations that add heat to the suppression chamber and minimizes the amount of heat that the containment will need to accommodate during a LOCA. The shutdown cooling mode removes reactor residual and decay heat for shutdown, refueling and servicing operations.

The RHR system consists of two loops, each loop containing two pumps, one heat exchanger (evaluated with the residual heat removal service water system) and the necessary valves and piping to connect these components to the reactor vessel via the recirculation system piping, the suppression chamber for spray/cooling and the drywell for spray. The system piping is maintained full by the ECCS keep fill system (evaluated with the CS system). Each loop of the system is equipped a minimum flow bypass line to the suppression chamber for pump protection. During normal plant operation the system is maintained in a lineup to be ready to inject water into either recirculation loop with all pumps. Process lines that penetrate the primary containment structure contain isolation valves. The RHR room coolers are evaluated with the ECCS corner room HVAC system.

For the LPCI mode of operation, the primary source of water to the RHR system is supplied from the suppression chamber (evaluated with the primary containment structure). The backup source of water is the condensate storage tank (CST) (evaluated with the condensate and condensate storage system). For each loop, water is pumped from the suppression chamber, through the pumps to the heat exchanger and the heat exchanger bypass valve. Upon automatic initiation of the RHR system, the LPCI loop select logic will select the recirculation loop (evaluated with recirculation, recirculation flow control and motor-generator set system) that appears most likely intact and, provided reactor pressure is sufficiently low, will inject to the intact recirculation loop.

For the containment cooling mode of operation, there are three different uses. Drywell spray takes suction from the suppression chamber and pumps water to two spray nozzle headers in the drywell. These spray headers may be used during a LOCA to reduce drywell pressure. Suppression chamber spray takes suction from the suppression chamber and pumps water to spray nozzles in the suppression chamber. This reduces suppression chamber pressure following a LOCA. Suppression chamber cooling takes suction from the suppression chamber and pumps through a RHR heat exchanger, (which rejects heat to the RHR service water system) and pumps the water back to the suppression chamber. This mode provides a heat sink, external to the containment, which will limit suppression chamber water temperature during conditions such as reactor core isolation cooling (RCIC) operation and minimize the amount of heat that the suppression chamber will need to accommodate during a LOCA (for pressure suppression and ECCS pump required suction head).

For the shutdown cooling mode of operation, the RHR pumps take suction from the "B" reactor recirculation system suction piping, pumps water through a RHR heat exchanger (for heat removal via RHR service water system) and returns the water to the reactor vessel via the recirculation system pump discharge line.

The system evaluation boundary begins with the suction lines from the suppression chamber, CST and reactor recirculation piping. Included are the four pumps and discharge piping up to the two heat exchangers and minimum flow lines for each loop. Also included are the return lines from each heat exchanger to the point where the RHR piping interfaces with the reactor vessel via the reactor recirculation piping, spray piping to the suppression chamber and drywell for each loop, and cooling water return to the suppression chamber. All associated piping, components and instrumentation contained within the flow paths and systems described above are included in the system evaluation boundary.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the residual heat removal system in accordance with the methodology described in the LRA and the rule.

8. Low Pressure Coolant Injection System

The LPCI system at Dresden provides core cooling during a LOCA for break sizes ranging from those for which the core is adequately cooled by the HPCI system alone, up to and including a design basis accident (DBA). LPCI is capable of injecting large quantities of water into the reactor pressure vessel and provides core cooling by submerging the core in water. The system is also designed to supply cooling/spray water to the primary containment (drywell and suppression chamber) during accident conditions to maintain containment temperature and pressure below design limits. The system is also the normal means of removing water from the suppression chamber to maintain the water level in the normal band.

The system consists of two independent loops, each with two motor driven pumps, a heat exchanger (evaluated with the containment cooling service water (CCSW) system), associated piping, valves, and instrumentation. The normal water source is supplied from the suppression chamber via an ECCS suction header (evaluated with the primary containment structure). An alternate source of water to the LPCI pumps is supplied from the CST (evaluated with the condensate and condensate storage system). The pumps can route water to several discharge paths. The system supplies water to the reactor vessel through the heat exchanger and into the reactor recirculation system (evaluated with the recirculation, recirculation flow control, and motor-generator set system) downstream of the reactor recirculation pumps. A motor operated valve (MOV) allows flow to bypass the heat exchanger. Each loop can deliver water to the reactor vessel through its own injection line or through the other loop injection line via a cross tie line. Each loop is equipped with a test return line to the suppression chamber to permit functional testing and a minimum flow bypass line to the suppression chamber for pump protection. Each loop also has the capability to deliver cooling/spray water to the primary containment during accident conditions.

The containment cooling mode of operation consists of: (a) drywell spray where the pumps are aligned to pump water from the suppression chamber to headers equipped with spray nozzles in the drywell (evaluated with the primary containment structure) to reduce containment pressure following a LOCA; (b) suppression chamber spray where the pumps are aligned to pump water from the suppression chamber to a header equipped with spray nozzles (evaluated with the primary containment structure) in the suppression chamber to reduce containment pressure following a LOCA; and (c) suppression chamber cooling where the pumps are aligned to recirculate water from the suppression chamber, through the heat exchangers and back to the suppression chamber.

The system is also the normal means of removing water from the suppression chamber to maintain normal operational level band. Taking suction from the suppression chamber, the pumps can transfer water from the suppression chamber to the following locations: the suppression chamber of the other unit, the main condenser (evaluated with main condenser) of either unit, or to the floor drain collector tank (evaluated with radwaste and equipment drains).

The system evaluation boundary begins with the suction lines from the suppression chamber and condensate storage system. Included are the four pumps and discharge piping, minimum flow lines for each loop, and the cross tie line connecting the loops. The heat exchangers have been excluded from the evaluation boundary because they are evaluated with the CCSW system. Also included in the evaluation boundary are return lines from each heat exchanger to the point where the piping interfaces with the reactor vessel via the reactor recirculation piping, spray piping to the suppression chamber and drywell for each loop, and cooling water return lines to the suppression chamber. The system evaluation boundary includes isolation valves from the high radiation sampling system (HRSS) and their associated instrumentation and manual isolation valves. These valves isolate the safety related LPCI system piping from the nonsafety-related HRSS. Additionally, HRSS grab sample manual isolation valves to the HRSS panel sample cooler are included. A room cooler maintains the equipment below the maximum equipment temperature limits. The LCPI room cooler has been evaluated with the ECCS corner room HVAC system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors identified some discrepancies, for which the applicant promptly initiated license renewal change request LRCR No. 2003-204 to change boundary diagram drawings LR-DRE-M-29-1 and LR-DRE-M-360-1 to incorporate NSR piping and valves in-scope of the rule. Otherwise, the inspectors concluded that the applicant had performed scoping and screening for the low pressure coolant injection system in accordance with the methodology described in the LRA and the rule.

9. Automatic Depressurization System

The ADS system is designed to act as a backup to the HPCI system and perform the function of vessel depressurization for all "small breaks" inside the primary containment or "small unisolable breaks" outside the containment. ADS is an ECCS and designed to operate with HPCI and CS to protect the reactor vessel/fuel in situations where the vessel is losing coolant. At Quad Cities, HPCI is an operational mode of the RHR system. For small breaks the vessel is depressurized in sufficient time to allow CS or HPCI to provide adequate core cooling. For large breaks the vessel depressurizes through the break without assistance.

The system will automatically and rapidly depressurize the reactor pressure vessel (evaluated with reactor pressure vessel) under certain accident conditions. When the logic circuitry detects an accident condition along with a HPCI pump (evaluated with HPCI system for Dresden and RHR system for Quad Cities) or CS pump (evaluated with CS) running, the circuit sends signals that actuate the reactor vessel’s five relief valves to perform a rapid vessel depressurization. One of the five relief valves is a safety/relief valve. Each relief valve (evaluated with main steam) is connected to a main steam line (evaluated with main steam). When a relief valve opens, it discharges steam to a tail pipe (evaluated with main steam), which directs the steam below the surface of the water in the suppression chamber (evaluated with primary containment structure), through a tee quencher (evaluated with primary containment structures).

The system evaluation boundary is comprised of the logic relays, timers and instrumentation that receivs process signal input and provides actuation signals to the relief valves actuated by ADS. The relief valves and the safety/relief valve, their tail pipes and vacuum breaker valves, related solenoids, pressure controllers, position switches, and pneumatic air components associated with the safety/relief valve are evaluated with the main steam system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the automatic depressurization system in accordance with the methodology described in the LRA and the rule.

10. Main Steam System

The main steam system delivers steam from the reactor pressure vessel to the main turbine and balance of plant auxiliary steam loads. The system transports steam generated by the reactor through the reactor pressure vessel nozzles to the main turbine via main steam stop valves in each of four lines. At Quad Cities only, the main steam system supplies steam to the HPCI and RCIC systems. Steam can be lined up to bypass the main turbine via bypass valves to the main condenser when required (e.g., during plant startup). Main steam isolation valves (MSIVs) and venturi type flow restrictors are installed to minimize reactor coolant inventory loss in the event of a main steam line break. The MSIVs also limit radiation release rates to prevent exceeding the 10 CFR Part 100 guidelines in the event of main steam line break outside the primary containment. Relief valves and safety valves located on the main steam piping inside primary containment are provided for reactor pressure vessel over pressure protection. The relief valves will operate automatically if steam pressure exceeds the relief valve setpoint or upon receipt of a signal from the automatic depressurization system. They can also be operated manually to reduce reactor pressure vessel pressure. The main steam system also provides steam to the main turbine gland seals, steam jet air ejectors, off-gas pre-heaters and booster air ejectors, as well as the radwaste maximum recycle re-boiler.

The system evaluation boundary starts at the four steam lines at the reactor pressure vessel nozzles and runs to and includes the turbine stop valves and the turbine bypass valves via an equalization header. Each line is equipped with safety valves, at least one relief valve, a venturi type flow restrictor, followed by an MSIV inside and outside the primary containment. At Quad Cities only, a connection is provided for supplying steam to the HPCI and RCIC turbines, which are evaluated with the HPCI and RCIC systems. Downstream of the inboard and outboard MSIVs are drain lines to the main condenser. The boundary includes piping and components from gland seal for the main turbine, steam jet air ejectors, off-gas preheater and booster air ejectors, and radwaste maximum recycle re-boiler. The evaluation boundary includes piping between the reactor pressure vessel and outboard isolation valve, including the main steam line drain piping, even though they are considered part of the reactor coolant pressure boundary. All associated piping, components, and instrumentation contained within the flow paths and systems described above are included in the evaluation boundary. Solenoids, accumulators, pressure controllers, and position switches associated with the automatic depressurization system and manual isolation valves for instruments associated with the feedwater level control system are evaluated as part of the main steam system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the main steam system in accordance with the methodology described in the LRA and the rule.

11. High Pressure Coolant Injection System

The HPCI system ensures that adequate core cooling takes place for all break sizes less than those sizes for which the HPCI or CS subsystems can adequately protect the core. Operation of the HPCI system in the emergency mode is completely independent of alternating current (AC) power.

The system consists of a steam turbine driving a multi-stage high-pressure main pump and a gear driven single-stage booster pump, piping, auxiliary support systems, and instrumentation. The turbine is driven by nuclear steam and exhausts to the suppression chamber (evaluated with the primary containment structure). The preferred water source to the booster pump suction is supplied from the condensate storage system (evaluated with the condensate and condensate storage system), with a backup source from the suppression chamber. Water from the main pump is delivered to the reactor vessel (evaluated with the reactor vessel) through the "B" feedwater line (evaluated with the feedwater system) and distributed within the reactor vessel through the feedwater sparger (evaluated with reactor internals). The system is equipped with a test line to the condensate storage system to permit functional testing and a minimum flow bypass line to the suppression chamber for pump protection.

The system evaluation boundary for water injection begins with the suction lines from the condensate storage system and the suppression chamber and continues through the booster pump and main pump. The discharge path runs from the output side of the main pump to the "B" feedwater line connection outside the primary containment. Included are all piping and components that feed the booster pump and the main pump. The discharge path also includes a minimum flow line and a flow test return line. The HPCI and RCIC systems at Quad Cities share a common flow test return line. This common line is evaluated for both systems with HPCI. The steam supply to the turbine runs directly from the reactor vessel at Dresden. At Quad Cities, the steam supply is provided from "B" main steam line on Unit 1 and the "C" main steam line on Unit 2. The turbine exhausts to the suppression chamber. Auxiliary subsystems include gland seal, drain pots, turbine oil, and turbine cooling water. All associated piping, components and instrumentation, contained within flow paths and subsystems described above are included in the system evaluation boundary. The HPCI room cooler maintains the room below the maximum equipment temperature limits. The room cooler has been evaluated with the ECCS corner room HVAC system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the high pressure coolant injection system in accordance with the methodology described in the LRA and the rule.

12. Containment Isolation Components and Primary Containment Piping System

The containment isolation components and primary containment piping system is a composite support system for the primary containment structure. The containment isolation components and primary containment piping system is comprised of primary containment isolation valves, penetrations and piping from nonsafety-related systems that perform no intended function except primary containment isolation. It also includes safety related piping, components and instrumentation that directly support intended functions of the primary containment structure and that are not assigned to other systems in-scope of license renewal. The containment isolation components and primary containment piping system ensures that the primary containment structure is able to perform its intended functions.

In the event of a nuclear steam supply system piping failure within the drywell (evaluated with the primary containment structure) reactor water and/or steam would be released into the drywell. The resulting increased drywell pressure would force a mixture of radioactive materials, noncondensable gases, steam, and water through the connecting vent lines into the chamber of water in the suppression chamber, which is also called the torus (evaluated with primary containment structure). The steam would condense rapidly and completely in the suppression chamber resulting in suppression of the pressure increase in the drywell. During this period, the primary containment and suppression chamber piping isolation valves are relied upon to ensure the containment of these gases and liquids. Vacuum breakers between the suppression chamber and the reactor building and between the suppression chamber and the drywell ensure that venting of non-condensable gases to the suppression chamber together with condensation of the released steam does not result in exceeding drywell or suppression chamber external design differential pressure. Instrument air to the traversing in-core probe (TIP) tubing ensures a clean, dry environment for the TIP probe while ensuring isolation capability. TIP ball and shear valves ensure tubing isolation, including situations where isolation is required concurrent with TIP probes traversing the core or an in-vessel stuck probe. Components associated with atmospheric containment atmosphere dilution (ACAD) (indication instruments only) and drywell pneumatics provide the supply for air operated valves and for maintaining an atmosphere that inhibits the formation of a combustible gas mixture. Floor and equipment drains provide for the measurement and removal of leakage while maintaining offsite radiological consequences to within acceptable limits, by isolating and maintaining containment integrity when required.

The system evaluation boundary consists of: primary containment pressure instruments; suppression chamber to reactor building vacuum breaker lines; purge supply and exhaust penetrations (HVAC – primary containment); suppression chamber level instrumentation penetrations; local leak rate test (LLRT) penetrations; and containment isolation barriers from the following systems: TIP, drywell equipment and floor drain sumps, ACAD, service air (SA), and instrument air (IA). All associated piping, components and instrumentation contained within the flow paths and systems described above are included in the primary containment and suppression chamber piping system evaluation boundary. The components that provide primary containment isolation for other in-scope systems are included in the overall evaluations for those systems.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the containment isolation components and primary containment piping system in accordance with the methodology described in the LRA and the rule.

13. Shutdown Cooling System

The shutdown cooling system at Dresden provides cooling of the reactor water when the temperature and pressure in the reactor fall below the point at which the main condenser can no longer be used as a heat sink following reactor shutdown. The system can also be used to help cool the fuel pool during refueling outages and to heat reactor water with steam from the plant heating system during startup from cold shutdown.

The system consists of three partial capacity cooling loops, each containing a pump, a heat exchanger, and associated piping, valves and instrumentation. The system takes suction from either reactor recirculation loop (evaluated with the reactor recirculation system), delivers the flow through each of the three separate cooling loops, and then directs it into either of the LPCI injection lines (evaluated with the LPCI system). Capability also exists to permit flow from both reactor recirculation loops to both LPCI injection lines simultaneously. When used to augment fuel pool cooling (evaluated with the fuel pool cooling and demineralizer system), only one of the cooling loops is required. Each cooling loop is provided with a minimum flow valve to return pump discharge flow to the pump suction. The system heat exchangers are cooled by water from the reactor building closed cooling water system (evaluated with the reactor building closed cooling water system) in the cooling mode and heated by steam from the plant heating system (evaluated with the plant heating system) in the heating mode. Provision is also made for chemical sampling, clean-up via the reactor water cleanup (RWCU) system (evaluated with the RWCU system), and system drainage to the reactor building equipment drain system.

The system evaluation boundary begins with the system inlet MOVs that receive primary coolant from the reactor recirculation piping. The boundary continues through each of the system pumps, heat exchangers, and discharge lines to the outlet MOVs that direct the cooled primary coolant back to the reactor via the LPCI injection lines. All associated piping, components and instrumentation contained within flow paths and subsystems described above are included in the system evaluation boundary. Each cooling loop includes a minimum flow line.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the shutdown cooling system in accordance with the methodology described in the LRA and the rule.

14. Control Rod Drive Hydraulic System

The control rod drive hydraulic (CRDH) system controls changes in reactivity by incrementally positioning the control rods in response to signals from the reactor manual control system. The system is also used to shut down the reactor quickly by rapidly inserting control rods into the core in response to a manual or automatic signal.

The system is made up of supply pumps, filters, strainers, control valves, and associated instrumentation and controllers. It provides water at the required pressures to the hydraulic control units (HCUs) for cooling and all types of required control rod (evaluated with control blades) motion. The system allows control rod withdrawal or insertion at a limited rate, one rod at a time, for power level control and flux shaping during reactor operation. Stored energy available from gas (nitrogen) charged accumulators and from reactor pressure provides hydraulic power for rapid simultaneous insertion (scram) of all control rods for reactor shutdown. The hydraulic system is arranged so that the equipment common to each CRD is packaged in modular form into HCUs, one HCU module to each drive. The HCUs are arranged into two banks, each of which has its own scram discharge volume (SDV), which consists of a scram discharge header and an instrument volume. The SDV is used to limit the loss of and contain the reactor vessel water from all the drives during a scram. Each CRD has its own separate control and scram devices. Alternate rod insertion valves are supplied to provide an alternate means of initiating control rod insertion during an ATWS scram event (evaluated with the ATWS system). Under normal operation, the CRDH system supplies unheated condensate by one of two system pumps to hydraulically position the control rods. These pumps take their suction from the condensate system (evaluated with the condensate and condensate storage system) at low pressure and direct it through the drive water filters. The discharge from the filters supply the reactor recirculation pump seal water supply header, the accumulators via the charging header, the HCUs via the drive water header, and the CRDs via the cooling water header. The pumps are provided with a minimum flow line to the contaminated condensate storage tank (CCST). The reactor recirculation pump seal water supply header supplies filtered and cooled water to the purge the reactor recirculation pump seals. The reactor recirculation pump seal water supply isolation check valves provide a pressure retaining boundary for the reactor coolant system. The charging header supplies pressurized water to maintain the accumulators charged and ready for service in the event of a scram. The drive water header provides the CRDs with motive force for moving the control rods. This header also supplies a continuous low flow to the reactor vessel level instrumentation system (RVLIS) backfill system (evaluated with the NBI system). Filtered control air is provided to CRDH system air operated valves from the IA system. Provision is also made (at Dresden) to supply system flow to the reactor recirculation pump seals for hydro purposes.

The CRDH system suction side evaluation boundary begins with the connection to the condensate reject line to the CCST. The boundary continues through the CRD pumps, the drive water filters, and branches to the reactor recirculation pump seal supply header, to the accumulators via the charging header, to the HCUs via the drive water header, and to the CRDs via the cooling water header. The evaluation boundary includes the suction piping, discharge piping, minimum flow line, filters, CRD pumps, HCUs, HCU manifolds, and the CRDs. Included within the boundary are the reactor recirculation pump seal water supply isolation check valves, the scram discharge header and instrument volume and the supply lines to the RVLIS backfill system. The air supply evaluation boundary starts at the parallel IA supply lines to the CRD air filters and includes the filters and all piping, instrumentation, and valves necessary to supply air to the CRD air operated valves. Included within the evaluation boundary is the accumulator nitrogen charging system, which includes the nitrogen cylinders, header piping, piping, instrumentation, and valves from the cylinders to the HCU accumulators. At Dresden, the RVLIS backfill system supply header isolation valves, and the system valves on the CRD hydro supply line to the reactor recirculation pump seals are included in the evaluation boundary. All associated piping, components and instrumentation contained within the flow paths and systems described above are included in the system boundary.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the control rod drive hydraulic system in accordance with the methodology described in the LRA and the rule.

15. Emergency Diesel Generators and Auxiliary Systems

The emergency diesel generator (EDG) system provides an emergency source of AC power to the ECCS and safe shutdown equipment at each site in the event off-site power supply is not available. The EDGs were classified as being in the scope of the rule, with the exception of some minor components, such as the air start compressors. The system consists of three emergency diesel generators assemblies per site: one assembly per unit and a shared assembly. The auxiliaries evaluated with the system include the jacket water system, the lubrication oil system, the air start system, the combustion air intake and exhaust system, and the room ventilation system. Included in the scope of the system were the diesel engines and generators, piping, valves, manifolds, starters, turbo-chargers, internal coolers, instrumentation, and other equipment directly attached to the diesel engines. The auxiliary systems contain heat exchangers, strainers, pumps, filters, coolers, receiver tanks, moisture separators, valves, manifolds, silencers, dampers, fans, along with piping, flexible hoses and instrumentation.

The inspectors reviewed the UFSAR sections for the diesel generators and the auxiliary systems, the LR drawings, and the EDG scoping and screening forms. The inspectors sampled components shown on the boundary diagrams or in the component lists and identified some discrepancies, for which the licensee promptly wrote LR change requests to correct either the boundary diagram or the scoping and screening documents. The inspectors concluded that the applicant had performed scoping and screening for the EDG system in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

16. Station Blackout System (Diesels and Auxiliaries)

The station blackout (SBO) diesel generators (DG) system provides an additional, independent AC power source as a backup to the EDGs for the regulated event of station blackout. For Quad Cities, the SBO DGs also provide power during certain Appendix R fires. The SBO DGs were classified as being in the scope of the rule, with the exception of some minor components, such as the air start compressors. The system consists of two DG sets per site. The auxiliaries evaluated with the system include the jacket water system, the lubrication oil system, the air start system, the combustion air intake and exhaust system, and the room ventilation system. Included in the scope of the system were the SBO DG sets consisting of two diesel engines and a generator arranged in tandem, along with directly attached piping, valves, manifolds, starters, turbo-chargers, internal coolers, instrumentation, and other equipment. The auxiliary systems contained heat exchangers, strainers, pumps, filters, coolers, receiver tanks, moisture separators, valves, manifolds, silencers, dampers, fans, along with piping, flexible hoses and instrumentation.

The inspectors reviewed the UFSAR sections for the SBO DGs and their auxiliary systems, the LR drawings, and the EDG scoping and screening forms. The inspectors sampled components shown on the boundary diagrams or in the component lists and identified some discrepancies, for which the licensee promptly wrote LR change requests to correct either the boundary diagram or the scoping and screening documents. The inspectors concluded that the applicant had performed scoping and screening for the SBO DG system in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

17. Security Diesel System

The security diesel system provides backup power to the station's security system in the event offsite power is lost. The security diesel was classified as not being in the scope of the rule, with no exceptions. The inspectors reviewed the UFSAR, and discussed the system intent with the applicant. The inspectors concluded that the applicant had performed scoping for the security diesel system in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

18. Diesel Fuel Oil System

The diesel fuel oil system stores and transfers diesel fuel oil for the EDGs, the SBO DGs, the diesel fire pumps, and, at Dresden only, the isolation condenser makeup pump diesels. The diesel fuel oil system was classified as being in the scope of the rule, with the exception of the some non-safety-related instrumentation and some abandoned piping at Dresden. The system consists of a separate fuel oil storage and transfer system for each EDG. At Dresden, the Unit 2 EDG fuel oil transfer system also supplies fuel oil to the isolation condenser makeup pump fuel oil day tanks, and the Unit 3 EDG fuel oil transfer system also supplies fuel oil to the Unit 2/3 diesel fire pump day tank. At Quad Cities, the Unit 1 and Unit 2 EDG fuel oil transfer systems also supply fuel oil for the diesel fire pump day tanks. Included in the scope of the system were tanks, pumps, filters, strainers, piping, valves, and instrumentation and controls.

The inspectors reviewed the UFSAR sections for the diesel fuel oil storage and transfer system, the LR drawings, and the diesel fuel oil system scoping and screening forms. The inspectors sampled components shown on the boundary diagrams or in the component lists and identified some discrepancies, for which the licensee promptly wrote LR change requests to correct either the boundary diagram or the scoping and screening documents. The inspectors concluded that the applicant had performed scoping and screening for the diesel fuel oil system in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

19. HVAC - Main Control Room

The purpose of the main control room HVAC system is to provide: (1) a suitable environment during normal operation for the control room operators and equipment; (2) a habitable environment after a DBA in which the operators can safely shutdown and maintain the plant for the duration of the accident; (3) an environment from which the operators can safely occupy and operate the plant during an onsite or offsite toxic chemical accident; and (4) fire protection to the operators with fire dampers, for fires outside the control room, and a smoke purge function mode for fires inside the control room. The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled the component screening and identified that the Quad Cities emergency air filtration unit booster fans (0-9400-104A(B)) were incorrectly classified as active. Fans that are not a subcomponent of a larger component are classified as passive for the pressure boundary provided by the associated housings. The applicant identified five additional fans which were incorrectly classified as active, and three additional fans that were incorrectly classified as in scope. License Renewal Change Requests 2003-183, 184, and 185 were initiated to correct the classifications. The inspectors concluded that the applicant had performed scoping and screening for main control room HVAC system in accordance with the methodology described in the LRA and the rule.

20. HVAC - Reactor Building

The reactor building ventilation system provides conditioned air to the reactor building and primary containment structures to remove the heat remaining from the primary process and operating equipment, minimize the level of airborne contaminants, make the plant atmosphere adequate to support the presence of personnel and maintain the reactor building at a negative pressure to minimize the release of radioactive contaminants to the environment. Emergency isolation dampers are provided to isolate the reactor building in the event of high radiation. The reactor building ventilation system also removes exhaust air from the drywell and suppression chamber purge system when the reactor is shutdown and/or whenever primary containment access is required. At Quad Cities, the parts of the reactor building ventilation system that are within the scope of the rule include: (a) the emergency isolation dampers in the main supply duct and main exhaust duct; and (b) the fire damper in the exhaust duct from the main steam pipe area in the turbine building. The remaining parts of the system are not within the scope of the rule. At Dresden, all associated piping, components, and instrumentation contained within the flow paths and systems are a requirement for the design basis fuel handling accident during refueling, as described in Section 15.7.3 of the Dresden UFSAR, and are included in the reactor building ventilation system evaluation boundary.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors questioned the significant difference between the Dresden and Quad Cities scopes considering the systems are essentially the same. Further review by the applicant determined the need to bring the Quad Cities ducting from the reactor building-turbine building interface to the reactor building ventilation exhaust dampers within the scope of the rule. The ducting must remain intact in order to ensure that all reactor building effluent is properly monitored and that there is no potential exhaust path that bypasses the radiation monitors. The applicant issued License Renewal Change Request No. 2003-208 to include this additional portion of the system in the scope. The inspectors concluded that the applicant had performed scoping and screening for reactor building HVAC system in accordance with the methodology described in the LRA and the rule.

21. HVAC - Primary Containment

The purpose of the drywell cooling system is to maintain the drywell temperatures less than those assumed for DBA initial conditions. The system utilizes seven cooling fan units which draw the drywell atmosphere through the cooling coils supplied from the reactor building closed cooling water system. The cooled air is distributed throughout the drywell by a system of ductwork. The drywell coolers maintain the drywell temperatures between 135 and 150 degrees F. The inspectors reviewed the LRA, applicable portions of the UFSAR, and the system scoping and screening packages. There were no functions of the system that met the criteria for LR scoping. The inspectors concluded that there was adequate basis for exclusion of this system from the LR scope.

22. Service Water System

The service water (SW) system provides strained river water to cool various loads in the reactor building, turbine building, and auxiliary building. The SW system is a nonsafety-related system that provides cooling water to components required for normal operation. The SW system was classified as being partially within the scope of the rule. On Quad Cities, portions of the SW system were brought into scope only because of spatial interactions. On Dresden, the majority of the system was brought into scope because the system is relied upon during a regulated event (Appendix R fires). At both sites, the system consists of an open loop system common to both units. Included in the scope of the rule for Quad Cities were piping, valves, and some instrumentation. Included in the scope of the rule for Dresden were pumps, strainers, piping, heat exchangers, valves, and instrumentation.

The inspectors reviewed the UFSAR sections for the SW system, the LR drawings, and the SW scoping and screening forms. The inspectors sampled components shown on the boundary diagrams or in the component lists and concluded that the applicant had performed scoping and screening for the SW system in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

23. Containment Cooling Service Water System

The CCSW system at Dresden removes heat from the primary containment by providing cooling water to the HPCI heat exchangers. CCSW, working with HPCI, limits suppression chamber bulk water temperature assuring: 1) suppression chamber hydrodynamic loads during blowdown are limited maintaining structure and equipment integrity; 2) complete steam condensation during a LOCA limiting long term primary containment pressure; and 3) adequate net positive suction head (NPSH) for ECCS pumps maintaining long term primary containment pressure control. The Unit 2 CCSW loops provide a safety related source of SW to the control room air conditioning condensers. The CCSW system also supplies a safety related source of river water to the HPCI and HPCI room coolers as a backup to the SW system.

The system is an open loop system consisting of four pumps, associated valves, piping, and instrumentation and controls. The system removes heat from the LPCI system (evaluated with LPCI system) through the LPCI heat exchangers. The CCSW pumps develop sufficient head to maintain the cooling water heat exchanger tube side outlet pressure greater than the HPCI subsystem pressure on the shell side (evaluated with HPCI system). Maintaining this pressure differential prevents reactor water leakage into the SW and thereby into the river. The Unit 2 CCSW loops provide a SR source of SW to the control room air conditioning condensers (evaluated with control room HVAC). The CCSW system also supplies a SR source of river water to the HPCI and HPCI room coolers (evaluated with ECCS corner room HVAC) as a backup to the SW system.

The system evaluation boundary begins with each pair of CCSW pumps taking suction from the crib house via separate supply piping. Two pumps discharge into a common header that routes the cooling water to that loop's associated heat exchanger. At the heat exchanger, heat is transferred from the LPCI subsystem (evaluated with LPCI system) to the CCSW system, and subsequently to the river. System piping is arranged to form two separate, two-pump flow networks (loops) to the piping downstream of the differential pressure control valve on the discharge of the heat exchanger. At this point, both piping loops merge into a common discharge line to the SW discharge header (evaluated with the SW system).

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the CCSW system in accordance with the methodology described in the LRA and the rule.

24. Ultimate Heat Sink

The ultimate heat sink provides a source of safety-related cooling water for the safety-related SW systems whenever the normal heat sink is unavailable (i.e., the river level was below its normal level). The ultimate heat sink was classified as being entirely within the scope of the rule. In addition, some components from the circulating water system at both sites and from the screen wash system, at Dresden only, were realigned to the ultimate heat sink. The system primarily consists of a topographic basin separate from, but connected to the normal heat sink (either the Mississippi or Kankakee Rivers). In addition to the basin, stop logs, pumps (Dresden only), pipes, and valves were included in the scope of the system.

The inspectors reviewed the UFSAR sections for the ultimate heat sink, the LR drawings; and the ultimate heat sink, scoping and screening forms. The inspectors sampled components shown on the boundary diagrams or in the component lists and concluded that the applicant had performed scoping and screening for the ultimate heat sink in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

25. Nitrogen Containment Atmosphere Dilution System

The nitrogen containment atmosphere dilution (NCAD) system provides two redundant, single failure proof, independent flow paths for purging the primary containment with nitrogen to provide post-accident combustible gas control. The NCAD system injects gaseous nitrogen into the primary containment to purge the containment of oxygen and hydrogen to maintain the mixture below combustible levels.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled the component screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the NCAD system in accordance with the methodology described in the LRA and the rule.

26. Drywell Nitrogen Inerting System

The drywell nitrogen inerting system, also known as the drywell nitrogen purge and inerting system, is provided to maintain the drywell in a nitrogen inerted condition as a means of inhibiting the formation of a combustible gas mixture under LOCA conditions. The system is not safety related; however, it can be used for post-LOCA hydrogen control. The system also serves as a backup to the pump-back system to maintain the required drywell-to-suppression chamber differential pressure and provide nitrogen to the NCAD system.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled the component screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the drywell nitrogen inerting system in accordance with the methodology described in the LRA and the rule.

27. Instrument Air and Drywell Pneumatic Supply System

The purpose of the IA system is to supply clean, dry, compressed air for air-operated control devices and instruments. The drywell pneumatic supply system has a function similar to the IA system, but it supplies drywell nitrogen (instead of air) to control devices and instruments in the drywell. The inspectors reviewed the LRA, applicable portions of the UFSAR, and the system scoping and screening packages. There were no functions of the system that met the criteria for LR scoping. The inspectors concluded that there was adequate basis for exclusion of this system from the LR scope.

28. Fuel Pool Cooling and Filter Demineralizers System

The purpose of the fuel pool cooling and filter demineralizer system is to remove heat from the spent fuel and to maintain fuel storage pool water clarity. During refueling operations the system can also be used to maintain the water clarity of the reactor refueling cavity. The system consists of tanks, pumps, heat exchangers, filters, demineralizers, fuel pool spargers, and the associated piping, components, and instrumentation. The applicant included some portions of the system at Dresden within the scope of license renewal as a result of spatial interactions in accordance with 54.4(a)(2). Because of differences in piping layout, none of the system at Quad Cities was included in the scope. The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors concluded that the applicant had performed scoping and screening for the fuel pool cooling and filter demineralizer system in accordance with the methodology described in the LRA and the rule.

29. Condensate and Condensate Storage System

The condensate and condensate storage systems (in conjunction with the feedwater system) works to provide water of a quality and quantity required for operation of the power plant. The condensate and condensate booster pump portion of the system supply reactor quality water to the suction of the reactor feedwater pumps. The condensate storage system's CCSTs ensure reactor quality water is available for makeup requirements, and are designed to ensure a minimum of 90,000 gallons of water is available from each CCST for use by HPCI. The condensate and feedwater systems' pumping functions are not credited to support safe shutdown or to perform any reactor safety function. The CCSTs are also credited for providing makeup to the reactor via the CRD pumps (at Dresden) or the RCIC and safe shutdown makeup pump (SSMP) systems (at Quad Cities) for safe shutdown scenarios in the Fire Protection Plan.

The boundary evaluated by the applicant for the condensate and condensate storage systems extended from the outlet of the condenser hotwell through the condensate pumps and condensate booster pumps up to the inlet of the reactor feedwater pump suction piping. The common system boundary evaluation also included the CCSTs, standpipes, associated instrumentation, condensate transfer pumps, associated distribution piping and valves. For Dresden only, valves in the main condenser system providing pressure boundary to CRD pump suction supply are evaluated with the condensate and condensate storage system, and an isolation valve from the condensate and condensate storage back up supply line is evaluated with the core spray system. The condensate demineralizers were not included in this evaluation; they were evaluated separately in auxiliary systems. The applicant determined that the CCSTs, level instruments, and piping components associated with supplying the safety systems during fire scenarios, station blackout and anticipated transient without scram (ATWS). For Quad Cities the safety systems supplied included HPCI, RCIC and SSMP. For Dresden the safety systems supplied included HPCI and CRD pumps.

The inspectors reviewed LR boundary drawings, the UFSAR and system/structure scoping forms for this system. The inspectors concluded that the applicant had performed scoping and screening for the condensate and condensate storage systems and identified the mechanical components subject to aging management in accordance with the methodology described in the LRA and the rule with one exception. The inspectors identified a piping segment (emergency core cooling test return line into the CCSTs), that the applicant had failed to place under the scope of LR. The applicant subsequently initiated a change request to change the Dresden Station boundary diagram (LR-DRE-M35-1) to include this piping segment within the scope of the rule (reference LR Change Request 2003-204).

30. Extraction Steam System

The purpose of the extraction steam is to preheat feedwater as it passes through the feedwater heaters.

The boundary evaluated by the applicant for this system extended from the turbine piping interface and ended with the feedwater heaters. The applicant determined that no portions of this system were within the scope of 10 CFR Part 54. The inspectors reviewed the UFSAR and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for this system and excluded its components from aging management in accordance with the methodology described in the LRA and the rule.

31. Oxygen Injection - Hydrogen Addition System

The purpose of the hydrogen water chemistry system is to inject hydrogen into the reactor coolant to limit the dissolved oxygen concentration. Suppression of dissolved oxygen, coupled with the high purity reactor coolant, reduces the susceptibility of reactor piping and materials to intergranular stress corrosion cracking. A hydrogen injection system is used to inject hydrogen into the condensate pump discharge line and on oxygen injector system is used to inject oxygen into the off-gas system to ensure that the excess hydrogen is safely recombined.

The boundary evaluated by the applicant for this system extended from the storage tanks through the piping components used for delivery systems. The applicant determined that no portions of this system were within the scope of 10 CFR Part 54. The inspectors reviewed the UFSAR and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for this system and excluded its components from aging management in accordance with the methodology described in the LRA and the rule.

32. Hypochlorite (Chemical addition)

The purpose of the sodium hypochlorite and sodium bromide addition is to provide a biocide used in plant water systems to kill slime-producing bacteria and minimize accumulation of algae on heat transfer surfaces. Other chemicals, such as anti-scalants, corrosion inhibitors, and clam inhibitors, are also added using this system. The biocide solution is injected into the circulating water intake bay and into the SW systems.

The boundary evaluated by the applicant for this system extended from the chemical storage tanks to the point of injection for circulating water and SW systems. The applicant determined that no portions of this system were within the scope of 10 CFR Part 54. The inspectors reviewed the UFSAR and system/structure scoping forms. The inspectors concluded that the applicant had performed scoping and screening for this system and excluded its components from aging management in accordance with the methodology described in the LRA and the rule.

33. Floor and Equipment Drain Collection System and Liquid Radwaste System

The liquid radioactive waste system collects, separates and processes liquid radioactive waste from the equipment drain systems without limiting unit or station operation or availability. It also controls radioactive liquid effluents. The solid radioactive waste system processes and packages solid wastes and allows for radioactive decay and temporary storage prior to shipment offsite. Both the liquid and solid radioactive waste systems were classified as being outside the scope of the rule.

The inspectors reviewed the UFSAR sections for the radioactive waste systems and discussed the system intent with the applicant. The inspectors concluded that the applicant had correctly scoped for the liquid and solid radioactive waste systems in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

34. Equipment and Floor Drains System

The equipment and floor drains system provide drainage for radioactive and non-radioactive fluids to prevent flooding of equipment. The system consists of a number of subsystems, primarily based upon building and type of fluid being collected. The equipment and floor drains system was classified as being outside the scope of the rule; however, in order to declare the system as out-of-scope, realignment of components was necessary. The realigned portions of the system primarily consisted of piping and valves.

The inspectors reviewed the UFSAR sections for the equipment and floor drains systems, the LR drawings; and the Dresden low pressure coolant injection, containment cooling service, and isolation condenser scoping and screening forms. The inspectors sampled components shown on the boundary diagrams or in the component lists and identified some discrepancies, for which the licensee promptly wrote LR change requests to correct the realignment descriptions in the scoping and screening packages. The inspectors concluded that the applicant had performed scoping and screening for the equipment and floor drains system in accordance with the methodology described in the Dresden and Quad Cities LRA and the rule.

35. Dresden Unit 1 Gaseous Monitoring

The purpose of the Dresden Unit 1 gaseous monitoring system is to provide a monitored release path from potentially radioactive areas and buildings of Unit 1. Ventilation exhaust from the Unit 1 fuel building and laundry ventilation systems are the only remaining inputs into the system which discharge to the Unit 1 chimney. The system design objective is to provide a monitored release path for areas having the potential for significant radioactive releases on Unit 1. The inspectors reviewed the LRA, applicable portions of the UFSAR, and the system scoping and screening package. There were no functions of the system that met the criteria for LR scoping. The inspectors concluded that there was adequate basis for exclusion of this system from the LR scope.

B. Evaluation of Scoping and Screening of Electrical Systems

A list of electrical and instrumentation and control (I&C) systems was developed as described in Section 2.1.3.7 of the LRA. These electrical and I&C systems were scoped against the criteria of 10 CFR 54.4(a). Most of the systems exist at both stations, are similarly named, and have many common design features, functions, and component types. At the system level, the scoping methodology utilized for electrical and I&C systems was identical to the mechanical system-level scoping described in Section 2.1.4.1. The UFSAR descriptions, Maintenance Rule database records, CLB and design basis documents, and system description documents applicable to the system were reviewed to determine the system safety classification and to identify all of the system functions. All system level functions were evaluated against the criteria of 10 CFR 54.4(a)(1), (a)(2)and (a)(3). The supporting systems needed to maintain the in-scope system intended functions were identified and evaluated against the criteria in 10 CFR 54.4(a)(2). The inspectors evaluated the scoping of the following electrical and I&C systems:

1. 4160 Vac Switchgear and Distribution

The 4160 V switchgear and distribution system performs the following functions: (1) distributes and controls the power required by the recirculation and feedwater pumps; (2) provides AC power to station auxiliaries required for plant operation; (3) provides ac power to the other unit via the 4 kV bus tie breaker; and (4) provides offsite AC power during offsite power restoration as part of an SBO event. The system is also relied upon for FP, SBO and environmental qualification functions.

The system evaluation boundaries included the 4 kV non-segregated bus duct, and the applicable 4 kV switchgear buses. The boundary extended up to the respective 4160 V bus feeder breaker (either from the low side of the supply transformer, or from the DG tie breaker).

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the licenses electrical design drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the 4160 Vac Switchgear and Distribution system in accordance with the methodology described in the LRA and the rule.

2. 480 Vac Motor Control Centers, Transformer Switchgear and Distribution

The 480 V switchgear distributes power directly to 480 V loads, typically between 50 hp and 200 hp, and 480 V motor control centers (MCCs) which are required for the plant operation. The 480 V MCCs distribute power directly to the smaller 480 V electrical loads, typically less than 50 hp, and through distribution transformers to low voltage loads required to operate the plant.

The 480 V system consists of the applicable switchgear buses for each unit. These buses supply large 480 V motors (such as fans) and 480 V MCCs for the control of small 480 V motors (such as valve motors). Each 480 V bus is fed from a 4160 V bus via a 4160 V - 480 V transformer. Each of these transformers is an oil/air type transformer, which relies on natural convection of both the oil and the air for cooling.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the licenses electrical design drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the 480 V MCCs, transformer, switchgear, and distribution system in accordance with the methodology described in the LRA and the rule.

3. 125 Vdc System

The 125 Vdc system supplies 125 Vdc power for power, control, and indication of the safety related and nonsafety-related dc equipment. The 125 Vdc system consisted of the following: the batteries, the 125 Vdc distribution cabinets, related instrumentation, and battery chargers extending to the upstream or "line" side of the battery charger load breaker located at the 480 Vac MCC buses. The system boundary for each 125 Vdc load was at the upstream or "line" side of the 125 Vdc circuit breaker. The breaker and the load were part of the system associated with the load. Within the boundary were the following: the 125 Vdc bus supply circuit breakers/fuses (from incoming 125 Vdc batteries); the 125 Vdc bus undervoltage relay and indication schemes, including the associated circuit breakers/fuses; the 125 Vdc system ground detection schemes, including the associated circuit breakers/fuses; the 125 Vdc temporary-duty alternate battery; and the 125 Vdc SBO battery system.

The following 125 Vdc switchyard battery system parts were within the scope of the rule: safety related batteries and chargers; 125 Vdc temporary-duty alternate battery; 125 Vdc temporary-duty alternate battery chargers; 125 Vdc battery bus 1; 125 Vdc bus 1A; 125 Vdc bus 1A-1; 125 Vdc bus 1A-2; 125 Vdc reserve buses 1B, 1B-1; 125 Vdc reserve bus 1B-2; 125 Vdc SBO battery; and the switchyard 125 Vdc system.

The lift station 125 Vdc battery system was considered outside the scope of the rule because the system did not support any safety related functions or one of the four regulated events.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the licenses electrical design drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the 125 Vdc system in accordance with the methodology described in the LRA and the rule.

4. Reactor Protection System

The reactor protection system (RPS) is an instrument and control system intended to initiate a reactor scram on any one of eleven parameters. The system contains motor-generator sets, electrical protection assemblies, voltage regulators, buses, breakers, fuses, cabling and connectors, sensors, sensing devices, and associated valves, and test devices. Components in the main turbine system, associated with the scram signal to the RPS on 10 percent closure of turbine stop valves, were realigned to the RPS system. The applicant included the majority of the system within the scope of the rule; the exclusions were the motor-generator sets, the test devices, and their associated cabling and connectors as they were not considered to perform a safety-related function, nor potentially impact the function of another safety system, nor provide a function related to one of the regulated events.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the RPS in accordance with the methodology described in the LRA and the rule.

5. Reactor Manual Control System

The reactor manual control system provides sequenced electrical signals to position the directional control valves for the hydraulic control units to move the control rods as desired by the operators. The system consists of the pushbutton select matrix, relays, an alarm circuit, and a sequence timer. The applicant included all of the system's components within the scope of the rule; there were no exclusions.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the reactor manual control system in accordance with the methodology described in the LRA and the rule.

6. Anticipated Transient Without Scram System

The ATWS system is a logic system that provides signals to reposition valves to depressurize the scram air header and, in the event of an automatic initiation, trip the recirculation pump motor generator field breakers. The system initiates automatically on high reactor pressure or low-low reactor water level or can be initiated manually. The system boundaries include the ac and dc power supplies, trip units, trip logic, sensors, transmitters, instrumentation valves and tubing. Because ATWS is a regulated event, the applicant included all components of the system within the scope of the rule; nothing was excluded.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled components screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the ATWS system in accordance with the methodology described in the LRA and the rule.

C. Evaluation of Scoping and Screening of Electrical Components

The inspectors observed that the scoping and screening of electrical components employed significantly different methods than the mechanical or structural disciplines. Unlike mechanical systems, the electrical and I&C components for in-scope systems that are in the scope of the rule were evaluated using the “spaces” approach. The “spaces” approach for electrical and I&C components is an approach to both scoping and aging management. The aging management part of the “spaces” approach performs evaluations of all passive electrical and I&C components in an area of the plant, regardless of whether the components are part of in-scope systems or not. Therefore, the scoping part of the “spaces” approach does not include a detailed scoping review to identify specific electrical and I&C components in each in-scope system. Scoping for electrical and I&C components using the “spaces” approach identifies the electrical and I&C commodity groups that are installed in the plant. The identification of these commodity groups was described previously in this section. The AMR using the “spaces” approach determined in which area of the plant the components were located and reviewed how the components age based on the environment in each of the areas.

Electrical/I&C component groups associated with electrical, I&C, and mechanical systems within the scope of license renewal were identified. This step included a complete review of design drawings and electrical/I&C component groups in the plant component database. A description and function for each of the electrical/I&C component groups were identified. The electrical/I&C component groups that perform an intended function without moving parts or without a change in configuration or properties [screening criterion of 10 CFR 54.21(a)(1)(i)] were identified. For the resulting passive electrical/I&C component groups, component groups that are not subject to replacement based on a qualified life or specified time period [screening criterion of 10 CFR 54.21(a)(1)(ii)] were identified as requiring an AMR. Electrical and I&C component groups included in the 10 CFR 50.49 Environmental Qualification (EQ) Program were considered to be subject to replacement based on qualified life, and thus eliminated from the list. Next certain passive, long-lived electrical/I&C component groups that do not support license renewal system intended functions were eliminated. Finally the in-scope equipment identified as requiring an AMR were compared to the NRC’s Generic Aging Lessons Learned report to ensure that differences are valid and justified. The resulting list of electrical and I&C component groups subject to an AMR included:

1. Cables and Connections

All electrical cables and connections were evaluated for aging management based on material properties and the applicable environment. Connection components included splices, connectors, fuse blocks, and terminal blocks. Some cables and connectors were excluded from aging management if they were determined to supply equipment that did not perform an intended function.

2. Bus Ducts

The applicant evaluated those bus ducts which were used for safety-related systems and those used for the 4160 Vac between the reserve auxiliary transformers and the switchgear.

3. High Voltage Transmission Conductors and Insulators

The applicant evaluated the high voltage conductors and insulators used with the connection of the switchyard to the reserve auxiliary transformers.

4. Electrical Penetrations

The applicant included all of the electrical penetrations which serve as the containment boundary for electrical systems. Aging management for electrical functions is controlled by the environmental qualification program and the pressure boundary function is controlled by programs associated with the primary containment system.

5. Switchyard Buses

During the inspection the applicant was evaluating scoping and screening for the switchyard buses. At the close of the inspection, no decision had been reached. This will be examined during the aging management inspection.

D. Evaluation of Scoping and Screening of Structures

1. Primary Containment

The primary containment of both sites is a Mark I design consisting of three steel structures: the drywell, the vent system, and the torus. The drywell is a steel shell which encloses the reactor vessel, reactor coolant recirculation system, and branch lines of the reactor coolant system. The vent system consists of vent headers and downcomers connecting the drywell to the torus. The torus is a toroidal-shaped steel pressure suppression chamber containing a large volume of water. CDBi-DRE00-DS083, “Primary Containment (Units 2&3),” 4/12/03 for Dresden and CDB1-QDC00-QS094, “Primary Containment (Units 1&2),” 4/7/03 for Quad Cities describe the primary containment in detail.

The lower portion of the drywell is embedded in concrete for support. The torus is located below the drywell and is mounted on supporting structures. The large water volume of the torus and the air volume of the drywell are designed to absorb the total energy from a DBA. This is one of the many intended functions of the primary containment.

The primary containment has many other intended functions including providing supports for safety-related structures and components, providing radiological and biological shielding, providing a missile barrier, etc. The scoping boundary of the primary containment is the entire structure. The applicant determined that the primary containment was within the scope of license renewal and nothing has been screened out. The team concurred with this decision.

2. Reactor Building (secondary containment)

CDB1-QDC00-QS053, “Reactor Building (0020),” 4/7/03 for Quad Cities and CDB1-DRE00-DS051, “Unit 2&3 Reactor Building,” 4/12/03 describe the reactor building as a steel and concrete structure which encloses the primary containment. The evaluation of the reactor building includes the equipment access building, spent fuel pool, new fuel storage vault, and high density spent fuel racks. The reactor building has three intended functions: (1) act as secondary containment during normal operation; (2) as primary containment when refueling; and (3) provide support and protection for safety-related structures and components.

The scoping boundary of the structure is the entire structure including both steel and reinforced concrete. The applicant assessed the entire reactor building as within the scope of license renewal except for the Dresden material interlock structure, the nonsafety-related passenger elevator, reactor cavity ladders, and signs of both sites because they do not perform any intended function. The team agreed with this assessment.

3. Turbine Buildings

The purposes of the turbine buildings are for the protection of plant equipment from environmental hazards and missiles, as well as, provide support for equipment and radiation shielding, as described in CDB1-QDC00-QS074, “Turbine Building (0030),” 4/7/03 for Quad Cities and CDB1-DRE00-DS067, “Unit 2/3 Turbine Buildings,” 4/12/03. The turbine buildings (categorized as Class II structures) provide Class I protection in area where Class I items are located.

The turbine buildings are common structures shared by both units at both sites. At Quad Cities, the turbine building houses the standby diesel generators 1&2, diesel generator cooling water pumps, RHR service water pumps, etc. The main generator, emergency diesel generators 2 and 3, the battery room, the main condenser, etc., are located within the turbine building at Dresden. The evaluation boundaries include the foundations, concrete slabs, structural steel floors, metal siding, anchor bolts, walls and roofing structures.

The applicant assessed the entire buildings as within the scope of license renewal with the following exceptions: the offgas recombiner rooms at both sites, and the turbine building roof stack of Dresden because they do not perform any intended functions. The team agreed with this assessment.

4. Dresden Units 2 and 3 Diesel Generator and High Pressure Coolant Injection Building

The Dresden 2 and 3 diesel generator and HPCI building provide structural support and protection for the 2/3 (swing) EDG, HPCI system equipment, and other safe shutdown SSCs. The structure is also relied upon for fire protection and station blackout (SBO).

This structure abuts the Unit 3 reactor building, as described in CDB1-DRE00-DS018, “Unit 2/3 Diesel Generator & HPCI Building,” 4/12/03. It is classified as a Class I structure (safety-related) and contains SSCs required for safe shutdown, fire protection, and SBO. The applicant assessed that the entire building was within the scope of license renewal. The only structural element considered outside the scope of license renewal was the built-up roofing. The 12-inch reinforced concrete roof slab provides all the required protection. Therefore, the built-up roofing does not provide any intended function as described in 10 CFR 54.4. The team concurred with this decision.

5. Quad Cities Diesel Generator Room

CDB1-QDC00-QS011, “Diesel Generator Room(s),” 4/7/03 describes that the EDGs (1, 2, and1/2 swing) provide emergency power for safe shutdown and for mitigating the consequences of a LOCA in the event that the normal offsite power supply is not available. The DG room(s) function is to provide structural support and protection of the EDGs, as well as the fire protection of adjacent safety-related structures and the DG room(s).

The boundaries of evaluation include the three DG rooms. EDG1 in the Southeast corner of the Unit 1 turbine building, EDG2 in the Northeast corner of the Unit 2 turbine building, and the1/2 (the swing EDG) is centered on the Unit 1&2 reactor building outside along the east wall. The applicant assessed that all three EDG rooms were within the scope of license renewal. There is nothing being screened out. The team agreed with this assessment.

6. Station Blackout Building

The Dresden SBO building, formerly the Unit 1 HPCI building, is a Category I, safety-related, reinforced concrete structure capable of protecting its contents from environmental events that could initiate the SBO event. The building provides support and protection for safety-related SSCs, including the Unit 2 alternate 125 Vdc batteries, the SBO EDGs, and associated equipments that are required to support an SBO event. CDB1-DRE00-DS017, “Unit 2/3 SBO Building,” 4/12/03 has a more detailed description of this building. The applicant assessed that the entire building was within the scope of license renewal and nothing was being screened out.

The Quad Cities SBO building is described in document CDB1-QDC00-QS090, “SBO Building,” 4/7/03. The SBO building is a two-floor structure consisting of a reinforced concrete ground-floor slab foundation, steel-framed exterior walls with corrugated metal siding, a metal deck supported concrete second floor, and an insulated metal deck roof. The SBO building houses the SBO diesel generators and associated equipment required to support an SBO event. The applicant assessed that the entire structure was within the scope of license renewal, only the stairs, handrails, gratings, and ladders were outside the scope because they do not perform any intended functions. The team concurred with this assessment.

7. Radwaste Floor Drain Surge Tank and Foundation

The floor drain surge tanks at both sites are intended to provide the necessary volume (200,000 gallons) for the floor drain system which collects potential radwaste liquids. The floor drain surge tanks are located outside the turbine building and are Class I structures with thick concrete walls for shielding. The evaluation boundary is from the foundation to the top of the floor drain surge tank structures including the attached pump house structures. The applicant assessed that the entire system was within the scope of license renewal. The following items were screened out of the license renewal scope: the built-up roofing, bird screens, equipment supports, and hand rail and ladders because they do not support any of the tanks' intended functions. The team agreed with this assessment.

8. Diesel Oil Storage Tanks Foundation

The diesel oil storage tanks foundations provide structural supports for three safety- related, 15,000 gallon EDG oil tanks. For Quad Cities, as described in CDB1-QDC00-QS012, "Diesel Oil Tanks Foundation," 4/7/03, the original unit 1 tank is replaced with a fiberglass tank and is anchored to two reinforced concrete foundations and restrained in place by stainless steel straps. The Unit 2 and ½ swing EDG tanks are supported on 4-foot thick concrete pads with 1-inch anchor bolts. All three foundation pads, including anchorages, were within the scope of license renewal and nothing is being screened out of the scope.

For the Dresden EDG oil tanks foundation, as described in CDB1-DRE00-DS020, "EDG Oil Tank Foundation," 4/12/03, and depicted on Drawing B-481, each tank is supported on three 3-foot, six-inch-6 thick concrete pads with twelve 1-inch diameter anchor bolts (four per pad). The applicant assessed that all three tank foundations, including anchor bolts were within the scope of license renewal and screened out nothing. The team concurred with this decision.

9. Contaminated Condensate Storage Tanks Foundation

The purpose of the two CCST foundations of both sites is to provide structural support for the nonsafety-related CCSTs. The CCST foundations are designed as Class II structures because they are required for the safety shutdown of the plant under DBAs. The design objective of the condensate storage facilities is to provide water of the quality and quantity required for preoperation and operation of the plant. The foundations are reinforced concrete ring- shaped structures with anchor bolts. Drawings B-480 and B-330 depict the CCST foundations in detail for both Dresden and Quad Cities facilities, respectively. The applicant assessed that the entire reinforced concrete foundation structures and anchor bolts for all CCSTs were within the scope of license renewal and nothing is being screened out. The team agreed with this assessment.

10. Crib House

The crib house of Dresden Units 2&3 is described in CDB1-DRE00-DS014, “Unit 2/3 Crib House,” 4/12/03 as to provide support and protection of safety related as well as nonsafety-related SSCs. The crib house contains the circulating water pumps, the SW pumps, the diesel driven fire pump, and DG cooling water pumps. It also provides suction for the containment cooling water system pumps. The evaluation boundary of the crib house is the entire structure. The applicant assessed that the crib house was within the scope of license renewal and only screened out the non-passive components and their associated structural components. Trash racks were screened out because they do not perform any intended functions. The team agreed with this decision.

The Quad Cities crib house is evaluated in CDB1-QDC00-QS010, “Crib House (Unit 1&2),” 4/7/03. The crib house contains the circulating water pumps, the SW pumps, and the diesel driven fire pump. It also provides suction for the safety related RHR service water pumps. The crib house is a reinforced, concrete block and steel structure to provide support for safety related and nonsafety-related SSCs. The applicant assessed that the entire crib house to be within the scope of license renewal. The only structural components that were not in the scope were those components associated with active components. The team agreed with this decision.

11. Dresden Unit 1 Crib House

The Dresden Unit 1 crib house contains one of the two diesel driven fire pumps required to support the Units 2&3 fire protection system. The Unit 1 crib house is a reinforced concrete structure and provides structural support for the diesel driven fire pump. The applicant assessed that the structural components that supporting the diesel driven fire pump including the reinforced concrete floor slab, anchor bolts, bearing plate, and grout were within the scope of license renewal. The remaining structural component of the crib house is outside of the 10 CFR Part 54 rule requirements and, therefore, is not in scope. The team agreed with this decision.

12. Station Chimney

The station chimneys of both sites are 310 feet tall, reinforced concrete structures that provide elevated release points for maximum dispersion of radioactive effluents. The station chimney is a plant containment barrier that contains and/or mitigates the release of fission products. The station chimney is shared by both units in each site. The chimney receives its input from many plant systems and components. The applicant assessed that the entire station chimney was within the scope of license renewal and nothing was screened out. The team concurred with this assessment.

13. Miscellaneous Radwaste Buildings

The miscellaneous radwaste buildings of both sites provide structural support and anchorage of nonsafety-related equipment and systems. The radwaste building is among a group of nonsafety-related structures which provide support to nonsafety-related SSCs that treat, process, and store solid, liquid, and gaseous radwaste materials. As described in CDB1-QDC00-QSMRW, “Miscellaneous Radwaste

Buildings," 5/14/03, this structural group at Quad Cities covers the chemical waste sample tank foundation, floor sample tank foundation, laundry sample tank foundation, maximum recycle radwaste building, offgas filter building, radwaste solidification building, radwaste building and tank farm foundation, stack gas monitoring building, waste sample tanks foundation, high radiation sample building, interim radwaste storage facility, laundry, tool, and decontamination building, river discharge tank foundation, mausoleum, and dry active waste building.

For Dresden, this structural group is described in CDB1-DRE00-DSMRW, "Miscellaneous Radwaste Buildings," 5/14/03. This group includes the radwaste upgrade building, mixed waste storage building, solid radwaste process building, Units 2 and 3 offgas filter structure, 2/3 radwaste floor drain sample tank foundation, 2/3 chemistry gas sample house, maximum recycle radwaste building, Units 2 and 3 offgas filter building, Units 2 and 3 radwaste building, radwaste waste sample tanks foundation, radwaste surge tank foundation, Units 2 and 3 high radiation Sample building, and interim radwaste storage facilities. None of the structures listed in this group perform any intended functions of 10 CFR Part 54 rules and the applicant correctly assessed them to be outside the license renewal scope. The team agreed with this assessment.

14. Miscellaneous Dresden Unit 1 Structures

Dresden Unit 1 was shut down approximately 30 years ago. All fuel elements and control rods were removed and stored in the fuel storage pool. It will be decommissioned when Units 2 and 3 are ready for decommissioning. The Unit 1 structures were to provide protection of Unit 1 personnel and nonsafety-related facilities, equipment, and components from the environment. They also provide supports for the Unit 1 safety related and nonsafety-related SSCs for Unit 1.

The Miscellaneous Unit 1 Structures were evaluated in CDB1-DRE00-DSMUI, "Miscellaneous Unit 1 Structures," 4/12/03 including the heat boiler, laundry area, turning vane storage building, core spray piping building, dry cask storage pad, fuel handling building, offgas filter building, radwaste building, reactor building, turbine building, HPCI valve building, sphere penetration building, chemical decontamination building, chimney. All these structures were outside the license renewal scope because they do not perform any 10 CFR Part 54 intended functions. The team agreed with this determination.

15. Miscellaneous Transmission and Distribution (T&D) Structures

The Quad Cities miscellaneous T & D structures cover the retired neutralizing transformer, spare main transformer storage structure, switchgear house, transformer storage structures, and transmission towers as described in CDB1-QDC00-QSMXM, "Miscellaneous T & D Structures," 7/23/03. The applicant assessed that these structures were outside the scope of license renewal because they do not perform or support any of the 10 CFR Part 54 intended functions. Transmission towers and structural foundations that support offsite power restoration were evaluated separately. The team agreed with this decision.

As for the Dresden evaluation, CDB1-DRE00-DSMXM, "Miscellaneous T & D Structures," 7/25/03 lists the following structures: 345 kV dead end structure, 34 kV relay house, 345 kV switchyard maintenance building, transmission towers, and 138 kV and 345 kV switchyard foundations. The applicant determines that these structures were not within the scope of license renewal because they were not safety related, not applicable to 10 CFR 54.4(a)(2), and do not provide a function credited in any of the regulated events identified in 10 CFR 54.4(a)(3). Transmission towers and structure foundations supporting offsite power restoration were evaluated separately. The team concurred with this determination.

16. Offsite Power Structures

The offsite power source is to provide sufficient capacity and capability to start and operate safety-related equipment. The offsite power structures provide supports of the equipment for normal alternate current restoration path as part of an SBO event. This group of structures includes dead end structures and foundations, intermediate transmission towers and foundations, reserve auxiliary transformer (RAT) foundations, and other miscellaneous support structures.

For the Dresden site, the following structural components, as described in CDB1-DRE00-Dsoff," Offsite Power Structures," 7/25/03, were included in the scope of license renewal: circuit breaker foundations in the switchyard serving the RATs; 345 kV and 138 kV switchyard dead end structures, foundations, and anchorages; intermediate transmission towers serving the RATs and associated foundations, anchorages, and steel piles at foundation 101A for RAT 22; RAT 32 and RAT 22 foundations; bus duct, bus duct supports, anchorages, and foundations; 345 kV relay house; and 138 kV relay house. All transmission towers that are not serving the RATs were outside the scope because they are not required for SBO restoration.

As for the Quad Cities site, the applicant assessed the following structural components to be within the scope of license renewal. They include the circuit breaker foundation in the switchyard for the RATs; 345 kV switchyard dead end structures, foundations, and anchorages serving the RATs; intermediate transmission towers, foundations, and anchorages; bus ducts, bus duct supports, foundations, and anchorages; and 345 kV relay house. All other transmission towers not serving the RAT were outside the scope because they are not required for an SBO event. The team concurred with these determinations.

E. Evaluation of Scoping and Screening of Fire Protection Systems

The fire protection system detects and suppresses fires and provides an alternate source of makeup water to various critical locations. Fire barriers prevent the spread of fire from one space to another. The fire protection system evaluation boundary begins with the suction of the diesel driven fire pumps from the associated crib house suction bays. It continues through the common fire protection header to the various wet pipe, preaction and deluge systems as well as hose reels, hydrants, and sprinkler heads. The evaluation boundary extends to include its interface with the SW system, the isolation condenser system (at Dresden) and the safe shutdown makeup pump system (at Quad Cities). The evaluation boundary also includes fire dampers, the halon suppression system and the fire computer system, which includes smoke detectors, heat sensors, pressure/flow sensors, and actuation devices for preaction systems. The fire dampers of the in-scope HVAC systems are evaluated with those systems. All associated piping, components and instrumentation contained within the flow paths and systems are included in the fire protection system boundary.

The inspectors reviewed the LRA, applicable portions of the UFSAR, the system scoping and screening packages, and the license renewal boundary drawings. The inspectors sampled the component screening and did not identify any components improperly excluded from aging management. The inspectors concluded that the applicant had performed scoping and screening for the fire protection system in accordance with the methodology described in the LRA and the rule.

II Exit Meeting Summary

The results of this inspection were discussed on August 1, 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

A. Fulvio, Senior Project Manager
J. Hansen, Regulatory Assurance Manager, Dresden Nuclear Power Station
M. Hayse, Senior Engineer
R. Hunnicut, Engineer
R. Jackson, General Electric Project Engineer
R. John, Senior Engineer
J. Nalewajka, Dresden License Renewal Manager
J. Patel, Senior Engineer
R. Robey, Engineer
P. Simpson, Licensing Manager Mid-West Regional Operating Group
R. Stachniak, Project Engineer
C. Tzomes, Quad Cities License Renewal Manager
G. Warner, Engineer (Parsons)

NRC

C. Pederson, RIII
T. Kim, NRR
J. Lara, RIII

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors reviewed the documents in their entirety, but that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion on this list does not imply NRC acceptance of the document, unless specifically stated in the inspection report.

License Renewal Boundary Drawings

LR-DRE-M-1; Property Diagram (shows Ultimate Heat Sink); Revision 0

LR-DRE-M-12-1; Main Steam Piping; Revision 0

LR-DRE-M-12-2; Main Steam Piping; Revision 0

LR-DRE-M-15; Condensate Piping; Revision 0

LR-DRE-M-22; Service Water Piping; Revision 0

LR-DRE-M-25; Pressure Suppression Piping; Revision 0

LR-DRE-M-26; Isolation Condenser Piping, Unit 2; Revision 0

LR-DRE-M-26-1; Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-DRE-M-26-2; Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-DRE-M-26-3; Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-DRE-M-27; Core Spray Piping; Revision 0

LR-DRE-M-29-1; L.P. Coolant Injection Piping; Revision 0

LR-DRE-M-29-2; L.P. Coolant Injection Piping; Revision 0

LR-DRE-M-32; Shutdown Reactor Cooling Piping; Revision 0

LR-DRE-M-34-1; Control Rod Drive Hydraulic Piping; Revision 0

LR-DRE-M-34-2; Control Rod Drive Hydraulic; Revision 0

LR-DRE-M-35-1; Demineralized Water System Piping; Revision 0

LR-DRE-M-37-2; Instrument Air Piping; Revision 0

LR-DRE-M-38-2; Service Air Piping 2/3, Sparging Air Compressors, Reactor Building and Crib House

LR-DRE-M-39; Reactor Building Equipment Drains; Revision 0

LR-DRE-M-40; Turbine Building Equipment Drains and Diesel Air Intake and Exhaust; Revision 0

LR-DRE-M-41-1; Turbine and Diesel Oil Piping; Sheet 1; Revision 0

LR-DRE-M-41-2; Turbine and Diesel Oil Piping; Sheet 2; Revision 0

LR-DRE-M-51; H.P. Coolant Injection Piping; Revision 0

LR-DRE-M-173; Corrosion Test and Diesel Start Up Air Piping; Revision 0

LR-DRE-M-177-4; Process Sampling Part 1, Turbine Bldg Sample Panel B; Revision 0

LR-DRE-M-272; Radwaste Ventilation; Revision 0

LR-DRE-M-345-1; Main Steam Piping; Revision 0

LR-DRE-M-345-2; Main Steam Piping; Revision 0

LR-DRE-M-355; Service Water Piping, Unit 3; Revision 0

LR-DRE-M-356; Pressure Suppression Piping; Revision 0

LR-DRE-M-357-1; Nuclear Boiler & Reactor Recirculation Piping; Revision 0

LR-DRE-M-357-2; Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-DRE-M-357-3**;** Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-DRE-M-358; Core Spray Piping; Revision 0

LR-DRE-M-359; Isolation Condenser Piping, Unit 3; Revision 0

LR-DRE-M-360-1; L.P. Coolant Injection System; Revision 0

LR-DRE-M-360-2; L.P. Coolant Injection System; Revision 0

LR-DRE-M-363; Shutdown Cooling Piping; Revision 0

LR-DRE-M-365-1; Control Rod Drive Hydraulic Piping; Revision 0

LR-DRE-M-365-2; Control Rod Drive Hydraulic Piping; Revision 0

LR-DRE-M-366; Demineralized Water System Piping; Revision 0

LR-DRE-M-367-2; Instrument Air Piping; Revision 0

LR-DRE-M-368; Service Air Piping; Revision 0

LR-DRE-M-369; Reactor Building Equipment Drains; Revision 0

LR-DRE-M-370; Turbine Building Equipment Drains; Revision 0

LR-DRE-M-374; H.P. Coolant Injection Piping; Revision 0

LR-DRE-M-419-4; Process Sampling Part 1, Turbine Building Sample Panel “B”; Revision 0

LR-DRE-M-478-1; Diesel Generator Lube Oil Piping; Sheet 1; Revision 0

LR-DRE-M-478-2; Diesel Generator Lube Oil Piping; Sheet 2; Revision 0

LR-DRE-M-478-3; Diesel Generator Lube Oil Piping; Sheet 3; Revision 0

LR-DRE-M-517-1; Diesel Generator Engine Cooling Water System; Sheet 1; Revision 0

LR-DRE-M-517-2; Diesel Generator Engine Cooling Water System; Sheet 2; Revision 0

LR-DRE-M-517-3; Diesel Generator Engine Cooling Water System; Sheet 3; Revision 0

LR-DRE-M-518-1; Diesel Generator Fuel Oil Piping; Sheet 1; Revision 0

LR-DRE-M-518-2; Diesel Generator Fuel Oil Piping; Sheet 2; Revision 0

LR-DRE-M-518-3; Diesel Generator Fuel Oil Piping; Sheet 3; Revision 0

LR-DRE-M-707-1; Atmospheric Containment Atmosphere Dilution System; Revision 0

LR-DRE-M-707-2; Atmospheric Containment Atmosphere Dilution System; Revision 0

LR-DRE-M-722; Concentrator Reboiler and Miscellaneous Equipment Piping; Revision 0

LR-DRE-M-974; Diesel Generator Room Ventilation; Revision 0

LR-DRE-M-1234-1; Liquid Sampling; Revision 0

LR-DRE-M-1239-1; Liquid Sampling; Revision 0

LR-DRE-M-3121; Control Room HVAC; Revision 0

LR-DRE-M-4204; Miscellaneous Systems (Diesel Oil to Isolation Condenser Makeup Pumps); Revision 0

LR-DRE-M-4305; Diesel Generator Fuel Oil System Piping, SBO Building; Revision 0

LR-DRE-M-4305A; Diesel Generator Fuel Oil Piping, SBO Building; Sheet A; Revision 0

LR-DRE-M-4305B; Diesel Generator Fuel Oil Piping, SBO Building; Sheet B; Revision 0

LR-DRE-M-4306-1; Diesel Generator Jacket Water Piping, SBO Building; Sheet 1; Revision 0

LR-DRE-M-4306-2; Diesel Generator Jacket Water Piping, SBO Building; Sheet 2; Revision 0

LR-DRE-M-4307; Combustion Air and Exhaust Piping, SBO Building; Revision 0

LR-DRE-M-4308; Diesel Generator Starting Air Piping, SBO Building; Revision 0

LR-DRE-M-4308A; Diesel Generator Starting Air Piping, SBO Building; Sheet A; Revision 0

LR-DRE-M-4308B; Diesel Generator Starting Air Piping, SBO Building; Sheet B; Revision 0

LR-DRE-M-4308C; Diesel Generator Starting Air Piping, SBO Building; Sheet C; Revision 0

LR-DRE-M-4308D; Diesel Generator Starting Air Piping, SBO Building; Sheet D; Revision 0

LR-DRE-M-4308E; Diesel Generator Air Skid System, SBO Building; Sheet E; Revision 0

LR-DRE-M-4308F; Diesel Generator Air Skid System, SBO Building; Sheet F; Revision 0

LR-DRE-M-4356-1; Electric Equipment Room HVAC System, SBO Building; Sheet 1; Revision 0

LR-DRE-M-4356-2; Electric Equipment Room HVAC System, SBO Building; Sheet 2; Revision 0

LR-DRE-M-4356-3; Electric Equipment Room HVAC System, SBO Building; Sheet 3; Revision 0

LR-DRE-M-4356-4; Diesel Generator Room HVAC System, SBO Building; Revision 0

LR-DRE-M-4356-5; Equipment Room and Storage Area HVAC System, SBO Building; Revision 0

LR-DRE-M-4359-1; Diesel Generator Exhaust and Combustion Air Piping, SBO Building; Sheet 1; Revision 0

LR-DRE-M-4359-2; Diesel Generator Exhaust and Combustion Air Piping, SBO Building; Sheet 2; Revision 0

LR-DRE-M-4359-3; Diesel Generator Exhaust and Combustion Air Piping, SBO Building; Sheet 3; Revision 0

LR-DRE-M-4359-3; Diesel Generator Exhaust and Combustion Air Piping, SBO Building; Sheet 3; Revision 0

LR-DRE-M-4360-1; Jacket Water Cooling System, Diesel Engine 2-6620-1A, SBO Building; Revision 0

LR-DRE-M-4360-2; Jacket Water Cooling System, SBO Building; Sheet 2; Revision 0

LR-DRE-M-4360-3; Jacket Water Cooling Diesel Engine 2-6620-1B, SBO Building; Revision 0

LR-DRE-M-4360-4; Jacket Water Cooling System, SBO Building; Sheet 4; Revision 0

LR-DRE-FSAR-3.9; Reactor Vessel And Internals; Revision 0

LR-DRE-002D-M26-1; Reactor Vessel Head Spray-Unit 2; Revision 0

LR-DRE-002D-M357-1; Reactor Vessel Head Spray-Unit 3; Revision 0

LR-DRE-002E-M26-1&2; Reactor Vessel Head Vent- Unit 2; Revision 0

LR-DRE-002E-M357-1&2; Reactor Vessel Head Vent - Unit 3; Revision 0

LR-QDC-CID-13-2; Control & Instrumentation, Main Steam System; Revision 0

LR-QDC-CID-39; RHR System; Revision 0

LR-QDC-CID-60-2; Main Steam System; Revision 0

LR-QDC-CID-81; RHR System; Revision 0

LR-QDC-M-13-1; Main Steam Piping; Revision 0

LR-QDC-M-13-2; Main Steam Piping; Revision 0

LR-QDC-M-16-5; Condensate Piping; Revision 0

LR-QDC-M-24-12; Instrument Air Piping; Revision 0

LR-QDC-M-24-13; Instrument Air Piping; Revision 0

LR-QDC-M-25-1; Service Air Piping; Revision 0

LR-QDC-M-34-1; Pressure Suppression Piping; Revision 0

LR-QDC-M-35-2; Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-QDC-M-36; Core Spray Piping; Revision 0

LR-QDC-M-37; RHR Service Water Piping; Revision 0

LR-QDC-M-38; Fuel Pool Cooling Piping; Revision 0

LR-QDC-M-39-1; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-39-2; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-39-3; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-39-4; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-41-1; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-41-2; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-41-3; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-41-4; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-43; Reactor Building Equipment Drains; Revision 0

LR-QDC-M-46-1; High Pressure Coolant Injection (HPCI) Piping; Revision 0

LR-QDC-M-46-2; High Pressure Coolant Injection (HPCI) Piping; Revision 0

LR-QDC-M-46-3; HPCI Turbine Lubricating and Hydraulic Oil System and Pump Seal Cooler Piping; Revision 0

LR-QDC-M-50-1; Reactor Core Isolation Cooling (RCIC) Piping; Revision 0

LR-QDC-M-60-1; Main Steam Piping; Revision 0

LR-QDC-M-60-2; Main Steam Piping; Revision 0

LR-QDC-M-71-7; Instrument Air Piping, Reactor Building; Revision 0

LR-QDC-M-71-8; Instrument Air Piping, Reactor Building; Revision 0

LR-QDC-M-72-1; Service Air Piping; Revision 0

LR-QDC-M-76-1; Pressure Suppression Piping; Revision 0

LR-QDC-M-77-2; Nuclear Boiler & Reactor Recirculating Piping; Revision 0

LR-QDC-M-78; Core Spray Piping; Revision 0

LR-QDC-M-79; RHR Service Water Piping; Revision 0

LR-QDC-M-80; Fuel Pool Cooling Piping; Revision 0

LR-QDC-M-81-1; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-81-2; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-81-3; Residual Heat Removal (RHR) Piping; Revision 0

LR-QDC-M-83-1; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-83-2; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-83-3; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-83-4; Control Rod Drive Hydraulic Piping; Revision 0

LR-QDC-M-85; Reactor Building Equipment Drains; Revision 0

LR-QDC-M-87-1; High Pressure Coolant Injection (HPCI) Piping; Revision 0

LR-QDC-M-87-2; High Pressure Coolant Injection (HPCI) Piping; Revision 0

LR-QDC-M-87-3; HPCI Turbine Lubricating, Hydraulic Oil System and Pump Seal Cooler Piping; Revision 0

LR-QDC-M-584-1; Traversing In-Core Probe (TIP) System; Revision 0

LR-QDC-M-584-2; Traversing In-Core Probe (TIP) System; Revision 0

LR-QDC-M-642-1; Atmospheric Containment Atmospheric Dilution System; Revision 0

LR-QDC-M-642-2; Atmospheric Containment Atmospheric Dilution System; Revision 0

LR-QDC-M-1056-1; High Radiation Sampling System Piping & Liquid Sampling; Revision 0

LR-QDC-M-1056-2; Liquid Sampling; Revision 0

LR-QDC-M-1061-1; Liquid Sampling; Revision 0

LR-QDC-M-1061-2; Liquid Sampling; Revision 0

LR-QDC-FSAR-3.9; Reactor Vessel And Internals; Revision 0

LR-QDC-002E-M35-1; Reactor Vessel Head Vent System; Revision 0

LR-QDC-002E-M77-1; Reactor Vessel Head Vent System; Revision 0

Plant Drawings

B-480; Dresden Nuclear Power Station Unit 2 and 3 - Miscellaneous Outdoor Foundations; Sheet 1; Revision B; dated July 1, 1970

B-330; Quad Cities Station Unit 1 - Miscellaneous Yard Foundations Units 1 and 2; Revision C; dated July 25, 1968

B-331; Quad Cities Station Unit 1 and 2 - Miscellaneous Yard Foundations; Sheet 2; Revision A; dated June 4, 1968

B-481; Dresden Power Station Unit 2 and 3 - Miscellaneous Outdoor Foundations; Sheet 2; Revision D; dated January 24, 1974

M-1D; Quad Cities Station Unit 1 and 2 Development Plat; Revision A; dated February 25, 1997

M-1E; Ultimate Property Plat; Dresden Nuclear Power Station Units 2 and 3; Revision A; dated March 29, 1976

M-4; Dresden Station Unit 2 and 3 - General Arrangement , Ground Floor Plan; Revision AB; dated August 23, 2002

B-331A; Quad Cities Station Unit 1 - Miscellaneous Yard Foundations; Revision A; dated April 2, 1991

M-5; Quad Cities Station Unit 1 and 2 - General Arrangement, Ground Floor Plan; Revision V; dated May 20, 2002

M-3010; P&ID/Flow Diagram Gaseous Monitoring System; Revision F

4E-2318B; Overall Key Diagram - 125 Vdc Distribution Centers; Revision H

4E-2318; Key Diagram - 125 Vdc Distribution Centers; Revision AD

12E-2322B; Overall Key Diagram - 125 Vdc Distribution Centers; Revision F

12E-2325; Key Diagram - 120 and 120/240 Vac Distribution Essential Service Bus and Inst. Bus; Revision AN

4E-6846E; Schematic Diagram - CRD/SDV Control Rod Drive; Revision E

12E-2324; Key Diagram - 48/24 Vdc Distribution for Neutron Monitoring; Revision V

12E-3301; Single Line Diagram; Sheet 1; Revision AG

12E-3301; Single Line Diagram; Sheet 1; Revision AJ

Dresden U3 Single Line Diagram, Sheet 1; Revision AG

Dresden U3 Single Line Diagram, Sheet 2; Revision AJ

Dresden U3 Single Line Diagram, Sheet 3; Revision AH

Dresden U2 Single Line Diagram, Sheet 2; Revision AF

Dresden U2 Single Line Diagram, Sheet 3; Revision AP

License Renewal Procedures

LRTI-4; Review of Contractor Prepared Scoping and Screening Documents, Revision 1; dated April 29, 2003

LRTI-16; Identification of Non Safety-Related Structures and Components Which Spatially or Structurally Interact With Safety Related Systems; Revision 1; dated May 12, 2003

GE-NE-LRTI-2000; Scoping and Screening of Systems, Structures, and Components for License Renewal; Revision 5; dated December 20, 2002

PP-DRE&QDC; Active/Passive Classification and Intended Function Determination of Structures and Components; Revision 2; dated November 16, 2002

Scoping and Screening Packages

002A; Dresden - Reactor Vessel and Internals; dated July 21, 2003

002AI; Dresden - Reactor Vessel and Internals; dated July 21, 2003

002AV; Dresden - Reactor Vessel and Internals; dated July 21, 2003

002D; Dresden - Head Spray; dated April 12, 2003

002E; Dresden - Reactor Vessel Head Vents; dated April 12, 2003

003A; Dresden - Control Rod Drive Hydraulic System; dated April 12, 2003

009; Dresden - Containment Condensate Tank Foundation; dated April 12, 2003

010A; Dresden - Shutdown Cooling System; dated April 12, 2003

013; Dresden - Unit 1 Crib House; dated April 12, 2003

014; Dresden - Unit 2 and 3 Crib House; dated April 12, 2003

014A; Dresden - Core Spray System; dated April 12, 2003

015AD; Dresden - Low Pressure Coolant Injection System; dated April 12, 2003

015BD; Dresden - Containment Cooling Service Water System; dated April 12, 2003

016A; Dresden - Primary Containment and Suppression Pool Piping; dated April 12, 2003

017; Dresden - Unit 2 and 3 SBO Building; dated April 12, 2003

018; Dresden - Unit 2 and 3 Diesel Generator and HPCI Building; dated April 12, 2003

020; Dresden - EDG Oil Tank Foundation; dated April 12, 2003

023A; Dresden - High Pressure Coolant Injection System; dated April 12, 2003

026; Dresden - 2 and 3 Floor Drain Surge Tank; dated April 12, 2003

027B; Dresden - Oxygen Injection - Hydrogen Addition; dated April 12, 2003

030A; Dresden - Main Steam System; dated April 12, 2003

030B; Dresden - Automatic Depressurization System; dated April 12, 2003

031A; Dresden - Extraction Steam; dated April 12, 2003

034A; Dresden - Condensate And Condensate Booster Pump; dated April 12, 2003

041A; Dresden - Fire Protection

045A; Dresden - Hypochlorite (Chemical Addition); dated April 12, 2003

047A; Dresden - Instrument Air; dated April 12, 2003

051; Dresden - Unit 2 and 3 Reactor Building; dated April 12, 2003

057A; Dresden - HVAC - Main Control Room; dated April 12, 2003

057AE; Dresden - Unit 1 Gaseous Monitoring; dated April 12, 2003

057BHVAC; Dresden - Primary Containment; dated April 12, 2003

057D; Dresden - HVAC - Reactor Building; dated April 5, 2003

064; Dresden - 2 and 3 Station Chimney; dated April 12, 2003

067; Dresden - Units 2and 3 Turbine Building; dated April 12, 2003

067A; Dresden - Unit 2 4160 V Switchgear and Distribution; dated July 23, 2003

067A; Dresden - Unit 3 4160 V Switchgear and Distribution; dated July 23, 2003

078A; Dresden - Unit 2 480 V MCCs, Transformer, Switchgear and Distribution; dated July 23, 2003

078A; Dresden - Unit 3 480 V MCCs, Transformer, Switchgear and Distribution; dated July 23, 2003

083B; Dresden - Unit 2 125 Vdc System Dresden U2; dated July 23, 2003

083B; Dresden - Unit 3 125 Vdc System Dresden U3; dated July 23, 2003

083; Dresden - Primary Containment (Units 2 and 3); dated April 12, 2003

085A; Dresden - Drywell Nitrogen Inerting; dated April 12, 2003

100A; Dresden - Nitrogen Containment Atomospheric Dilution; dated July 24, 2003

Dsoff; Dresden - Offsite Power Structures; dated July 25, 2003

MRW; Dresden - Miscellaneous Radwaste Building; dated May 14, 2003

MU1; Dresden - Miscellaneous Unit 1 Structures; dated April 12, 2003

MXM; Dresden - Miscellaneous T & D Structures; dated July 25, 2003

002A; Quad Cities - Reactor Vessel and Internals; dated July 24, 2003

002AI; Quad Cities - Reactor Vessel and Internals; dated July 24, 2003

002AV; Quad Cities - Reactor Vessel and Internals; dated July 24, 2003

002E; Quad Cities - Reactor Vessel Head Vents; date April 5, 2003

003A; Quad Cities - Control Rod Drive Hydraulic System; dated April 5, 2003

006; Quad Cities - Containment Condensate Tank Foundation; dated April 7, 2003

010; Quad Cities - Crib House (Units 1 and 2); dated April 7, 2003

011; Quad Cities - Diesel Generator Room(s); dated April 7, 2003

012; Quad Cities - Diesel Oil Tank Foundation; dated April 7, 2003

014A; Quad Cities - Core Spray System; dated April 5, 2003

015AQ; Quad Cities - Residual Heat Removal System; dated April 5, 2003

016A; Quad Cities - Primary Containment & Suppression Pool Piping; dated April 5, 2003

023A; Quad Cities - High Pressure Coolant Injection System; dated April 5, 2003

025; Quad Cities - Floor Drain Surge Tank; dated April 7, 2003

027B; Quad Cities - Oxygen Injection- Hydrogen Addition; dated April 5, 2003

030A; Quad Cities - Main Steam System; dated April 5, 2003

030B; Quad Cities - Automatic Depressurization System; dated April 5, 2003

031A; Quad Cities - Extraction Steam; dated April 5, 2003

034A; Quad Cities - Condensate And Condensate Booster Pump; dated April 5, 2003

041A; Quad Cities - Fire Protection

045A; Quad Cities - Hypochlorite (Chemical Addition); dated April 5, 2003.

047A; Quad Cities - Instrument Air; dated April 5, 2003

053; Quad Cities - Reactor Building (0020); dated April 7, 2003

057A; Quad Cities - HVAC - Main Control Room; dated April 5, 2003

057D; Quad Cities - HVAC - Reactor Building; dated April 12, 2003

57BHVAC; Quad Cities - Primary Containment; dated April 5, 2003

067A; Quad Cities - Unit 1 4160 V Switchgear and Distribution; dated July 23, 2003

067A; Quad Cities - Unit 2 4160 V Switchgear and Distribution; dated July 23, 2003

074; Quad Cities - Turbine Building (0030); dated April 7, 2003

078A; Quad Cities - Unit 1 480 V MCCs, Transformer, Switchgear and Distribution; dated July 23, 2003

078A; Quad Cities - Unit 2 480 V MCCs, Transformer, Switchgear and Distribution; dated July 23, 2003

083B; Quad Cities - Unit 1 125 Vdc System QCs U1; dated July 23, 2003

083B; Quad Cities - Unit 2 125 Vdc System QCs U2; dated July 23, 2003

085A; Quad Cities - Drywell Nitrogen Inerting; dated April 5, 2003

090; Quad Cities - SBO Building; dated April 7, 2003

094; Quad Cities - Primary Containment (Units 1 and 2); dated April 7, 2003

099; Quad Cities - Chimney; dated April 7, 2003

100A; Quad Cities - Nitrogen Containment Atomospheric Dilution; dated July 24, 2003

Qsoff; Quad Cities - Offsite Power Structures; dated July 25, 2003

MRW; Quad Cities - Miscellaneous Radwaste Building; dated May 14, 2003

MXM; Quad Cities - Miscellaneous T & D Structures; dated July 23, 2003

License Renewal Change Requests

2003-172; Revise Screening Package 002A for Vessel Internals; dated July 29, 2003

2003-175; Revise Screening Package 002A for Vessel Internals; dated July 28, 2003

2003-177; Revise Screening Package 002D (Dresden Only) for Head Spray System; dated July 29, 2003.

2003-178; Revise Screening Package 002E for Reactor Vessel Head Vent; dated July 30, 2003

2003-182; Revise Screening Package 034A (QC only), Condensate/Condensate Storage; dated July 30, 2003

2003-186; Corrected License Renewal Designation for Diesel Generator Ventilation Dampers from Active to Passive; dated July 30, 2003

2003-187; Deleted Station Blackout Components from Emergency Diesel Generator Component List; dated July 30, 2003

2003-188; Corrected License Renewal Designation for a Security Diesel Fan from In to Out of Scope; dated July 30, 2003

2003-189; Corrected License Renewal Designation for a Diesel Generator Booster Pump and Valve from Out of to In Scope; dated July 30, 2003

2003-190; Highlight Pressure Gauge on Drawing LR-QDC-M-813-2; dated July 30, 2003

2003-191; Corrected License Renewal Designation for Internal Bypass Valves from Active to Passive; dated July 30, 2003

2003-194; Revise Screening Package 002D (Dresden only) Head Spray; dated July 30, 2003

2003-195; Multiple Changes to Diesel Fuel Oil Data Base, Boundary Diagram and Scoping and Screening Package for Both Dresden and Quad Cities; dated July 31, 2003

2003-200; Revise Screening Package 002AI & 002AV (QC only) for Vessel Internals; dated July 31, 2003

2003-201; Delete Comment on ECCS Coolers from Service Water Scoping and Screening Package; dated July 31, 2003

2003-203; Revise Realignment Descriptions in Equipment and Floor Drain Scoping and Screening Packages for Systems 015AD and 048A; dated July 31, 2003

2003-204; Revise LR Boundary Drawings for Condensate/Condensate Storage; dated July 31, 2003

2003-209; Provide Clarification and Corrections to the Screening of Components Type FE Flow Elements in Various Scoping and Screening Packages; dated August 6, 2003

2003-210; Provide Clarification and Corrections to the Screening of Components Type H13 Heating Coils in Various Scoping and Screening Packages; dated August 6, 2003

Plant Procedures

NES-MS-09.01; Diesel Generator Preventive Maintenance Basis Document; Revision 5; Volume 1; Section 2; Updated Fire Hazard Analysis Report, Fire Protection Program; Revision 12

Support References

--- License Renewal Application, Dresden and Quad Cities Nuclear Power Stations; dated January 3, 2003

--- Letter from Christopher I. Grimes (NRR) to Mr. Alan Nelson (NEI) and Mr. David Lochbaum (Union of Concerned Scientists); Subject: License Renewal Issue: Guidance on the Identification and Treatment of Structures, Systems, and Components which Meet 10 CFR 54.4(a)(2); dated March 15, 2002

EPRI TR-105707; Safety Assessment Of BWR Reactor Internals (BWRVIP-06); dated October 1995

EPRI TR-107286; BWR Standby Liquid Control System/ Core Plate ΔP Inspection And Flaw Evaluation Guidelines (BWRVIP-27); dated April 1997

ATTACHMENT 2

Dresden/Quad Cities

LICENSE RENEWAL INSPECTION PLAN

LICENSE RENEWAL SCOPING RESULTS FOR MECHANICAL SYSTEMS

System Name	**Dresden In-Scope?**	**Quad Cities In-Scope?**
Reactor vessel	Yes	Yes
Reactor internals	Yes	Yes
Reactor vessel head vent system	Yes	Yes
Nuclear boiler instrumentation system	Yes	Yes
Head spray system (Dresden only)	Yes	N/A
High pressure coolant injection system	Yes	Yes
Core spray system	Yes	Yes
Containment isolation components and primary containment piping system	Yes	Yes
Residual heat removal system	N/A	Yes
Low pressure coolant injection system	Yes	N/A
Automatic depressurization system	Yes	Yes
Anticipated transients without scram system	Yes	Yes
Shutdown cooling system	Yes	N/A
Control rod drive hydraulic system	Yes	Yes
Fire protection system	Yes	Yes
Emergency diesel generator and auxiliaries	Yes	Yes
HVAC – Main control room	Yes	Yes
HVAC – Reactor building	Yes	Yes
Station blackout system (diesels and auxiliaries)	Yes	Yes
Diesel fuel oil system	Yes	Yes
Service water system	Yes	Yes
Containment cooling service water system	Yes	N/A
Ultimate heat sink	Yes	Yes
Fuel pool cooling and filter demineralizers system	Yes	No
Nitrogen containment atmosphere dilution system	Yes	Yes
Drywell nitrogen inerting system	Yes	Yes
Floor and equipment drain collection system and liquid radwaste system	No	No

System Name	Dresden In-Scope?	Quad Cities In-Scope?
Reactor building floor and equipment drain system	No	No
Oxygen injection – hydrogen addition system	No	No
Hypochlorite (Chemical addition)	No	No
Instrument air and drywell pneumatic supply system	No	No
HVAC – Primary containment	No	No
Dresden Unit 1 gaseous monitoring	No	N/A
Security diesel, distribution and auxiliaries	No	No
Condensate and condensate storage system	Yes	Yes
Extraction steam system	No	No

Dresden/Quad Cites

LICENSE RENEWAL INSPECTION PLAN

LICENSE RENEWAL SCOPING RESULTS FOR STRUCTURES

Structure Name	Dresden In-Scope?	Quad Cities In-Scope?
Primary containment	Yes	Yes
Reactor building (secondary containment)	Yes	Yes
Turbine buildings	Yes	Yes
Dresden Unit 2/3 Diesel generator and HPCI building	Yes	N/A
Quad Cities diesel generator room	N/A	Yes
Station blackout building	Yes	Yes
Radwaste floor drain surge tank and foundation	Yes	Yes
Diesel oil storage tanks foundation	Yes	Yes
Contaminated condensate storage tanks foundation	Yes	Yes
Crib house	Yes	Yes
Dresden Unit 1 crib house	Yes	N/A
Station chimney	Yes	Yes
Miscellaneous radwaste buildings	No	No
Miscellaneous Dresden Unit 1 structures	No	N/A
Miscellaneous transmission and distribution structures	No	No

Dresden/Quad Cities

LICENSE RENEWAL INSPECTION PLAN

LICENSE RENEWAL SCOPING RESULTS FOR ELECTRICAL/I&C SYSTEMS

System Name	Dresden In-Scope?	Quad Cities In-Scope?
Reactor protection system	Yes	Yes
Reactor manual control system	Yes	Yes
4160 V switchgear and distribution	Yes	Yes
480 V motor control centers, transformer switchgear and distribution	Yes	Yes
dc emergency lighting	Yes	Yes
Essential service bus	Yes	Yes
120/240 VAC instrument bus	Yes	Yes
250 Vdc system	Yes	Yes
125 Vdc system	Yes	Yes
Transformers (Main, Unit, Reserve and Standby)	Yes	Yes
24/48 Vdc system	No	No
12 & 34 kV distribution	No	N/A
13.8 kV distribution	N/A	No
120 Vac distribution, lighting and receptacles	No	No

ATTACHMENT 3

LIST OF ACRONYMS USED

ac	Alternating Current
AMR	Aging Management Review
ATWS	Anticipated Transient without Scram
CCST	Contaminated Condensate Storage Tank
CRD	Control Rod Drive
CST	Condensate Storage Tank
DBA	Design Basis Accident
DG	Diesel Generator
ECCS	Emergency Core Cooling Systems
EDB	Equipment Database
EDG	Emergency Diesel Generator
EQ	Environmental Qualification
FHB	Fuel Handling Building
FO	Fuel Oil System
FW	Feedwater
HPCI	High Pressure Coolant Injection
HRSS	High Radiation Sampling System
HS	Head Spray
HVAC	Heating Ventilation and Air Conditioning
IA	Instrument Air
LOCA	Loss of Coolant Accident
LR	License Renewal
LRA	License Renewal Application
NCAD	Nitrogen Containment Atmosphere Dilution
NRR	NRC Office of Nuclear Reactor Regulation
NSR	Nonsafety Related
RAB	Reactor Auxiliary Building
RAI	Request for Additional Information
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant
RFP	Reactor Feed Pump
RV	Reactor Vessel
RVHV	Reactor Vessel Head Vent
SA	Service Air System
SBO	Station Blackout
SFPC	Spent Fuel Pool Cooling
SLC	Standby Liquid Control
SR	Safety Related
SSC	Systems, Structures, and Components
SSMP	Safe Shutdown Makeup Pump
SW	Service Water
T&D	Transmission and Distribution
UFSAR	Updated Final Safety Analysis Report