



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
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May 5, 2010

Mr. Charles G. Pardee
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION - NRC INTEGRATED INSPECTION
REPORT 05000352/2010002 AND 05000353/2010002

Dear Mr. Pardee:

On March 31, 2010, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at the Limerick Generating Station Units 1 and 2. The enclosed integrated inspection report documents the inspection results which were discussed on April 16, 2010, with Mr. C. Mudrick and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Bases on the results of this inspection, no findings of significance were identified.

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

Sincerely,

A handwritten signature in cursive script, appearing to read "Paul G. Krohn".

Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos: 50-352, 50-353
License Nos: NPF-39, NPF-85

Enclosure: Inspection Report 05000352/2010002 and 05000353/2010002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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Sincerely,
/RA/

Paul G. Krohn, Chief
Projects Branch 4
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 50-352, 50-353

License Nos: NPF-39, NPF-85

Report No: 05000352/2010002 and 05000353/2010002

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Sanatoga, PA 19464

Dates: January 1, 2010 through March 31, 2010

Inspectors: E. DiPaolo, Senior Resident Inspector
N. Sieller, Resident Inspector
A. Rosebrook, Senior Project Engineer
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Approved by: Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000352/2010002, 05000353/2010002; 01/01/2010 - 03/31/2010; Limerick Generating Station, Units 1 and 2; routine integrated report.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional reactor inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactor is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

No findings of significance were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period operating at full rated thermal power (RTP). On January 5, Unit 1 entered coastdown and feedwater temperature reduction operations, as planned, in advance of the Unit 1 refueling outage. On January 17, operators reduced power to approximately 65 percent to facilitate a main steam isolation valve packing adjustment and secondary plant maintenance. The unit was returned to full RTP on January 18. On March 21, operators performed a reactor shutdown from a maximum attainable power of 91 percent to commence refueling outage 1R13. Unit 1 remained in the refueling outage for the remainder of the inspection period.

Unit 2 began the inspection period operating at full RTP. On January 9, operators reduced power to approximately 71 percent to perform control rod scram time testing, a control rod pattern adjustment, and secondary plant maintenance. The unit was restored to full RTP on January 18. On February 20, a planned downpower to approximately 85 percent was performed to facilitate main steam isolation valve testing, main turbine valve testing, control rod scram time testing, and secondary plant maintenance. The unit was returned to full RTP on February 21. On March 8, operators commenced a planned downpower to 20 percent to remove the main generator from service to repair stator water cooling leaks from the main generator output bushings. Following completion of repairs, full RTP was achieved on March 11. Unit 2 remained at full RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Mitigating Systems

1R01 Adverse Weather Protection (71111.01 - 2 Samples)

Site Imminent Weather Conditions

a. Inspection Scope

The inspectors evaluated Exelon's implementation of adverse weather preparation procedures as a result of a winter storm warning on January 25 and a blizzard warning on February 10. The inspectors verified that Exelon entered the appropriate procedures and conducted walkdowns of the site, as necessary, to ensure plant equipment would not be affected by the adverse weather. The inspectors reviewed Exelon's plans to address the ramifications of potentially lasting effects that may have resulted from the adverse weather conditions. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04Q - 3 Samples)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns of the plant systems listed below to verify operability following realignment after a system outage window or while safety-related equipment in the opposite train was inoperable, undergoing surveillance testing, or potentially degraded. The inspectors used Technical Specifications (TS), Exelon operating procedures, plant piping and instrumentation diagrams (P&ID), and the Updated Final Safety Analysis Report (UFSAR) as guidance for conducting partial system walkdowns. The inspectors reviewed the alignment of system valves and electrical breakers to ensure proper in-service or standby configurations as described in plant procedures and drawings. During the walkdowns, the inspectors evaluated the material condition and general housekeeping of the systems and adjacent spaces. The documents reviewed are listed in the Attachment. The inspectors performed walkdowns of the following areas:

- 'B' Control Room Emergency Fresh Air Supply (CREFAS) when 'A' CREFAS was out-of-service (OOS);
- 'B' Standby Gas Treatment System (SGTS) when 'A' SGTS was OOS; and
- Unit 1 'A' and 'C' Core Spray (CS) loops when the reactor vessel bottom head drain plug was installed during 1R13 and Division II emergency core cooling systems (ECCS) were OOS.

b. Findings

No findings of significance were identified.

.2 Complete Risk Important System Walkdowns (71111.04S – 1 Sample)

a. Inspection Scope

The inspectors conducted one complete system walkdown of the Unit 1 'A' Reactor Enclosure Recirculation System (RERS) to verify that equipment was properly aligned and there were no apparent deficiencies that could affect the ability of the system to perform its functions. The walkdown included a verification of damper positions, major system components, electrical power availability, and general equipment condition. The inspectors also reviewed outstanding maintenance work requests, Issue Reports (IRs) and equipment performance history to determine if there were any outstanding deficiencies that could affect the ability of the system to perform its function. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 7 Samples)Fire Protection – Toursa. Inspection Scope

The inspectors conducted a tour of the seven areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustible materials and ignition sources were controlled in accordance with Exelon's procedures. Fire detection and suppression equipment was verified to be available for use, and passive fire barriers were verified to be maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out-of-service (OOS), degraded, or inoperable fire protection equipment in accordance with the station's fire plan. The documents reviewed are listed in the Attachment. The inspectors toured the following areas:

- Unit 1 Reactor Core Isolation Cooling (RCIC) pump room, fire area 33;
- Unit 1 'A' & 'C' Residual Heat Removal (RHR) heat exchanger and pump room, fire area 32;
- Unit 1 'A' CS Pump Room, fire area 35;
- Unit 1 'B' CS Pump Room, fire area 38;
- Unit 1 'C' CS Pump Room, fire area 36;
- Unit 1 'D' CS Pump Room, fire area 37; and
- Unit 2 'D' Emergency Diesel Generator (EDG) and fuel oil tank room, fire area 86.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 Sample)a. Inspection Scope

The inspectors performed an inspection of the service water (SW) and circulating water (CW) pump house. The major components in the pumphouse were four SW pumps, four CW pumps, a motor-driven fire pump, and a diesel driven fire pump. The inspectors reviewed the UFSAR and related design basis documents to identify the requirements for mitigating a flood in the pump house. The inspectors observed flood protection features and relevant station procedures to assess their general material condition and their ability to minimize the impact of a flooding event from both a failure of the cooling tower (flooding from outside the building) and from failure of the flexible couplings in the CW system (flooding from inside the building). The inspectors reviewed items entered into the licensee's Corrective Action Program (CAP) to ensure degraded conditions were being identified and resolved in a timely manner. The documents reviewed are listed in the Attachment

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A - 1 Sample)a. Inspection Scope

The inspectors selected the 'E' CS Room Unit Cooler for review to determine the heat exchanger's readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component; reviewed Exelon's commitments to NRC Generic Letter 89-13; and reviewed engineering reports that documented results of previous internal inspections. The inspectors reviewed engineering results of the inspection to verify that appropriate corrective actions were initiated for deficiencies that were discovered. The inspectors reviewed documents and verified that the amount of tubes plugged within the heat exchanger did not exceed the maximum amount allowed. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program.1 Resident Inspector Quarterly Review (71111.11Q - 1 Sample)a. Inspection Scope

On March 8, the inspectors observed licensed operator just-in-time training conducted in preparation for the reactor shutdown for refueling outage 1R13. The inspectors verified that the training incorporated industry and site operating experience. The simulator training covered several portions of the shutdown, including: removing the turbine from the grid starting at 20 percent RTP; placing the reactor on startup level control; driving rods from two percent RTP until the reactor went subcritical; and placing 'A' RHR loop in service in shutdown cooling mode.

b. Findings

No findings of significance were identified.

.2 Senior Reactor Operator Regualification Program (71111.11B) (1 sample)a. Inspection Scope

On January 5, one NRC region-based inspector conducted an in-office review of results of licensee-administered requalification examination results for Senior Reactor Operator Limited to Fuel Handling license holders. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The inspector verified that:

- Overall pass rate among individuals for all portions of the exam was greater than or equal to 80 percent. (Overall pass rate was 100 percent).

- The inspector also verified that one Limerick operator who had missed his full license annual operating examination for medical reasons had passed a makeup examination.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 Samples)

a. Inspection Scope

The inspectors evaluated Exelon's work practices and follow-up corrective actions for two issues within the scope of the maintenance rule. The inspectors reviewed the performance history of these structures, systems, and components (SSCs) and assessed the effectiveness of Exelon's corrective actions, including any extent-of-condition determinations to address potential common cause or generic implications. The inspectors assessed Exelon's problem identification and resolution actions for these issues to evaluate whether Exelon had appropriately monitored, evaluated, and dispositioned the issues in accordance with Exelon procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed the maintenance rule classifications, performance criteria, and goals for these SSCs and evaluated whether they appeared reasonable and appropriate. The documents reviewed are listed in the Attachment. The inspectors reviewed the following issues:

- Repeat residual heat removal service water (RHRSW) radiation monitor low flow alarms, System 26H; and
- Emergency Service Water (ESW) low flow to ECCS room coolers, System 11

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 Samples)

a. Inspection Scope

The inspectors evaluated the effectiveness of Exelon's maintenance risk assessments required by 10 CFR 50.65(a)(4). This inspection included discussion with control room operators and risk analysis personnel regarding the use of Exelon's on-line risk monitoring software. The inspectors reviewed equipment tracking documentation, daily work schedules, and performed plant tours to verify that the actual plant configuration matched the assessed configuration. Additionally, the inspectors verified that Exelon's risk management actions, for both planned and emergent work, were consistent with those described in Exelon procedure, ER-AA-600-1042, "On-Line Risk Management."

The documents reviewed are listed in the Attachment. Inspectors reviewed the following samples:

- Unit 2 online risk during High Pressure Coolant Injection (HPCI) functional testing and D24 EDG OOS on January 20;
- Unit 1 and 2 online risk during Technical Support Center emergency ventilation system outage on February 11;
- Unit 1 and 2 online risk and schedule adjustment for impending winter storm on January 25;
- Unit 1 and 2 online risk during the performance of RT-6-055-340-1, HPCI turbine hydraulic control system operability check, on March 8;
- Unit 2 online risk during various system outage windows and testing (HPCI, 'B' RERS, and D22 EDG testing) on March 18; and
- Unit 2 online risk during 1R13 with various 480 volt motor control centers OOS on March 24.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 5 Samples)

a. Inspection Scope

The inspectors assessed the technical adequacy of a sample of five operability evaluations to ensure that Exelon properly justified TS operability and verified that the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the UFSAR to verify that the system or component remained available to perform its intended safety function. In addition, the inspectors reviewed compensatory measures implemented to ensure that the measures worked and were adequately controlled. The inspectors also reviewed a sample of IRs to verify that Exelon identified and corrected deficiencies associated with operability evaluations. The documents reviewed are listed in the Attachment. The inspectors reviewed the following evaluations:

- IR 1017465, Reactor pressure indicator PI-042-2 leads rolled at remote shutdown panel;
- IR 1022245, 'A' CREFAS damper failure to close fully;
- IR 1023344, Unit 1 'A' RHR pump room cooler (1AV210) low air flows;
- IR 1031938, 'B' RHRSW radiation monitor low flow; and
- IR 1047618, Unit 1 electro-hydraulic accumulators associated with turbine bypass valves found not fully charged.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 – 3 Samples).1 Temporary Modifications (2 Samples)a. Inspection Scope

The inspectors reviewed the two temporary plant modifications listed below to ensure that installation of the modifications did not adversely affect systems important to safety. The inspectors compared the modifications with the UFSAR and TS to verify that the modification did not affect system operability, availability, or adversely affect plant operations. The inspectors ensured that station personnel implemented the modification in accordance with the applicable temporary configurations change process. The impact on existing procedures was reviewed to verify Exelon made appropriate revisions to reflect the temporary changes. The inspectors reviewed the following samples:

- IR 1038249, Compensation action for RHRSW piping found below minimum wall; and
- IR 669563, Reactor pressure vessel bottom head drain plug.

b. Findings

No findings of significance were identified.

.2 Permanent Modifications (1 Sample)

The inspectors reviewed a permanent plant modification documented in Engineering Change LG 09-00151 for the installation of a new uninterruptible power supply (UPS). These upgrades imposed additional load on the UPS system that could not be supported by the original system. The new UPS was designed to provide increased power output and allow for battery and EDG backup power supplies. The inspectors verified that the new UPS had sufficient capacity to supply the new equipment, and ensured that Limerick had adequately evaluated the loading impact on the backup EDG source. Additionally, the inspectors ensured that proper preventative maintenance activities had been specified for the new equipment, including the breaker in the motor control center that supplied the UPS from the EDG backup power supply. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 Samples)a. Inspection Scope

The inspectors reviewed five post-maintenance tests to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed Exelon's test procedures to verify that the procedures adequately tested the safety functions that may have been affected by the maintenance activity, and that the acceptance criteria in the procedures were consistent with information in the licensing and design basis documents. The inspectors also witnessed the test or reviewed test data to verify that the results adequately demonstrated restoration of the affected safety functions. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- A1745983, Troubleshoot and repair EDG D23 high crankcase pressure;
- R1090274, Clean/examine Unit 2 'B' CS room cooler;
- R1096703, Inspect and overhaul waterside components for control rod drive hydraulic control unit 02-27;
- C0231109, Inspect and adjust mechanical interlock for motor control unit 1-DB-2-02 (Unit 1 HPCI Valve HV-055-1F006); and
- R1160079, Replace vessel water level indicator, LI-042-1R610.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20 - 1 Partial Sample)a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Limerick Unit 1 maintenance and refueling outage (1R13), which commenced on March 22, 2010. The inspectors reviewed Exelon's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. At the end of the inspection period, Unit 1 was in Operational Condition (OPCON) 5, Refueling with the reactor cavity flooded. This sample will be completed in the second quarter after the Unit returns to OPCON 1. Documents reviewed are listed in the Attachment. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored Exelon controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TS when taking equipment OOS;
- Post-shutdown primary containment walkdown to identify any abnormal conditions that may have existed during the previous operating cycle;
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing;

- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting;
- Status and configuration of electrical systems and switchyard activities to ensure that TS were met;
- Monitoring of decay heat removal operations;
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system;
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss;
- Activities that could affect reactivity;
- Maintenance of secondary containment as required by TS;
- Refueling activities, including fuel handling and fuel receipt inspections; and
- Identification and resolution of problems related to refueling outage activities.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 6 Samples; 4 Routine Surveillances, 2 In-service Testing (IST))

a. Inspection Scope

The inspectors either witnessed the performance of, or reviewed test data, for six surveillance tests (STs) associated with risk-significant SSCs. The reviews verified that Exelon personnel followed TS requirements and that acceptance criteria were appropriate. The inspectors also verified that the station established proper test conditions, as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria were met. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- ST-6-011-232-0, 'D' Emergency Service Water Pump, Valve and Flow Test (IST);
- ST-2-042-933-2, RPS and NSSSS - Reactor Vessel Water Level - Low, Level 3; Division IB, Channel B Response Time Test;
- ST-2-061-600-2, Reactor Coolant System Leakage Detection System – Drywell Floor Drain Sump Level and Flow Functional Test;
- ST-6-049-230-1, Unit 1, RCIC Pump, Valve and Flow Test (IST);
- RT-3-047-640-01, Fuel Channel Distortion Monitoring; and
- ST-6-092-118-1, D14 Diesel Generator 4kv Safeguard – Loss of Power Logic System Functional (LSF/SAA) and Outage Testing.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01 -1 partial sample)

a. Inspection Scope

During the period January 4 - 8, 2010, the inspectors conducted the following activities to verify that the licensee was evaluating, monitoring, and controlling radiological hazards for work performed in locked high radiation areas (LHRA) and other radiological controlled areas, and that workers were adhering to these controls when working in these areas. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, Technical Specifications, and the licensee's procedures.

Radiological Hazards Control and Work Coverage

The inspectors identified exposure significant work areas, in LHRAs in Unit 1 and Unit 2. Specific work activities included surveillance testing of the Unit 1 'A' Residual Heat Removal system (RWP 2010-004), and repairing an instrument air line leak on a Unit 2 unit cooler air supply valve (RWP 2010-007). The inspectors reviewed radiation survey maps and radiation work permits (RWP) associated with these areas to determine if the associated controls were acceptable. The inspectors also attended the pre-job RWP briefings for these tasks to determine if the workers were informed of the radiological conditions at the job site, electronic dosimeter alarm set points, and actions to be taken if a dosimeter alarms.

The inspectors toured the accessible radiological controlled areas in both units, including the reactor buildings, waste processing building, and turbine building, and with the assistance of a radiation protection supervisor performed independent surveys of selected areas to confirm the accuracy of survey data and the adequacy of postings. During this tour, the inspectors verified that selected LHRAs were properly secured and posted.

In evaluating the RWPs, the inspectors reviewed electronic dosimeter dose/dose rate alarm set points to determine if the set points were consistent with the survey indications and plant policy. The inspectors verified that workers were knowledgeable of the actions to be taken when the dosimeter alarms, or malfunctions, for tasks being performed under selected RWPs.

The inspectors reviewed the licensee's procedure for measuring personnel exposure using the effective dose equivalent method. The inspectors confirmed that the method was approved by the NRC and that the implementing procedure appropriately specified the placement of whole body and extremity dosimeters on the worker.

Problem Identification and Resolution

A review of Nuclear Oversight Objective Evidence Reports, Issue Reports, Common Cause Analyses, and a Root Cause Evaluation, was performed to determine if identified problems and negative performance trends were entered into the Corrective Action Program and evaluated for resolution.

Relevant IRs associated with radiation protection control access, initiated between April 2009 through January 2010 were reviewed and discussed with the licensee staff to determine if the follow up activities were being conducted in an effective and timely manner, commensurate with their safety significance.

High Radiation Area and Very High Radiation Area Controls

Procedures for controlling access to High Radiation Areas (HRA) and Very High Radiation Areas (VHRA), e.g. the drywell and the traversing incore probe room were reviewed to determine if the administrative and physical controls were adequate. The inspectors also reviewed the physical and procedural controls for securing and removing highly contaminated/activated materials stored in the spent fuel pool. The inspectors discussed with radiation protection management, the adequacy of current LHRA/VHRA controls, including prerequisite communications and authorizations, and verified that any changes made to relevant procedures did not substantially reduce the effectiveness and level of worker protection.

Radiation Worker Performance and Radiation Protection Technician Performance

The inspectors observed and questioned radiation workers and radiation protection technicians regarding radiological controls applied to various tasks, including equipment surveillance testing and maintenance tasks. The inspectors determined that the workers were aware of current RWP requirements, radiological conditions, access controls, and that the skill level was appropriate with respect to the potential radiological hazards and the work involved.

The inspectors reviewed IRs related to radiation worker and radiation protection technician errors, and personnel contamination event reports to determine if an observable pattern traceable to a similar cause was evident.

Contamination and Radioactive Material Control

The inspectors observed workers surveying and releasing potentially contaminated materials for unrestricted use. The inspectors verified that the counting instrumentation was located in a low background area and that the instruments sensitivity was appropriate for the type of contamination being measured.

The inspectors reviewed the licensee's procedures for storing, issuing, and inventorying seal radioactive sources. Through this review, the inspectors determined that sources were properly tested for possible leaks, all sources were appropriately accounted for, and that the storage containers were properly secured and labeled.

The inspectors verified that a transaction involving a nationally tracked source was reported in accordance with 10 CFR 20.2207.

b. Findings

No findings of significance were identified.

2RS02 Occupational ALARA Planning (AP) and Controls (71124.02 - 1 partial sample)

a. Inspection Scope

During the period January 4 - 8, 2010, the inspectors conducted the following activities to verify that the licensee was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks performed during 2009 and in making preparations for the Unit 1 refueling outage (1R13). Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

Radiological Work Planning

The inspectors reviewed pertinent information regarding the 2009 2R10 outage exposure history, current exposure trends, and ongoing activities to assess current performance and exposure challenges for the upcoming 1R13 outage. A review of 2009 outage performance was conducted to compare actual exposures with forecasted estimates to determine if differences were properly addressed in Work-In-Progress and Post-Job ALARA reviews and approved by the Station ALARA Council.

The inspectors reviewed the 1R13 contingency action plans that would be implemented should dose rates become elevated in various work areas during Unit 1 outage. Scheduled outage work included the in-service inspection of the Unit 1 reactor pressure vessel nozzles and the associated hydrolyzing and installation of temporary shielding. Additional projects included suppression pool inspections, replacement of the reactor bottom head drain valves, and installation of coolant flow instrumentation.

The inspectors evaluated the departmental interfaces between radiation protection, operations, maintenance crafts, and engineering to identify missing ALARA program elements and interface problems. The evaluation was accomplished by attending a pre-job planning meeting for repairing a Unit 1 instrument air line leak in a LHRA; reviewing recent Station ALARA Council meeting minutes, work-in-progress/post-job ALARA reviews, Nuclear Oversight Objective Evidence Reports; and interviewing the site Radiation Protection Manager.

Verification of Dose Estimates

The inspectors reviewed the assumptions and basis for the annual (2010) site collective dose, exposure projections for the 1R13 outage, and for routine power operations.

The inspectors reviewed the licensee's procedures associated with monitoring and re-evaluating dose estimates when the forecasted cumulative exposure for tasks differed from the actual exposure received. The inspectors reviewed the dose/dose rate alarm reports, work-in-progress evaluations, and exposure data for selected individuals receiving the highest Total Effective Dose Equivalent (TEDE) for 2009 to confirm that no individual exposure exceeded the regulatory limit, or met the performance indicator (PI) reporting guideline.

Jobs-In-Progress

The inspectors observed various jobs-in-progress to evaluate the effectiveness of dose control measures. Jobs observed included repairing an air line leak in Unit 1 and performing a surveillance test on a Unit 2 RHR system. As part of this evaluation, the inspectors reviewed the RWP, survey maps, and contamination control measures, and determined that workers were properly wearing dosimetry and were knowledgeable of RWP requirements. The inspectors attended the pre-job briefing for these activities. The inspectors also attended a Station ALARA Committee meeting in which the management and staff discussed the optimum time to conduct instrument air line repairs for the Unit 1 air cooler air supply valve to minimize worker dose.

Source Term Control

The inspector reviewed the status and historical trends for the Unit 1 source term. By reviewing survey data for reactor coolant system piping (BRAC measurements) and interviewing the Radiation Protection Manager, the inspector evaluated the recent source term measurements and control strategies. Specific strategies employed by the licensee included performing a reactor soft shutdown, system flushes, installation of permanent and temporary shielding in the DW, vacuuming the seal plate, hydro-lazing of reactor nozzles, and increasing the capacity of the reactor cavity filtration system.

Problem Identification and Resolution

The inspectors reviewed elements of the licensee's Corrective Action Program related to implementing ALARA Program Controls, including Issue Reports, Nuclear Oversight Objective Evidence Reports, dose/dose rate alarm reports, and Station ALARA Committee Meeting Minutes to determine if problems were being entered at a conservative threshold and resolved in a timely manner. The inspectors reviewed the root cause analysis for the 2R10 dose overage and the common cause analysis related to the 2R10 emergent dose.

b. Findings

No findings of significance were identified.

2RS03 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

During the period April 5 - 9, 2010, the inspector conducted the following activities to verify that the licensee was properly monitoring in-plant airborne radioactivity concentrations, implementing engineering controls to limit the uptake by workers, and appropriately using respiratory protection devices to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks performed during the Unit 1 refueling outage (1R13). Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

Engineering Controls

The inspector reviewed the ALARA Plans for various tasks to determine if appropriate ventilation controls and airborne concentration "Stop work" criteria were specified to limit airborne contamination at the job site. Included in this review were control rod drive replacements, suppression pool platform activities, and reactor cavity decontamination. For these activities, the inspector reviewed the TEDE ALARA evaluation screening work sheet, to determine if the use of respiratory protection was appropriately evaluated.

The inspector reviewed the air sample analysis sheets for various projects to evaluate the effectiveness of engineering controls in minimizing airborne contamination levels at the job site. The inspector determined that the appropriate sampling technique was used in making airborne radioactivity measurements. Sampling methods used included breathing zone lapel samplers, and high/ low volume samplers. Projects reviewed, that required air sampling, included weld preparations/flange replacement on the RHR system, inspections of MSIV internals, replacement of the fuel pool gate seal, reactor head inspections, installation of reactor head "O" rings, and turbine blade sand blasting.

During plant tours, the inspector verified that continuous air monitors were operating and were representatively sampling work areas located in the drywell, turbine building, and reactor building.

Use of Respiratory Protection Devices

The inspector evaluated the use of respiratory protection devices for those tasks where it was impractical to employ engineering controls to minimize airborne radioactivity. The inspector reviewed the use of respirators for reactor cavity decontamination and control rod drive replacement.

b. Findings

No findings of significance were identified.

2RS04 Occupational Dose Assessment (71124.04)

a. Inspection Scope

During the period April 5 - 9, 2010, the inspector conducted the following activities to verify that the licensee was properly monitoring occupational dose, that personal exposure monitoring devices were operable and accurately monitoring work dose, and that worker total effective dose equivalent was accurately determined for tasks performed during the Unit 1 refueling outage (1R13). Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

External Dosimetry

The inspector verified that selected individuals were appropriately wearing thermoluminescent dosimeters and electronic dosimeters while the workers were performing tasks in radiological controlled areas. The inspector reviewed dose and dose rate alarm logs and associated issue reports to determine if the cause of the alarm was

Enclosure

appropriately determined and that the worker took prompt action upon receiving the alarm.

The inspector reviewed the licensee's procedure for measuring personnel exposure using the effective dose equivalent method. The inspector confirmed that the method was approved by the NRC and that the implementing procedure appropriately specified the placement of whole body and extremity dosimeters on the worker. Tasks in which the EDE method was used included control rod drive replacement and suppression pool diving activities.

The inspector reviewed the dose/dose rate alarm reports, dose extension authorizations, and exposure data for selected individuals receiving the highest Total Effective Dose Equivalent (TEDE) for the 1R13 outage, to confirm that no individual exposure exceeded the regulatory limit, or met the performance indicator reporting guideline.

Internal Dosimetry

The inspector reviewed and assessed the adequacy of the results of whole body counting for personnel that had potential exposure to internally deposited contamination and determined that no individual received a recordable committed effective dose equivalent (CEDE) of greater than 10 millirem. The inspector determined that the personnel were properly monitored with calibrated equipment, and that the data was properly analyzed.

Declared Pregnant Workers

The inspector verified that no declared pregnant workers were employed to work in radiologically controlled areas during the 1R13 outage.

b. Findings

No findings of significance were identified

4. **OTHER ACTIVITIES**

4OA1 PI Verification (71151 – 6 Samples)

.1 Initiating Event and Mitigating Systems Cornerstone PIs

a. Inspection Scope

The inspectors sampled Exelon's submittal of the Mitigating Systems and Barrier Integrity cornerstone PIs listed below to verify the accuracy of the data recorded from January 2009 through December 2009. The inspectors utilized performance indicator definitions and guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 6, to verify the basis in reporting for each data element. The inspectors reviewed various documents, including portions of the main control room logs, IRs, power history curves, work orders, and system derivation reports. The inspectors also discussed the method for compiling and reporting performance indicators with cognizant engineering personnel and compared graphical representations from the most recent PI report to the raw data to verify that the report correctly reflected the data.

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Cornerstone: Initiating Events (2 samples)

- Units 1 and 2 Unplanned Power Changed per 7000 critical hours (IE03)

Cornerstone: Mitigating Systems (4 samples)

- Units 1 and 2 MSPI: High Pressure Injection System (MS07)
- Units 1 and 2 MSPI: Heat Removal System (MS08)

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – 1 Sample)

.1 Annual Sample: Recirculation Pump Speed Control Failures

a. Inspection Scope

The inspectors reviewed Exelon's actions to investigate and identify the cause of the Reactor Recirculation motor generator sets unexpected speed changes. The inspectors reviewed Exelon's common cause evaluation and also various equipment apparent cause evaluations. The inspectors reviewed Exelon's actions towards identification and completion of corrective actions. The inspectors reviewed Exelon's procedure, notifications, work orders, corrective actions, and root cause evaluations to understand the equipment functional and operational history. The inspectors interviewed the system engineer to understand the effectiveness of the short and long term corrective actions plans. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

The inspectors determined that Exelon appropriately identified degraded conditions associated with Reactor Recirculation Pump speed controllers. Exelon's apparent and common cause evaluations determined that the unexpected recirculation pump speed controller failures have been caused due to age and obsolescence of circuit cards. Exelon has developed corrective actions to replace the cards that meet a specified age criteria during the upcoming refueling outages with re-engineered cards, and developed a long term plan to replace the existing speed controller with an adjustable speed drive. The inspectors reviewed Exelon's corrective actions and determined that they were appropriate to adequately address identified deficiencies. The inspectors determined that Exelon properly implemented their corrective action process regarding the identification, evaluation, and corrective actions for the Reactor Recirculation Pump speed controller failures.

4OA3 Event Follow-up (71153 - 2 Samples).1 Unit 2 Planned Downpowera. Inspection Scope

The inspectors reviewed and/or observed plant parameters and reviewed personnel performance during a planned Unit 2 downpower on March 8, to 20 percent RTP to remove the main generator from service. The downpower was necessary to facilitate repairs to the generator output bushing when a stator water cooling leak developed. During the repair window, the inspectors observed work coordination meetings, status update meetings, and observed plant conditions to verify that proper controls were established. The inspectors observed portions of subsequent power ascension activities to verify operators appropriately followed plant procedures.

b. Findings

No findings of significance were identified.

.2 (Closed) Licensee Event Report (LER) 05000353/2009-001-00: Valid Actuation of the D23 Emergency Diesel Generator Bus Undervoltage Logic.

On March 31, 2009, a valid actuation of the D23 EDG bus undervoltage minimum actuation logic occurred following manual operator action to mitigate a bus overvoltage condition during testing. The testing was being conducted as a post-maintenance test for replacement of the voltage regulator rectifier. The overvoltage was caused by an intermittent failure of the EDG's voltage regulator rectifier bank. High impedance on the voltage regulator rectifier flyback diode caused the rectifier to fail to return to the "off" state. Failure analysis confirmed the high impedance was due to corrosion buildup on the rectifier bolted connections. Corrective actions included replacement of the inverter and an evaluation of the voltage transient on the effected electrical bus and components. Exelon added a periodic preventive maintenance item to perform forward checks on the rectifier. The event was documented in Exelon's Corrective Action Program as IR 900755 and IR 910484. The LER was reviewed and no findings of significance were identified and no violation of NRC requirements occurred. This LER is closed.

4OA5 Other Activities (IP 92702).1 NRC review of Exelon's Response to Notices of Violation EA-09-183a. Inspection Scope:

On June 26, 2009, the U.S. Nuclear Regulatory Commission (NRC) Office of Investigations (OI) completed an investigation at the Limerick Generating Station (LGS). The purpose of the investigation was to determine if a lead maintenance technician (LMT) willfully allowed unqualified contractors to perform clearance and tagging (C&T) work at LGS between January and July 2007 and in February 2008, and then falsified the related records. Based on evidence developed during the OI investigation, the NRC concluded that the LMT had, in fact, deliberately violated requirements set forth in Technical Specification 6.8, "Procedures and Programs," and 10 CFR 50.9, "Completeness and Accuracy of Information." The violations were cited in the Notice of

Violation issued December 16, 2009 and the circumstances surrounding the violations were described in detail. (ML093500674)

Exelon provided an NOV response on January 15, 2010 (ML100341201) and a revised NOV response on January 27, 2010 (ML100341223) to address when and how Exelon restored compliance and the corrective actions taken to preclude repetition. The inspectors conducted an in-office review of the Exelon response in accordance with IP 92702.

b. Findings and Observations:

There were no findings of significance. The inspectors determined that Exelon's response and corrective actions were reasonable and appropriate to address the NOV and underlying performance deficiency. The NRC does not require any additional information for these issues and considers these issues to be closed.

40A6 Meetings, Including Exit

April 16, 2010, the resident inspectors presented the inspection results to Mr. C. Mudrick and other members of his staff. The inspectors confirmed that proprietary information was not included in the inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

C. Mudrick, Site Vice President
E. Callan, Plant Manager
D. Merchant, Manager, Radiation Protection
R. Dickinson, Manager of Nuclear Training
P. Gardner, Director, Operations
R. Kreider, Director, Maintenance
T. Moore, Director, Engineering
C. Rich, Director, Work Management
J. Hunter, Manager, Regulatory Assurance
D. Palena, Manager, Nuclear Oversight
S. Bobyock, Manager, Plant Engineering
F. Michaels, Manager, Electrical Engineering Systems
E. Dennin, Shift Operations Superintendent
C. Gray, Manager, Radiological Engineering
R. Harding, Engineer, Regulatory Assurance
R. Gosby, Radiation Protection Technician, Instrumentation
J. Sprucinski, Senior Radiation Protection Technician
D. Wahl, Environmental Scientist
D. Monahan, Simulator Operator/Instructor
R. George, Manager, Electrical Design
C. Pragman, Exelon, Corporate Fire Protection Engineer
P. Tarpinian, Probability Risk Assessment
K. Ferich, Limerick Emergency Planning Manager
M. Crim, Emergency Preparedness Coordinator
R. Rogers, Exelon Facility and Equipment Coordinator
E. Bell, Senior Radiation Protection Technician
D. Kern, Senior Radiation Protection Technician
J. Risteter, Radiation Protection Supervisor, Technical Support
B. Tracey, System Engineer
J. Kirkpatrick, Health Physics Supervisor

Other Attendees

M. Murphy, Inspector Commonwealth of Pennsylvania

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

None

Closed

05000353/2009-001-00	LER	Valid Actuation of the D23 Emergency Diesel Generator Bus Undervoltage Logic (Section 4OA3.2)
05000352 & 05000353/2009-007-01	NOV	Failure to Follow Worker Tagout Procedure (Section 4OA5.1)
05000352 & 05000353/2009-007-02	NOV	Failure to provide Complete and Accurate Information on Worker Tagout Clearance Forms (Section 4OA5.1)

Opened and Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**Procedures

SE-9, Preparation for Severe Weather, Revision 27
 OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 4
 SE-14, Snow, Revision 14
 OP-AA-106-101-1001, Event Response Guidelines, Revision 16
 WC-AA-101, On Line Work Control Process, Revision 17

Issue Reports

IR 1021820, Old Spray Pond Shed Damaged

Section 1R04: Equipment AlignmentProcedures

OS78.1.B (COL), Equipment Alignment for Control Room HVAC Isolation and Emergency Fresh Air Supply, Revision 10
 S76.1.C SGTS and RERS Set up for Automatic Initiation, Revision 14
 1S76.1C (COL), Equipment Alignment of Standby Gas Treatment System Reactor Enclosure, Revision 12
 S76.8A Manual Start up and Shutdown of SGTS, Revision 18

IS 52.1.A (COL01), Equipment Alignment for Core Spray Loop 'A' Operation, Revision 14

Issue Reports

IR 1093561, Retorque system 051, loop 'A' drywell valves
IR 766310, 1A RERS flow low per ST-6-076-250-1
IR 811448, 1A RERS flow element FE-076-195A replacement strategy change
IR 816856, 1A RERS damper cycling
IR 885367, FD-C-076-192A failed causing a low flow trip of A RERS fan
IR 1007300, Install test connection downstream of 1A RERS flow element
IR 1008425, 1A-V213 tripped during SGTS/RERS flow test
IR 1009012, Field wiring different from control drawings
IR 1009658, Nuts and washers loose and other missing on RERS ductwork
IR 1011819, 1A RERS fan trip 2 min after start
IR 1048926, Recommend FT-076-195A be recalibrated or replaced

Work Orders

C0229277, Repair/Replace the FE-076-195A

Miscellaneous

8031-M-76, Reactor Enclosure and Refueling area HVAC P&ID, Sheet 6, Revision 32

Section 1R05: Fire Protection

Procedures

F-R-102, Revision 06, Unit 1 A and C, RHR Heat Exchanger and Pump Room, PRB-Fire Plan
F-R-108, Revision 08, Unit 1 RCIC Pump Room, 108 Pre-Fire Plan
Pre-Fire Plan, F-R-110, Revision 8
Pre-Fire Plan, F-R-117, Revision 8
Pre-Fire Plan, F-R-113, Revision 8
Pre-Fire Plan, F-R-114, Revision 9
ST-2-022-630-1, Fire Detection – Smoke Detection Instrumentation Channel Functional Test, Zones 31, 32, Revision 15
ST-2-022-607-1, Fire Detection – Smoke Detection Instrumentation Channel Functional Test and Supervisory Circuit Operability Test, Zones 33, 34, 35, 36, 37, 38, 39 and 40, Revision 19
ST-2-022-649-1, Fire Detection – Heat Detection Instrumentation Channel Functional Test and Supervisory Circuit Operability Test, Zones 33 and 34, Revision 12

F-D-315D, Unit 2, D24 Diesel Generator and Fuel Oil-Lube Oil Tank Room (elevation 217), Fire Area 86, Revision 5
E-1661, Communication & Fire Alarm Layout Reactor Enclosure Unit -1, Revision 10
E-1660, Communication & Fire Alarm Layout Reactor Enclosure Unit -1, Revision 9

Procedures

Special Event Procedure, SE-8, Fire Revision 34

Section 1R06: Flood Protection Measures

Procedures

SE-4-1, Reactor Enclosure Flooding, Revision 8
SE-4-3, Flooding External to Power Block, Revision 4

SE-4, Flood, Revision 6
S09.3 B, Filling the Cooling Tower and Circulatory Water System, Revision 20

Issue Reports

IR 988591
IR 812412

Miscellaneous

Condition Report L91-220 Revision 2

Section 1R07: Heat Sink Performance

Procedures

RT-2-011-395-2, 2BV211 Core Spray Room Cooler Air to Water Heat Transfer Test, Revision 6
RT-2-011-394-1, 1EV211 Core Spray Room Cooler Air to Water Heat Transfer Test, Revision 7

Calculations

RT-1-011-390-0, ESW Room Cooler Heat Transfer Performance Calculation Test, Revision 5
RT-1-011-390-0, ESW Room Cooler Heat Transfer Performance Calculation Test, Revision 7

Section 1R12: Maintenance Effectiveness

Procedures

OP-AA-108-115, Operability Determinations, Revision 9
Maintenance Rule Expert Panel Meeting Minutes for January 12, 2010

Issue Reports

IR 1019308, ESW increased frequency throttle valve flush
IR 975564, ESW, 1HV210 ESW flow below minimum
IR 975559, IFV210 below minimum flow
IR 1006912, Unit 1 "A" RHR unit cooler flow left below minimum
IR 1034554, HPCI unit cooler maintenance rule functional failure
IR 1001013, Gap identified in ESW performance monitoring criteria
IR 1001431, ESW maintenance rule a (1) determination
ER-AA-310-1004, maintenance rule performance monitoring, Revision 8
ER-AA-310-1001, maintenance rule scoping, Revision 3

Other Documents

Technical Specification Bases 3 /4.5.1
UFSAR Section 6.3, Emergency Core Cooling System
A1683097, Evaluate Results of ESW and RHRSW NDE Examinations

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Issue Reports

IR 984431, 2009 CDBI – Preconditioning of ESW Flow Verification Test
IR 977266, Unit 1 HPCI Unit Coolers Found with No/Low Flow
IR 979516, HPCI Unit Cooler Availability Assessment
SE-9 "Preparation for Severe Weather, Revision 27
EP-AA-111, Emergency Classification and Emergency Classification and Protection Action,
Revision 15

OP-AA-108-111-1001, Severe Weather and National Disaster Guideline, Revision 4
SE-14, "Snow" Revision 14; OP-AA-108-111-1001, "Severe Weather and National Weather
Disaster Guidelines", Revision 4
WC-AA-101, Online Work Control Process, Revision 16
WC-LG-101-1001, Guideline for the Performance of Online Work/Online System Outages,
Revision 12

Miscellaneous

Operations Brief Sheet – LGS Paragon Model Revision T Changes, effective February 6, 2006

Section 1R15: Operability Evaluations

Issue Reports

IR 1017465, PI-042-2R011 requires calibration
IR 202245, OA, CREFAS damper failure to close fully
IR 1023344, Unit 1, 'A' RHR pump room cooler (1AV 210) low flow
IR 1031938, 'B', RHR service water radiation monitor low flow
IR 1047618, Unit 1, electro-hydraulic accumulators associated with turbine bypass valves
found not fully charged
IR 0885591, Pressure indication optimization
IR 0908974, RSP PI-42-2R011 reads high
IR 1023344, 1A-V210 low flow
IR 1022245, HV-078-020A damper failed to close fully

Procedures

ST-6-107-595-2, Monthly Surveillance Log OPCON 1, 2, or 3, performed 02/15/09
ST-2-088-409-1, Remote Shutdown System Reactor Vessel Pressure Calibration
(PT-042-1N006, PI-042-1R011), Revision 8

Miscellaneous

09-0015-2, Temporary Change Control Form, dated 01/12/09
09-0025-2, Temporary Change Control Form, dated 01/18/09
8031-M-42, Nuclear Boiler Vessel Instrumentation P&ID, Revision 21

Section 1R19: Post-Maintenance Testing

Issue Reports

IR 1028881, Crankcase eductor air in-leakage
IR 103020A, Room cooler over pressurization during pressure
IR 1047688, LI-042-1R610 not able to be calibrated within tolerance

Work Order

C0230739, Rework 6" RCIC steam valve internals
C0230736, Limitorque diagnostics and support for valve work
R1092911, Accident monitoring - reactor vessel level calibration / functional
R1160079, Steps outstanding for L1-042-1R610
R1096703, Inspect and overhaul waterside components for control rod drive hydraulic control
Unit 02-27;

Procedures

ST-2-042-469-1, Accident Monitoring – Reactor Vessel Water Level Calibration/Functional Test, Revision 10

Miscellaneous

A1565145, Evaluation 17, Engineering Evaluation of Deferral of Quarterly Stroke Testing of ESW Check Valve 011-1011

Test Results Evaluation 09-192, dated November 19, 2009

Exelon Nine-Month Response to Generic Letter 2008-01, October 14, 2008

Section 1R20: Refueling and Other Outage Activities

Procedures

M-041-079, Reactor Vessel Bottom Head Drain Cleaning and Plug Installation/Removal, Revision 3

OU-AA-103, Shutdown Safety Management Program, Revision 10

OU-AA-104, Shutdown Safety Management Program, Revision 10

GP-6.2, Shutdown Operations-Refueling, Core Alterations and Core Off-Loading, Revision 45

GP-3, Normal Plant Shutdown, Revision 129

OU-AB-4001, BWR Fuel Handling Practices, Revision 4

OP-AA-300-1520, Reactivity Management-Fuel Handling Storage and Refueling, Revision 2

S97.0.M, Refueling Platform Operation, Revision 27

Miscellaneous

GEK-90-90391, Operation and Maintenance Instruction, RPV Bottom Head Drain Plug, May 1984

1R13 Shutdown Safety Plan, March 16, 2010

Section 1R22: Surveillance Testing

Procedures

ST-6-011-232-0, 'D' ESW Pump, Valve & Flow Test (IST), Revision 75

ST-2-042-933-2, RPS and NSSSS - Reactor Vessel Water Level – Low, Level 3; Division IB, Channel B Response Time Test, Revision 9

ST-2-061-600-2, Reactor Coolant System Leakage Detection System – Drywell Floor Drain Sump Level and Flow Functional Test, Revision 9

ST-6-049-230-1, RCIC Pump, Valve and Flow Test (IST), Revision 72

RT-3-047-640-01, Fuel Channel Distortion Monitoring, Revision 15

ST-6-092-118-1, D14 Diesel Generator 4 KV SFGD – Loss of Power LSF/SAA and Outage Testing, Revision 16

Issue Reports

IR 1049144, D144-R-E-04 failed to shunt trip

IR 1049131, D14 LOCA/LOOP auto start bypass light not lit

IR 1049011, D134-C-B-14 seismic clip stripped

Section 2RS01 – 2RS04

RP-MA-403-1001, Revision 3

RP-AA-203, Revision 3

RP-AA-210, Revision 15

RP-AA-220, Revision 5

Radiation Work Permit Processing

Exposure Control and Authorization

Dosimetry Issue, Usage, and Control

Bioassay Program

RP-LG-220-1001, Revision 5	Perform Calibration Checks and Whole Body Count on AccuScan
RP-LG-220-1002, Revision 3	Perform Calibration Checks and Whole Body Count on FastScan
RP-LG-225, Revision 1	Calibration of Canberra AccuScan and FastScan Whole Body Counters
RP-AA-222, Revision 3	Timing Internal Exposure from In Vivo and In Vitro Bioassay Data
RP-AA-250, Revision 4	External Dose Assessments From Contamination
RP-LG-300-102, Revision 2	Removing Items from the Spent Fuel Pool, Reactor Cavity Equipment Pit, or Cask Pit
RP-AA-301, Revision 2	Radiological Air Sampling Program
RP-AA-350, Revision 7	Personnel Contamination Monitoring, Decontamination, and Reporting
RP-AA-376, Revision 2	Radiological Postings, Labeling, and Markings
RP-AA-400, Revision 5	ALARA Program
RP-LG-400-1004, Revision 3	Emergent Dose Control and Authorization
RP-AA-401, Revision 9	Operational ALARA Planning and Controls
RP-AA-403, Revision 1	Administration of the Radiation Work Permit Program
RP-AA-460, Revision 19	Controls for High and Very High Radiation Areas
RP-LG-460-102, Revision 4	Initial Entry into the Drywell
RP-LG-460-1016, Revision 9	Radiation Protection Controlled Keys
RT-0-100-460-0, Revision 3	High Radiation and Locked High Radiation Door Preventative Maintenance Inspection
ST-0-107-493-0, Rev 12	Periodic Byproduct Material Leakage Test and Inventory
ST-2-022-630-1	Fire Detection-Smoke Detection Instrumentation Channel Functional Test, Zones 31, 32, Revision 15
ST-2-022-607-1	Fire Detection-Smoke Detection Instrumentation Channel
10 CFR 50.72	Event Notification 45 693, Technical Support Center
Emergency	Ventilation System Maintenance
EP-AA-112 200 F-01	Station Emergency Director Checklist, Revision F

Radiation Protection Group Info Notices

09-L-035, 09-L-036, 09-L-039

ISSUE REPORTS (Access Control/ALARA related (71124.01/02/03/04))

1053795, 1053751, 1046685, 1046683, 1046681, 1046546, 1044977, 1043941, 1023315, 1045183, 1042839, 1051659, 1051357, 1048509, 1050757, 1043115, 1052736

CAUSE ANALYSES:

Apparent Cause Evaluation for IR No.1039368

Radiation Work Permits (RWP)/ALARA PLANS (AP):

RWP 91, DW CRD Exchange and associated Under Vessel Work/AP 2010-021
 RWP 81, DW Scaffold/AP 2010-023
 RWP 86, DW Reactor Pressure Vessel Nozzle & Skirt In-Service Inspections/AP 2010-025
 RWP 40, Suppression Pool Diving/ AP 2010-001
 RWP 60, Reactor Disassembly/AP 2010-074
 RWP 63/64, Reactor Cavity Decontamination/AP: RP-LG-401-1001 & RP-AA-1002

ALARA Work-In-Progress/Post-Job Reviews:
Under Vessel CRD Exchange
Suppression Pool Diving and Support Activities
1R13 Refuel Floor – Middle Activities

STATION ALARA COUNCIL MEETING MINUTES:
2010-05, 2010-06, 2010-07, 2010-08, 2010-09, 2010-10

NUCLEAR OVERSIGHT REPORTS:
NOSPA-10-1T, Effectiveness of Radiological Controls during 1R13

Air Sample Analysis Sheets Survey Nos:
10-02171, 10-02206, 10-02459, 10-02811, 10-03061, 10-03071, 10-02752, 10-02718,
10-02645, 10-01896, 10-02293, 10-02471, 10-02560, 10-02999, 10-03060, 10-03069,
10-02925, 10-02840, 10-02699,

MISCELLANEOUS REPORTS:
Dose and Dose Rate Alarm Reports for period 1/1/2010 through 04/08/2010
Dosimeter Alarm Log
Locked Door Daily Status Report
Basis for Electronic Dosimeter Dose and Dose Rate Set Points
BRAC Data Points for Unit 1
Three Year Rolling Average Cumulative Exposure for Unit 1 and Unit 2

Section 40A1: Performance Indicator Verification

Miscellaneous
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 5
HPCI System Engineer's notebook
RCIC System Engineer's notebook
Miscellaneous short duration LCO log entries from 1/1/2009 through 12/31/2009
Miscellaneous control room log entries from 1/1/2009 through 12/31/2009

Section 40A2: Problem Identification & Resolution

Issue Reports

IR 657596	IR 787602
IR 725476	IR 888962
IR 737527	IR 900414
IR 768797	IR 907453
IR 774682	IR 909312
	IR 974132

Miscellaneous
OP-AA-108-111, Adverse Condition Monitoring and Contingency Plan, Revision 5
Recirculation Flow Control System Training Manual, Revision 3

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access Management System
AP	ALARA Plan
CAP	Corrective Action Program
CREFAS	control room emergency fresh air supply
CS	core spray
CW	circulating water
ECCS	emergency core cooling systems
EDG	emergency diesel generator
ESW	emergency service water
HRA	high radiation areas
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
IR	issue report
LER	licensee event report
LHRA	locked high radiation area
NRC	Nuclear Regulatory Commission
OOS	out of service
OPCON	operational condition
PARS	Publicly Available Records
PI	performance indicator
PI&D	plant piping and instrumentation diagrams
RCIC	reactor core isolation cooling
RERS	reactor enclosure recirculation system
RHR	residual heat removal
RHRSW	residual heat removal service water
RTP	rated thermal power
RWP	radiation work permit
SDP	significance determination process
SSC	structure, system, component
SGTS	standby gas treatment
ST	surveillance test
SW	service water
TEDE	total effective dose equivalent
TS	technical specification
UFSAR	updated final safety analysis report
UPS	uninterruptable power supply
VHRA	very high radiation area