UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

October 30, 2012

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000373/2012004;
05000374/2012004

Dear Mr. Pacilio:

On September 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your LaSalle County Station, Units 1 and 2. The enclosed report documents the inspection results which were discussed on Wednesday, October 3, 2012, with the Site Vice-President, Mr. P. Karaba, 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.

Six NRC-identified findings of very low safety significance (Green) were identified during this inspection.

These findings were determined to involve violations of NRC requirements. Further, a licensee-identified violation, which was determined to be of very low safety significance, is listed in Section 4OA7 of this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at LaSalle County Station.

If you disagree with the cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at LaSalle County Station.

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 System (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael Kunowski, Chief
Branch 5
Division of Reactor Projects

Docket Nos. 50-373; 50-374
License Nos. NPF-1; NPF-18

Enclosure: Inspection Report 05000373/2012004; 05000374/2012004
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos.:	05000373; 05000374
License Nos.:	NPF-11; NPF-18
Report Nos.:	05000373/2012004; 05000374/2012004
Licensee:	Exelon Generation Company, LLC
Facility:	LaSalle County Station, Units 1 and 2
Location:	Marseilles, IL
Dates:	July 1 through September 30, 2012
Inspectors:	R. Ruiz, Senior Resident Inspector M. Ziolkowski, Resident Inspector (Acting) F. Ramírez, Resident Inspector B. Kemker, Senior Resident Inspector, Clinton J. Jandovitz, Project Engineer J. Bozga, Reactor Inspector G. O'Dwyer, Reactor Inspector N. Féliz-Adorno, Reactor Engineer L. Jones Jr., Reactor Engineer A. Shaikh, Reactor Inspector R. Schulz, Illinois Emergency Management Agency
Approved by:	M. Kunowski, Chief Branch 5 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000373/2012004, 05000374/2012004; 06/01/2012 – 09/30/2012; LaSalle County Station, Units 1 and 2; Heat Sink Performance; Operability Determinations and Functionality Assessments; Surveillance Testing; and Other Activities.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Six Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of U.S. Nuclear Regulatory Commission (NRC) regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP); the cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- **Green**: The inspectors identified a finding of very low safety significance and associated NCV of Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to adequately verify the adequacy of the design of systems needed during a design basis accident. Specifically, the inspectors identified the licensee failed to evaluate the effects of fish mortality resulting from the elevated ultimate heat sink (UHS) temperatures predicted to occur during design basis accidents. The licensee entered the issue into its corrective action program (CAP) and based on engineering judgment, concluded the fish mortality or fish kills would not prevent systems from performing their safety functions during a design basis accident.

  The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the capability of the system to respond to an initiating event to prevent undesirable consequences. Specifically, based on previous operating experience, there was reasonable doubt equipment would remain operable due to the anticipated fish kill from elevated lake temperatures if a design basis accident had occurred. The finding was screened as very low safety significance (Green) because the design deficiency did not result in a loss of operability or functionality. The inspectors determined the finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not adequately analyze the potential adverse effects of fish kills on systems needed during design basis accidents when evaluating the adverse affects of the high UHS temperatures during an August 13, 2010, event (P.1(c)). (Section 1R07)

- **Green**. The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow procedure CC-AA-201, Revision 9, "Plant Barrier Control Program." Specifically, the licensee propped open two doors that were required to remain shut at all times as high energy line break (HELB) barriers. Upon identification, the licensee immediately closed the doors and promptly entered the issue into the CAP for evaluation.

The finding was associated with the Mitigating Systems Cornerstone and was determined to be more than minor because if left uncorrected, the failure to follow the requirements of the plant barrier control program would lead to a more significant safety issue. The finding screened as very low safety significance (Green) for both units. This finding had a cross-cutting aspect in the area of human performance, work practices, for failing to effectively define and communicate expectations regarding procedural compliance, and personnel following procedures (H.4(b)). (Section 1R15)

- **<u>Green</u>**. The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to maintain an adequate testing program for the station's safety-related watertight doors. Specifically, the licensee's watertight door inspection procedure failed to satisfy the testing standard, set forth in regulations, that all testing required to demonstrate that safety-related structures, systems, and components (SSCs) will perform satisfactorily in service, be identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Upon notification by the inspectors, the licensee entered the issue into the CAP and concluded that a revision to the watertight door inspection procedure was warranted.

  The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of procedure quality and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding was determined to be of very low safety significance (Green). This finding did not have a cross-cutting aspect because the deficient inspection procedure was created more than three years ago and was not considered indicative of current performance. (Section 1R22)

- **<u>Green</u>**: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to evaluate piping interactions between the service water (SW) and residual heat removal (RHR) systems. Specifically, the SW piping was observed to vibrate and an associated support clamp was oscillating very closely to another support clamp of a nearby RHR pipe. The loads of the potential impact between the clamps were not analyzed. This finding was entered into the licensee's CAP to perform a formal evaluation of the condition to accept it as part of the design of the systems or to eliminate the condition.

  The performance deficiency was determined to be more than minor because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very low safety significance (Green) because it was a design deficiency confirmed not to result in loss of operability. Specifically, the licensee performed an operability determination which concluded the affected pipe supports remained functional. The inspectors did not find an applicable cross-cutting aspect which represented the underlying cause of this performance deficiency; therefore, no cross-cutting aspect was assigned. (Section 4OA5.1c.(3))

Cornerstones: Mitigating Systems and Barrier Integrity

- **Green**: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to ensure low pressure coolant injection (LPCI) and containment cooling (CC) operability in Mode 3. Specifically, the licensee did not correct two conditions adverse to quality that adversely impacted the operability of these modes of operation of the RHR system while realigned for shutdown cooling mode of operation. This finding was entered into the licensee's CAP to reconcile the licensing requirements and design of the RHR system.

  The performance deficiency was determined to be more than minor because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was associated with the Containment Barrier Cornerstone attribute of structures, systems, components and barrier performance and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as of very low safety significance (Green) using a Phase II evaluation. Specifically, all the core damage sequences affected were calculated to have a frequency of 1×10^{-8} per year or less. The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned. (Section 4OA5.1c.(1))

- **Green**: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to adequately assess the susceptibility to pressure locking and thermal binding of the RHR suction isolation valves from the suppression pool. Specifically, the design reviews for susceptibility to pressure locking and thermal binding did not consider the operational configuration of these valves when the RHR system is operated in the shutdown cooling mode. This finding was entered into the licensee's CAP to reconcile the licensing requirements and design of the RHR system.

  The performance deficiency was determined to be more than minor because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was associated with the Containment Barrier Cornerstone attribute of structures, systems, components, and barrier performance and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as of very low safety significance (Green) using a Phase II evaluation. Specifically, all the core damage sequences affected were calculated to have a frequency of 1×10^{-8} per year or less. The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned. (Section 4OA5.1c(2))

B. **Licensee-Identified Violations**

A violation of very low safety significance that was identified by the licensee has been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's CAP. This violation and CAP tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1

The unit began the inspection period operating at full power. On September 1, 2012, power was reduced to approximately 60 percent for a control rod sequence exchange and scram time testing. Unit 1 was restored to full power on September 2.

Unit 2

The unit began the inspection period operating at full power. On September 8, 2012, power was reduced to approximately 60 percent for a control rod sequence exchange and scram time testing. Unit 2 was restored to full power on September 10.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- Unit 1A RHR SW;
- 1A standby liquid control (SBLC) with 1B out-of-service for maintenance;
- Unit 1 LPCI system; and
- Units 1 and 2 remote shutdown panels.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted four partial system walkdown samples as defined in inspection procedure (IP) 71111.04-05.

b. Findings

No findings were identified.

.2 Semiannual Complete System Walkdown

a. Inspection Scope

On August 21, 2012, the inspectors performed a complete system alignment inspection of the low pressure core spray (LPCS) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- 7B - Unit 1 diesel generator (DG) corridor;
- 8C1 - high pressure core spray (HPCS) diesel fuel tank room 674'0" through 8C5 - Division 1 RHR SW pump room 674'0;
- 10B - offgas building; and
- 2H4 - Unit 1 reactor core isolation cooling (RCIC) and LPCS pump room.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained

passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan.
The inspectors selected fire areas based on their overall contribution to internal fire risk, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted four quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed: operability determinations; completed surveillances; vendor manual information; associated calculations; performance test results; and cooler inspection results associated with the Unit 1 B/C RHR pump room cooler VY03A. This heat exchanger/cooler was chosen based on its risk significance in the licensee's probabilistic safety analysis, its important safety-related mitigating system support functions, its operating history, and its relatively low margin.

For the VY03A heat exchanger, the inspectors verified the testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by verifying the test method used was consistent with accepted industry practices, or equivalent, the test conditions were consistent with the selected methodology, the test acceptance criteria were consistent with the design basis values, and results of heat exchanger performance testing. The inspectors also verified that the test results appropriately considered differences between testing conditions and design conditions. The frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values and test results considered test instrument inaccuracies and differences.

For the VY03A heat exchanger, the inspectors reviewed the methods and results of heat exchanger performance inspections. The inspectors verified the methods used to inspect and clean heat exchangers were consistent with as-found conditions identified and expected degradation trends and industry standards, the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

In addition, the inspectors verified the condition and operation of the VY03A heat exchanger were consistent with design assumptions in heat transfer calculations and as described in the UFSAR. This included the verification of the number of plugged tubes were within pre-established limits based on capacity and heat transfer assumptions. The inspectors verified that the licensee evaluated the potential for water hammer; established adequate controls; and operational limits to prevent heat exchanger degradation due to excessive flow-induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchanger.

The inspectors verified that the licensee checked the performance of the UHS and safety-related SW system and subcomponents such as piping, intake screens, pumps, and valves by tests or other equivalent methods to ensure availability and accessibility to the inplant cooling water systems.

The inspectors reviewed the licensee's operation of SW system and UHS. This included the review of licensee's procedures for a loss of the SW system or UHS and the verification the instrumentation, which was relied upon for decision making, was available and functional. In addition, the inspectors verified that macrofouling was adequately monitored, trended, and controlled by the licensee to prevent clogging. The inspectors verified the licensee's biocide treatments for biotic control were adequately conducted and the results monitored, trended, and evaluated. The inspectors ensured there were no adverse effects from strong pump/weak pump interaction. The inspectors reviewed design changes to the SW system and the UHS. The inspectors also verified the licensee maintained adequate water chemistry parameters such as pH and calcium hardness.

The inspectors performed a system walkdown of the SW system and the accessible portions of the UHS to verify the licensee's assessment on structural integrity. In addition, the inspectors reviewed testing and inspections results, licensee's disposition of any active thru-wall pipe leaks, and the history of thru-wall pipe leakage to identify any adverse trends since the last NRC inspection. For buried or inaccessible piping, the inspectors reviewed the licensee's pipe testing, inspection, or monitoring program to verify structural integrity, and ensured that any leakage or degradation had been appropriately identified and dispositioned by the licensee. The inspectors verified the periodic piping inspection program adequately detected and corrected protective coating failure, corrosion, and erosion. The inspectors verified the licensee adequately monitored and resolved any adverse trends for the horizontal equipment cooling water pumps by reviewing the operational history.

In addition, the inspectors reviewed condition reports related to heat exchangers/coolers and heat sink performance issues to verify the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted two heat sink inspection samples as defined in IP 71111.07-05.

b. Findings

Lack of Adequate Design Review of Effects of Fish Kills on Systems Needed During an UHS Design Basis Accident

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” was identified by the inspectors for the licensee’s failure to verify the adequacy of design by the performance of design reviews or by the use of alternate or simplified calculational methods. Specifically, the licensee failed to perform an adequate formal design review of the potential effects on SSCs from fish kills that would result from the elevated UHS temperatures assumed during design basis accidents.

Description: During the onsite inspection of the triennial portion of the Heat Sink Performance inspection, the inspectors identified the licensee did not have an adequate evaluation bounding the potential adverse effects of large fish kills due to cooling water from the core standby cooling system (CSCS) pond (also known as the ultimate heat sink (UHS)) being assumed to be as high as 104 degrees Fahrenheit (°F) after a worst-case design basis accident.

The inspectors reviewed AR 1101063, “Dual Unit Limiting Condition for Operation (LCO) Entered Due to High Lake Temperature,” that documented a reduction of power to approximately 80 percent for both units due to problems caused by the fish kill resulting from the cooling water temperature from the CSCS pond reaching 101.34 °F on August 12, 2010. This was the highest inlet temperature ever reached to date and had exceeded the TS 3.7.3.1 limit of 101.25 °F. The previous highest temperature for the cooling water from the CSCS pond was 99.8 °F on August 8, 2005. The inspectors reviewed the root cause investigation report and noted the report acknowledged the temperature of 101.34 °F had caused a fish kill larger and more rapidly than had been expected or previously experienced. The licensee performed a qualitative risk-assessment, which concluded the primary risk to nuclear safety associated with high lake temperature was the requirement to shutdown the units.

The inspectors were concerned the licensee did not address the potential adverse effects of fish kills during design basis accidents. Specifically, this event indicated that lower than design bases temperatures caused a condition, which impacted the operation of the plant; however, the licensee did not evaluate the condition with respect to the design basis accident assumed in design documents, e.g., the 104 °F inlet temperature assumed in Calculation L-002457, Revision 5a, “LaSalle County Station Ultimate Heat Sink Analysis.” The licensee did not adequately assess how a larger fish kill expected during a design basis accident due to a higher temperature would impact safety-related equipment.

The inspectors noted Revision 1 of engineering change (EC) 388666, “Revise Design for Post Accident UHS Temperature of 107 °F,” dated June 22, 2012, concluded there would be no adverse effects on the safety-related heat exchangers if the CSCS pond reached 107 °F. Although the impact of the increase in water temperature was assessed from a heat removal capability, the licensee did not assess whether the temperature increase would impact other aspects, such as tube clogging or overall flow rate due to an extensive fish kill caused by the higher water temperature of 107 °F.

The inspectors noted UFSAR Section 9.2.1.3 stated if the traveling screens become plugged with debris during a design basis accident then a manual valve will be opened to bypass the screens and the trash bar racks. The inspector questioned if the dead fish (or even dead plants) would then be able to enter the CSCS equipment cooling water systems and block components. The inspectors also noted UFSAR Section 2.5.5.2.5.g and other sections stated the shad net (in the UHS) will not become blocked because the shad will be alive and will swim away from the net. However, the inspectors noted there was not an adequate analysis of the effects of fish kills on the shad nets.

The licensee entered the inspectors' concerns into the CAP as assignment report (AR) 1390774, which recommended a formal evaluation of the fish mortality effects on the equipment cooling water systems. The licensee concluded the UHS remained operable because: (1) the dead fish would become buoyant as they decompose; therefore, would not likely be swept into the bypass line due to its depth; (2) the CSCS inlet piping was high enough off the lake screen house floor to prevent heavier debris intake issues; and (3) the equipment cooling water flow should be sufficient because the shad net had a large surface area; therefore, should not become completely plugged and if it were to be plugged, there existed enough net bypass flowpaths. Based on these and other reasons documented in AR 1390774, the licensee concluded by engineering judgment the SSCs would perform their required functions despite fish kills during worst case design basis accidents.

Analysis: The inspectors determined the failure to perform a formal design review of the potential effects on SSCs from fish kills that would result from the elevated UHS temperatures assumed during design basis accidents was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control" and was a performance deficiency. The performance deficiency was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors also determined by using Examples j and k of Section 3 of IMC 0612, Appendix E, dated August 11, 2009, the performance deficiency was more than minor and a finding because if left uncorrected, it could lead to a worse condition since the licensee had initiated a license amendment to increase the UHS inlet temperature limit in the TS.

The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because the finding impacted the Mitigating Systems Cornerstone, the inspectors screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012, using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as of very low safety significance (Green) because the finding was a qualification deficiency that did not represent a loss of operability or functionality.

This finding has a cross-cutting aspect in the area of problem identification and resolution and the component of CAP because the licensee did not thoroughly evaluate problems such that the resolutions addressed the full extent of conditions. Specifically, on August 13, 2010, a plant inlet temperature of 101.34 °F caused an unexpectedly large fish kill and subsequent power reduction of both units to approximately 80 percent. This event indicated that lower than design bases temperatures caused a condition, which impacted the operation of the plant; however, the licensee did not evaluate potential effects of fish kills during a design basis accident with UHS inlet temperatures assumed as high as 104 °F [P.1(c)].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” requires, in part, that design control measures provide for the verifying or checking of the adequacy of design such as by the performance of design reviews or by the use of alternate or simplified calculational methods.

Contrary to the above, from at least as early as September 21, 2010, the licensee had failed to perform an adequate formal design review to verify the adequacy of design of systems that would be required to mitigate the consequences of UHS design basis accidents. Specifically, the licensee failed to perform an adequate formal design review of the effects on systems from fish kills that would result from the inlet temperatures of the cooling water from the CSCS pond being as high as 104 °F during design basis accidents as assumed in design documents. The immediate corrective actions included verification of operability and initiating a formal design review. Because this violation was of very low safety significance and was entered into the licensee’s CAP (as AR 1390774), the violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000373/2012004-01; 05000374/2012004-01, Lack of Adequate Design Review of Effects of Fish Kills on Systems Needed to Respond During an UHS Design Basis Accident).

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On Thursday, August 23, 2012, the inspector observed a crew of licensed operators in the plant’s simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspector evaluated the following areas:

- licensed operator performance;
- crew’s clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew’s performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On September 4, 2012, the inspectors observed the shift supervisor, unit supervisor, and reactor operator perform a secondary containment operability test. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of procedures;
- control board and equipment manipulations; and
- oversight and direction from supervisors.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance, and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- CSCS equipment cooling ventilation;
- CSCS pumps; and
- control room and auxiliary electrical equipment room ventilation (VC/VE).

The inspectors reviewed events, such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems, and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for SSCs/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- emergent work to recover from June 29, 2012, severe thunderstorm;
- 1A DG planned work window from August 12–15, yellow risk condition;
- 1A DG cooling water, fuel oil pump, diesel fire pump, A train VC/VE; and
- 0 DG planned work window to perform 10-year maintenance, yellow risk condition.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Specific documents reviewed during this inspection are listed in the Attachment to this report. These maintenance risk assessments and emergent work control activities constituted four samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 (Closed) Unresolved Item (URI) 05000373/2012002-01; 05000374/2012002-01, "Potential Impact on Operability of Safety-Related Components Due to Defeated High Energy Line Break Barriers"

a. Inspection Scope

The inspectors reviewed URI 05000373/2012002-01; 05000374/2012002-01. The inspectors evaluated the technical adequacy of the licensee's evaluation to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to the licensee's evaluations to determine whether the components or systems were operable.

This review constituted one sample as defined in IP 71111.15.

b. Findings

Failure to Follow Plant Barrier Control Process for High Energy Line Break Protection Doors

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to follow procedure CC-AA-201, Revision 9, "Plant Barrier Control Program." Specifically, the licensee propped open two doors that were required to remain shut at all times as HELB barriers.

Description: On February 14, 2012, outage contract workers propped open two doors to the Unit 1 turbine-driven reactor feed pump rooms at a time that the floor plugs to the auxiliary building were removed. In that configuration, those doors were required to remain shut as HELB barriers. The doors remained inappropriately propped open for approximately 12 hours before being identified and closed. Upon discovery, the doors were immediately closed, and the issue was entered into the CAP.

Per the Plant Barrier Control Program procedure, when a HELB barrier, in this case the floor plugs, is going to be breached, compensatory measures are required to be established and implemented as part of the Plant Barrier Impairment Permit process. Further, steps 6.5.1.2 and .3 of the procedure direct the work group to arrange for compensatory actions and to implement those actions prior to impairing a barrier. In this case, doors 203 and 207 were required to remain shut to act as compensatory HELB barriers while the floor plugs were removed. These procedural steps were not followed as evidenced by the doors being found propped open with cables and hoses that were in use by the work group.

In order to adequately assess the extent to which safety-related SSCs could have been put at risk of a postulated HELB as a result of the open doors, the inspectors requested that the licensee provide a list of potentially affected components. Based on this request for information, a detailed engineering analysis was performed and subsequently determined that only the main supply damper actuators and two duct-mounted fire detectors in the Unit-Common VC/VE system would have been exposed to conditions beyond their design environment. Based on the HELB timeline and location, these components would not have been degraded to the point of failure; the components were calculated to have only been beyond their mild-environment design limits, with temperature and humidity reaching 135 °F and 100 percent, respectively, for less than ten minutes.

<u>Analysis</u>: The inspectors determined that the failure to implement the requirements of the Plant Barrier Control Program procedure was contrary to 10 CFR 50 Appendix B, Criterion V, and was a performance deficiency.

The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because if left uncorrected it would become a more significant safety concern. Specifically, failing to properly implement the requirements of the plant barrier impairment procedure in the future could cause a more significant safety concern. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone.

The inspectors and the Region III senior reactor analyst used IMC 0609, Appendix A, "The Significance Determination Process for At-Power Findings," dated June 19, 2012, to evaluate the finding for Unit 2 and IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," dated February 28, 2005, for Unit 1. The finding affected the Mitigating Systems Cornerstone. It did not cause the affected ventilation systems to be inoperable. Since the systems could still perform their safety function with the HELB door blocked open, the finding did not meet the criteria for performing a detailed risk assessment. For the shutdown SDP, checklist 6 was reviewed. All safety function checklist items were met, and none of the criteria for performing a Phase 2 or 3 evaluation were met. As a result, the finding screened as very low safety significance (Green) for both units.

This finding has a cross-cutting aspect in the area of human performance, work practices, for the licensee's failure to effectively define and communicate expectations regarding procedural compliance, and personnel follow procedures. Specifically, the contract work group's failure to follow the barrier control procedure could have been prevented if the licensee had adequately communicated the expectation that the plant barrier impairment permit requirements be followed closely, and if the work group had actually followed the procedures [H.4(b)].

<u>Enforcement</u>: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, on February 14, 2012, the licensee failed to accomplish an activity affecting quality (Plant Barrier Control Program) in accordance with the documented procedure CC-AA-201, Revision 9, “Plant Barrier Control Program.” Specifically, a contract work group failed to establish procedurally required compensatory measures after propping open HELB doors with hoses and cables. Because this violation was of very low safety significance and it was entered into the licensee’s CAP (as AR 1326937), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000373/2012004-02; 05000374/2012004-02, Failure to Follow Plant Barrier Control Process for High Energy Line Break Protection Doors).

.2 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- DG “souping” potential and procedure acceptability;
- DG fuel oil storage tank level at 61.2 Hertz; and
- Operability Evaluation 2011-002, Revision 3.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee’s evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of CAP documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

These operability inspections constituted three samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance testing (PMT) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- control rod 22-03 accumulator replacement;

- 1B SBLC pump discharge relief valve replacement;
- 1A DG after biennial overhaul;
- 2B SBLC tank outlet valve;
- U1 reactor protection system (RPS) alternate transformer replacement;
- 1A DG cooling water and fuel oil pump; and
- VC/VE compressor work.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed CAP documents associated with PMTs to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted seven PMT samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- 2A SBLC quarterly (Routine);
- 2A RHR SW pump (Routine);
- 2A DG idle start (Routine);
- Unit 2 RCIC cold quick start (Routine);
- safety-related watertight doors (Routine); and
- DG cooling water pump quarterly testing (IST---inservice testing).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers (ASME) code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted five routine surveillance testing samples and one inservice testing sample as defined in IP 71111.22-02 and -05.

b. Findings

Failure to Maintain an Adequate Testing Program for Safety-Related Water Tight Doors:

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified by the inspectors for the licensee's failure to maintain an adequate testing program for safety-related watertight doors. Specifically, the licensee's watertight door inspection procedure failed to meet the testing standards set forth in the regulation, that all testing required to demonstrate that safety-related SSCs will perform satisfactorily in service be identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. This deficient procedure resulted in watertight door # 3, Division 2 CSCS Pump Room Door, being degraded with regard to leak tightness.

Description: The inspectors reviewed procedure LMS-ZZ-04, Water Tight Door Inspection, Revision 3, and assessed the adequacy of the testing methodology per the standards set forth in 10 CFR 50, Appendix B, Criterion XI, for those watertight doors classified as safety-related by the licensee. The vendor manual was also reviewed for reference.

The inspectors noted that the licensee's door inspection procedure only required that the licensee visually check that the rubber gasket is installed and not damaged, degraded, or excessively worn. In accordance with Technical Requirements Manual Section TSR 3.5.a.2, the licensee is to inspect the emergency core cooling system (ECCS) corner room door seals every 24 months. Technical Requirements Manual Basis 3.5.a, "ECCS Corner Room Water Tight Doors," states in part that SSCs important to safety are designed to withstand the most severe flood conditions due to hydro-meteorological conditions, seismic activity, and pipe or tank ruptures. Basis 3.5.a further lists watertight bulkhead doors as flood control measures.

Additionally, the vendor manual stated under the section "General Operations and Maintenance Procedure" that the doors were originally adjusted for proper gasket compression at the factory. According to the vendor, as gaskets age, permanent deformation may require adjustment of the adjusting screws on the seal side of the door. The vendor manual further stated that for gasket adjustments (of existing or new gaskets), to perform a chalk test as a method of verifying adequate leak tightness. A chalk test involves rubbing chalk on the knife edge of the combing frame, closing and locking the door, and then reopening the door to check the gasket for a uniform line of chalk deposit. If the line was broken, then that indicates an inadequate seal.

Further, the inspectors contacted the manufacturer of the watertight doors and discussed testing practices with one of their Technical Engineers. The Engineer stated that the chalk test assured that a tight seal is achieved that might only result in a minimal amount of water leakage. The Engineer further stated that this minimal amount of water would not cause damage to any equipment in the room. The chalk test was recommended by the vendor as a method to monitor seal effectiveness as it degrades over time. The Engineer also stated that an alternative way to assure a watertight seal would be to perform a pressure test onsite, similar to the test originally performed at the manufacturer's facility. Despite the recommendation by the vendor to perform a leak-tightness check, the licensee has not performed any such tests; neither after a gasket adjustment, nor as part of a periodic inservice testing method.

The inspectors concluded that a visual-only inspection was not sufficient to detect degradation of a leak-tight seal. For example, the gasket could be completely intact and in perfect condition, but if the door's mechanical parts are degraded due to wear and tear or impact damage, leak tightness could not be achieved even with a perfect gasket. The inspectors provided their concerns to the licensee regarding the apparent lack of a sufficient testing method for ensuring the leak-tightness of safety-related watertight doors onsite. The licensee captured the issue in the CAP.

Also, during a walkdown, the inspectors identified a significant amount of airflow bypassing the sealing-surface of the closed watertight door #3. Door #3 is the Division 2 CSCS Pump Room Door from the Auxiliary Building Stairwell, 673 ft. elevation. After communicating this observation, the licensee fixed the door. Additionally, the licensee has revised the door inspection procedure to include a leak-tightness check to restore compliance.

<u>Analysis</u>: The inspectors determined that the license's failure to test the in-service design function of leak-tightness for the watertight doors was not in accordance with 10 CFR 50, Appendix B, Criterion XI, "Test Control," and was a performance deficiency. As a result, the safety-related watertight doors have not had their leak tightness verified through an objective testing method, which contributed to door #3 being found in a degraded state with its leak-tightness compromised.

The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Mitigating Systems Cornerstone attribute of procedure quality and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, dated June 19, 2012. The finding was determined to be of very low safety significance (Green) because all screening questions were answered "No."

The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency was not considered to be indicative of current performance since the deficient door inspection procedure was created greater than 3 years ago.

<u>Enforcement</u>: Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program be established to assure that all testing required to demonstrate that SSCs will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant or fuel reprocessing plant operation, of SSCs.

Contrary to the above, from at least October 19, 2008, the licensee failed to maintain a test program for the safety-related watertight doors to assure they could perform satisfactorily in service, and failed to perform operational tests during nuclear power plant operation. Specifically, the licensee's inspections of the doors only included a subjective visual examination of door components and in no way tested or measured for leak-tightness—the design function of the watertight doors. Further, the lack of leak tightness of door #3 was not identified by the subjective criteria of the current procedure. Because this violation was of very low safety significance and it was entered into the licensee's CAP (as ARs 1413150 and 1395277), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy

(NCV 05000373/2012004-03; 05000374/2012004-03, Failure to Maintain an Adequate Testing Program for Safety-Related Watertight Doors).

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Training Observation

a. Inspection Scope

The inspector observed a training evolution for emergency responders on September 24, 2012, which required emergency plan implementation by the licensee and an off-hours drive-in activation of the emergency response locations (technical support center, operations support center, and emergency operations facility). The inspectors observed event classification and notification activities performed by the crew and also verified that the required response locations were staffed and activated in accordance with timeliness requirements. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the CAP.

This inspection of the licensee's training evolution with emergency preparedness drill aspects constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

2. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency AC Power Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power Systems performance indicator (PI) for Units 1 and 2 for the fourth quarter 2011 through the second quarter 2012. To determine the accuracy of the PI data reported, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, ARs, event reports, and NRC integrated inspection reports for October 2011 through June 2012 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI emergency AC power system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - High Pressure Injection Systems PI for Units 1 and 2 for the fourth quarter 2011 through the second quarter 2012. To determine the accuracy of the PI data reported, PI definitions and guidance contained in the NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, ARs, MSPI derivation reports, event reports, and NRC integrated inspection reports for October 2011 through June 2012 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI high pressure injection system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - RHR Systems PI for Units 1 and 2 for the fourth quarter 2011 through the second quarter 2012. To determine the accuracy of the PI data reported, PI definitions and guidance contained in the NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, ARs, MSPI derivation reports, event reports, and NRC integrated inspection reports for October 2011 through June 2012 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's CAP database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI RHR system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline IPs discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Selected Issue Followup Inspection: Loss of Secondary Containment Operability During Severe Weather

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a CAP item documenting the loss of the reactor building ventilation system due to an electrical disturbance caused by a lightning strike in the switchyard. Because the reactor building ventilation fans tripped, the level of negative pressure required to be maintained by TSs was temporarily unable to be met, and as a result, secondary containment was declared inoperable. The secondary containment remained inoperable until operators manually placed the safety-related standby gas treatment system into service and restored the negative pressure.

Due to the unplanned nature in which the secondary containment inoperability occurred, and since the reactor building is considered to be similar to a single train safety system, the inspectors evaluated the circumstances surrounding the event to determine if it should have been considered an event or condition that could have prevented the fulfillment of a safety function in accordance with 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," and NUREG 1022, "Event Reporting Guidelines 10 CFR 50.712 and 50.73."

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope

The inspectors verified the onsite documentation, system hardware, and licensee actions were consistent with the information provided in the licensee's response to NRC Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." Specifically, the inspectors verified the licensee has implemented or was in the process of implementing the commitments, modifications, and programmatically controlled actions described in the licensee's response to GL 2008-01. The inspection was conducted in accordance with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)," and considered the site-specific supplemental information provided by Office of Nuclear Reactor Regulations (NRR) to the inspectors.

Based on this review, the inspectors concluded there is reasonable assurance the licensee will complete all outstanding items and incorporate relevant information into the design basis and operational practices. Therefore, this TI is considered closed for LaSalle County Station.

The documents reviewed are listed in the Attachment to this report.

b. Inspection Documentation

The selected TI areas of inspection were licensing basis, design, testing, and corrective actions. The documentation of the inspection effort and any resulting observations are below.

(1) Licensing Basis: The inspectors reviewed selected portions of licensing basis documents to verify they were consistent with the NRR assessment report and were processed by the licensee. The licensing basis verification included the verification of selected portions of TS, TS bases, UFSAR, and Technical Requirements Manual. The inspectors also verified applicable documents which described the plant and plant operation, such as calculations, piping and instrumentation diagrams, procedures, and CAP documents, addressed the areas of concern and were changed if needed following plant changes.

The inspectors also confirmed the frequency of selected surveillance procedures were at least as frequent as required by TSs, and that the licensee's CAP captured the commitment to evaluate the resolution of TS issues with respect to the elements contained in the TS task force traveler for gas accumulation and submit a license amendment request, if deemed necessary based on this evaluation, within 180 days following the NRC approval of the TS task force traveler. This commitment was captured in the CAP as AR 760935-14.

The inspectors also conducted a licensing basis verification in an earlier inspection period associated with the addition of a vent line to the HPCS piping. This additional activity counted towards the completion of this TI and was documented in NRC Inspection Report 05000373/2010002; 05000374/2010002.

(2) Design: The inspectors reviewed selected design documents, performed system walkdowns, and interviewed plant personnel to verify the design and operating characteristics were addressed by the licensee. Specifically:

(a) The inspectors verified the licensee had identified the gas intrusion mechanisms that apply to the licensee's plant.

(b) The inspectors assessed if the licensee's void acceptance criteria were consistent with NRR's void acceptance criteria and noted the licensee had not developed acceptance criteria for voids found at suction piping because the licensee had never found a void in suction piping.

(c) The inspectors reviewed selected documents, including calculations and engineering evaluations, with respect to gas accumulation in the subject systems. Specifically, the inspectors verified these documents addressed venting requirements, keep-full systems, aspects where pipes are normally void such as some spray piping inside containment, void control during system realignments, and the effect of debris on strainers in containment emergency sumps causing accumulation of gas under the upper elevation of strainers and the impact on net positive suction head requirements. The inspectors noted the

ECCS pumps calculation for net positive suction head in Modes 4 and 5 used incorrect input values. The details of this observation are discussed in Section 4OA5.1c.(4)(a) of this report.

(d) The inspectors conducted a walkdown of selected regions of ECCS and containment spray in sufficient detail to assess the licensee's walkdowns. The inspectors also verified the information obtained during the licensee's walkdown was consistent with the items identified during the inspectors' independent walkdown. The inspectors also assessed if the pipe and instrument drawings accurately described the subject systems and were up-to-date with respect to recent hardware changes. The inspectors did not assess isometric drawings because the licensee did not have controlled isometric drawings for these systems.

The inspectors also conducted a similar walkdown of selected portions of LPCS and HPCS in an earlier inspection period. This additional activity counted towards the completion of this TI and was documented in NRC Inspection Report 05000373/2010002; 05000374/2010002.

(e) The inspectors reviewed applicable documents to determine if the licensee's commitment to perform walkdowns had been completed and noted an inaccessible portion of ECCS discharge piping were walkdowns were not performed. The details of this observation are discussed in Section 4OA5.1c.(4)(b) of this report.

(f) Testing: The inspectors reviewed selected surveillance, post-modification test, and PMT procedures and results to assess if the licensee approved and was using adequate procedures to address the issue of gas accumulation and/or intrusion in the subject systems. Specifically:

(a) The inspectors reviewed procedures used for conducting void periodic monitoring and determination of void volumes to ensure the void criteria was satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance. The inspectors noted the surveillance procedures did not always require the licensee to quantify the as-found void volume. The details of this issue are discussed in Section 4OA5.1c.(4)(c) of this report.

(b) The inspectors reviewed selected procedures used for void control, such as filling and venting, following conditions which may have introduced voids into the subject systems to verify the procedures addressed testing for such voids and provided processes for their reduction or elimination.

The inspectors also review selected portions of procedures used during the surveillance testing of LPCS and LPCI in an earlier inspection period. This additional activity counted towards the completion of this TI and was documented in NRC Inspection Report 05000373/2010004; 05000374/2010004.

(3) Corrective Actions: The inspectors reviewed selected licensee's assessment reports and CAP documents to assess the effectiveness of the licensee's CAP when addressing the issues associated with GL 2008-01. In addition, the inspectors verified selected corrective actions identified in the licensee's nine-month and supplemental reports were documented. The inspectors also verified commitments were included in the CAP.

The inspectors noted an example where the licensee identified a design deficiency associated with the normally voided piping of containment spray. The details of this licensee-identified finding are discussed in Section 4OA7 of this report.

In addition, the inspectors noted two examples where the CAP did not adequately evaluate operating experience. Specifically, the licensee received two operating experience documents associated with steam formation at the RHR piping following a MODE 3 loss-of-coolant accident. In both instances, the licensee determined the issue was applicable for the station but failed to correct the condition adverse to quality. The details and enforcement of this issue are discussed in Section 4OA5.1c.(1) of this report.

c. Findings

(1) Operability of LPCI and Containment Cooling in Mode 3 Not Maintained

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for the failure to ensure LPCI and CC operability in Mode 3. Specifically, the licensee did not correct two conditions adverse to quality that adversely impacted the operability of these modes of operation of RHR while realigned for shutdown cooling mode of operation.

Description: On June 5, 1993, the RHR suction isolation valve from the suppression pool failed to open due to thermal binding when the licensee was in the process of realigning Unit 2 'B' RHR from shutdown cooling mode to LPCI standby mode of operation. The licensee captured this condition in its CAP as Problem Identification Form 374-200-93-00444PIF. The licensee implemented procedure changes to LOP-RH-07, "Shutdown Cooling System Startup, Operation, and Transfer," to prevent opening the RHR suction isolation valves from the suppression pool (i.e., 1(2)E12-F004A/B) when a differential temperature across the valve is equal or greater than 60 °F and to ensure the associated train of LPCI is not declared operable until this differential temperature criterion is met. The LPCI mode of operation of RHR takes suction from the suppression pool in order to inject water into the reactor vessel during a design basis accident.

On June 25, 2009, the licensee captured an industry operating experience in the CAP as AR 935272 regarding the potential LPCI inoperability due to steam void formation following RHR realignment from shutdown cooling to LPCI mode of operation at water temperatures higher than saturation conditions to respond to a Mode 3 loss-of-coolant accident. The licensee concluded the station was not vulnerable to this condition because procedure LOP-RH-07 required declaring LPCI inoperable under the applicable conditions and, thus, additional actions were not required to address the condition. However, on November 3, 2009, the licensee initiated AR 988330 to revise LOP-RH-07 to include a note explaining the potential for water to flash to steam at the RHR piping during a loss-of-coolant accident event while the system is aligned for shutdown cooling to remind operators of the condition when they are in the process of restoring the operability of LPCI in Mode 4. The licensee reached a similar conclusion on August 4, 2010, after evaluating NRC Information Notice 2010-11, "Potential for Steam Voiding Causing RHR System Inoperability." This evaluation was captured in the CAP as AR 992573. Specifically, the licensee determined procedural guidance prevented the formation of voids in the RHR suction piping during shutdown cooling operation because it required declaring LPCI inoperable under the applicable conditions.

The inspectors were concerned because the operability of LPCI and CC was not ensured in Mode 3 while RHR is operating in its shutdown cooling mode as required by TS. Specifically, TS LCO 3.5.1, "ECCS-Operating," required, in part, each ECCS injection/spray subsystem to be operable during Mode 3. This LCO included a note stating, "LPCI subsystems may be considered operable during alignment and operation for decay heat removal with reactor vessel pressure less than the RHR cut-in permissive pressure in Mode 3, if capable of being manually realigned and not otherwise inoperable." In addition, LCO 3.6.2.3, "RHR Suppression Pool Cooling," and LCO 3.6.2.4, "RHR Suppression Pool Spray," required two RHR suppression pool cooling and spray subsystems to be operable in Mode 3. The suppression pool cooling and spray subsystems provide the CC function of the RHR system and also require the 1(2)E12-F004A/B valves to open to take suction from the suppression pool.

The inspectors discussed this issue with NRR and reviewed applicable licensing basis documents. As a result, it was determined the intent of TS LCOs 3.5.1, 3.6.2.3, and 3.6.2.4 was, in part, to ensure LPCI and CC operability in Mode 3 and it was not acceptable to rely on TS required actions and associated completion times as corrective actions for conditions adverse to quality that are known and expected. Consequently, the licensee's corrective actions were determined to be inadequate to correct the conditions adverse to quality. In addition, the inspectors reviewed the operators' logs and confirmed the licensee complied with TS LCOs 3.5.1, 3.6.2.3, and 3.6.2.4 actions and associated completion times for LPCI and CC inoperable the last two times the RHR system operated in shutdown cooling mode.

The licensee captured the inspectors' concerns in the CAP as AR 1401163. The corrective action considered at the time of this inspection was to reconcile the licensing requirements and design of RHR.

Analysis: The inspectors determined the failure to ensure LPCI and CC operability in Mode 3 was contrary to TS LCOs 3.5.2, 3.6.2.3 and 3.6.2.4, and was a performance deficiency. The performance deficiency was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was associated with the Containment Barrier Cornerstone attribute of SSCs and barrier performance and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the current operating procedure and the design of RHR did not ensure the availability and capability of the LPCI and CC modes of RHR during Mode 3.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because this issue involved operation in a shutdown condition, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," dated February 28, 2005, and concluded a Phase 2 SDP evaluation was needed because the finding degraded the licensee's ability to add reactor coolant system inventory when needed. The Region III senior reactor analyst performed a phase 2 SDP evaluation using IMC 0609, Appendix G, Attachment 3, "Phase 2 Significance Determination Process Template for BWR During Shutdown," Worksheet 1, "SDP Worksheet for a BWR Plant – Loss of Inventory in POS 1." The exposure time was considered to be less than 3 days. The worksheet was solved assuming one train of RHR (the operating train) could not be reconfigured for ECCS injection if necessary due to the performance deficiency. However, because other low pressure trains of RHR and other low pressure systems were available for injection, the credit for manual low pressure injection was dominated by the failure of the operator action to perform the manual injection. This human error probability remained at its nominal value. All the core damage sequences affected were calculated to have a frequency of 1×10^{-8} per year or less. The finding was determined to have very low safety significance (Green). The dominant sequence was a loss of inventory event, failure to isolate the inventory loss, failure of automatic ECCS injection, and failure of manual ECCS injection.

The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances, are promptly identified and corrected.

Contrary to the above, as of July 31, 2012, a condition adverse to quality identified on June 5, 1993, and on November 3, 2009, was not corrected. Specifically, the licensee failed to correct the lack of barriers to prevent LPCI and CC, safety-related systems, from becoming inoperable in Mode 3 when RHR is running in shutdown cooling mode. Because this violation was of very low safety significance and was entered into the licensee's CAP (as AR 1401163), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000373/2012004-04; 05000374/2012004-04, Operability of Low Pressure Core Injection and Containment Cooling In Mode 3 Not Maintained).

(2) Inadequate Assessment of Pressure Locking and Thermal Binding of the RHR Suction Isolation Valves from the Suppression Pool

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to adequately assess the susceptibility to pressure locking and thermal binding of the RHR suction isolation valves from the suppression pool. Specifically, the design reviews for susceptibility to pressure locking and thermal binding did not consider the operational configuration of these valves when the RHR system is operated in the shutdown cooling mode.

Description: On August 17, 1995, the NRC issued GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves." This GL requested licensees, in part, to evaluate operational configurations of safety-related, power-operated gate valves for susceptibility to pressure locking and thermal binding. In addition, it requested, when needed, corrective actions to ensure the affected valves are capable of performing their intended safety functions. The licensee provided to the NRC the 180-day response to GL 95-07 on February 13, 1995. This response stated the RHR suction isolation valves from the suppression pool (i.e., 1(2)E12-F004A/B) were not screened as potentially susceptible for thermal binding because the licensee concluded the valves did not have a safety function to open from the full closed position and were not placed in the full closed position with temperatures above normal room temperature. In addition, the licensee indicated the valves were not screened as potentially susceptible for pressure locking because the valves did not have a safety function to open from the full closed position.

However, on July 31, 2012, the inspectors noted the evaluation did not consider the operational configuration of the 1(2)E12-F004A/B valves when the RHR system is operated in the shutdown cooling mode. Specifically, these valves are placed in the full closed position with temperatures above normal room temperature while in shutdown cooling mode and are required to open in order for RHR to transition to LPCI and CC modes, which are safety-related modes of RHR operation credited by TS LCOs 3.5.1, 3.6.2.3, and 3.6.2.4. In addition, as described above, the 2E12-F004B valve experienced thermal binding in 1993. Specifically, on June 5, 1993, the RHR suction isolation valve from the suppression pool failed to open due to thermal binding when the licensee was in the process of realigning Unit 2 'B' RHR from shutdown cooling mode to LPCI standby mode of operation.

The licensee captured the inspectors' concerns in the CAP as AR 1401165. The corrective action considered at the time of this inspection was to reconcile the licensing requirements and design limitations of RHR.

Analysis: The inspectors determined the failure to adequately assess the susceptibility to pressure locking and thermal binding of the RHR suction isolation valves from the suppression pool was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. The performance deficiency was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was associated with the Containment Barrier Cornerstone attribute of SSC and barrier performance and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to adequately assess the susceptibility to pressure locking and thermal binding of the 1(2)E12-F004A/B valves does not ensure the availability and capability of the LPCI and CC modes of RHR during Mode 3.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because this issue involved operation in a shutdown condition, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," dated February 28, 2005, and concluded a Phase 2 SDP evaluation was needed because the finding degraded the licensee's ability to add reactor coolant system inventory when needed. The Region III senior reactor analyst performed a Phase 2 SDP evaluation using IMC 0609, Appendix G, Attachment 3, "Phase 2 Significance Determination Process Template for BWR

During Shutdown," Worksheet 1, "SDP Worksheet for a BWR Plant – Loss of Inventory in POS 1." The exposure time was considered to be less than 3 days. The worksheet was solved assuming one train of RHR (the operating train) could not be reconfigured for ECCS injection if necessary due to the performance deficiency. However, because other low pressure trains of RHR and other low pressure systems were available for injection, the credit for manual low pressure injection was dominated by the failure of the operator action to perform the manual injection. This human error probability remained at its nominal value. All the core damage sequences affected were calculated to have a frequency of 1 x 10^{-8} per year or less. The finding was determined to have very low safety significance (Green). The dominant sequence was a loss of inventory event, failure to isolate the inventory loss, failure of automatic ECCS injection, and failure of manual ECCS injection.

The inspectors determined the cause of this finding did not represent current licensee performance and, thus, no cross-cutting aspect was assigned.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews.

Contrary to the above, on February 13, 1995, the design control measures failed to verify the adequacy of RHR. Specifically, the GL 95-07 design reviews incorrectly determined the 1(2)E12-F004A/B valves were not susceptible to pressure locking and thermal binding; therefore, failed to verify the adequacy of RHR. Because this violation was of very low safety significance and was entered into the licensee's CAP (as AR 1401165), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000373/2012004-05; 05000374/2012004-05, Inadequate Assessment of Pressure Locking and Thermal Binding of the RHR Suction Isolation Valves from the Suppression Pool).

(3) Piping Interaction Between Service Water and RHR Systems Was Not Evaluated

Introduction: A finding of very-low-safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to evaluate piping interactions between the SW and RHR systems. Specifically, the SW piping was observed to vibrate and an associated support clamp was oscillating very closely to another support clamp of a nearby RHR pipe. However, the potential impact loads were not analyzed.

Description: On August 2, 2012, while performing a walkdown of the GL 2008-01 subject systems, the inspectors noted Unit 1 SW piping 1WS26B-20 was vibrating and appeared to be impacting the nearby Unit 1 RHR piping 1RH53A-18. Specifically, the inspectors noted the clearance between pipe clamps of pipe support M09-WS26-1005R of the nonsafety-related SW piping and of pipe support M09-RH53-1069X of the safety-related RHR piping was less than 1 inch. The pipes were about 15 feet above the floor and from the floor the SW pipe clamp appeared to be impacting the RHR pipe clamp due to the SW pipe axial motion. As a result of these observations, the licensee performed a VT-3 examination which determined the clearance between the clamps was 0.125 inches and the clamps were not impacting due to the SW piping axial moment at that time. However, the inspectors were concerned the clamps may impact each other during a seismic event that results in greater axial movement of both pipes.

Specification DS-RH-01-LS, "RHR Piping System Design Specification," incorporated ASME Section III, 1974 Edition, into the design basis for the RHR system. ASME Section III, NC-3622.1, "Impact," stated "Impact forces caused by either external or internal conditions shall be considered in the piping design." In addition, Article 302, "Design Basis," of the Specification stated "When necessary, piping systems which are not a part of this Specification will be included in the analytical model in order to ascertain the effect on RHR piping specified herein." However, the effects of the SW piping, which was not part of the Specification, on the RHR piping were not evaluated.

The licensee captured the inspectors' concern in the CAP as AR 1400648. In addition, the licensee determined operability was maintained because both clamps were free to slide along the pipe as a result of any interaction between them preventing gross damage and the expected relative seismic displacement of the pipes would not result in pipe support gross shift from their nominal position preventing loss of functionality. The corrective action being considered at the time of this inspection was to perform a formal evaluation of the condition to accept it as part of the design basis or to eliminate the condition.

<u>Analysis</u>: The inspectors determined the failure to evaluate piping interactions between the SW and RHR systems was contrary to ASME Section III, NC-3622.1, and was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to evaluate the piping interaction between SW and RHR did not ensure the availability and reliability of RHR to provide its accident mitigating function.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because the finding impacted the Mitigating Systems Cornerstone, the inspectors screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012, using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as of very low safety significance (Green) because it was a design deficiency confirmed not to result in loss of operability. Specifically, the licensee performed an operability determination which concluded the affected pipe supports remained functional.

The inspectors did not find an applicable cross-cutting aspect which represented the underlying cause of this performance deficiency; therefore, no cross-cutting aspect was assigned.

<u>Enforcement</u>: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. ASME Section III, 1974 Edition, was included in the design bases of the RHR system.

Contrary to the above, as of August 15, 2012, the design control measures failed to translate applicable design basis into specifications. Specifically, the RHR piping design did not consider the impact forces caused by the interaction with the SW piping as required by ASME Section III, 1974 Edition, NC-3622.1. Because this violation was of very low safety significance and was entered into the licensee's CAP (as AR 1400648), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000373/2012004-06; 05000374/2012004-06, Piping Interaction Between SW and RHR Systems Was Not Evaluated).

(4) Observations

(a) The ECCS Pump Net Positive Suction Head Calculation Used Incorrect Input Values

Calculation PC-05, "Suppression Pool Level Required for Conditions 4 and 5," determined the minimum required suppression pool level and volume during Modes 4 and 5 based, in part, on net positive suction head and vortexing requirements. The inputs used to determine ECCS pump available and required net positive suction head values were incorrect or outdated. This issue was determined to be a minor design control deficiency because the calculation error had minimal effect on the outcome of the calculation. This issue was captured in the CAP as AR 1398957.

(b) The GL 2008-01 Walkdowns Did Not Include Portions of HPCS Discharge Piping

The licensee's responses to GL 2008-01 did not state that a GL 2008-01 walkdown of the HPCS piping between the 740' and 761' elevations had not been performed. This piping is located in the traversing in-core probe room and is normally inaccessible due to radiological conditions both online and offline. The licensee's GL 2008-01 three-month response included a commitment to complete a walk-down of specific inaccessible sections of piping during the refueling outages in Spring 2009 for Unit 2 and Spring 2010 for Unit 1. Engineering change 371601, "GL 08-01 HPCS System Evaluation," justified not performing a walkdown at this piping section based on reviews of drawings. Specifically, this piping section contains a small horizontal section in between two large vertical sections allowing any gas to be transported by buoyancy out of the piping section in the traversing in-core probe room. This omission of information was minor.

(c) Monthly Gas Accumulation Surveillances Did Not Capture the As-found Condition

Procedures LOS-HP-M1, "HPCS System Operability Test," LOS-RH-M1, "RHR System and RHR SW System Operability Test," and LOS-LP-M1, "LPCS System Operability Test," were used to meet the monthly fill and vent TS surveillance requirements associated with the ECCS systems. However, these procedures did not contain instructions to qualify or quantify the as-found volume of all voids detected during these surveillance activities. Specifically, the procedures only required quantifying the as-found volume during surveillances, which coincide with the periodicity of the GL 2008-01 ultrasonic examinations intended to detect and measure voids in piping. The ultrasonic testing periodicity at the time of the inspection was every six months. This issue was determined to be a minor procedural deficiency because a review of ultrasonic testing results determined the systems rarely experienced gas accumulation and, when voids were detected, the voids were very small relative to the maximum allowable size. In addition, a review of CAP documents did not produce an example where a void was vented without qualifying or quantifying the as-found volume. This issue was captured by the CAP as AR 1397628.

.2 TI 2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks"

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, NEI 09-14, "Guideline for the Management of Buried Piping Integrity" (Agencywide Document Access Management System (ADAMS) Accession No. ML1030901420) to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122), with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued TI 2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks," to gather information related to the industry's implementation of this initiative.

The inspectors reviewed the licensee's programs for buried pipe, underground piping and tanks in accordance with TI 2515/182 to determine if the program attributes and completion dates identified in Sections 3.3 A and 3.3 B of NEI 09-14, Revision 1, were contained in the licensee's program and implementing procedures. For the buried pipe and underground piping program attributes with completion dates that had passed, the inspectors reviewed records to determine if the attribute was in fact complete and to determine if the attribute was accomplished in a manner which reflected good or poor practices in program management.

Based upon the scope of the review described above, Phase I of TI 2515/182 was completed.

b. Observations

The licensee's buried piping and underground piping and tanks program was inspected in accordance with Paragraphs 03.01.a through 03.01.c of TI 2515/182 and was found to meet all applicable aspects of NEI 09-14, Revision 1, as set forth in Table 1 of the TI.

c. Findings

No findings were identified.

.3 (Discussed) TI 2515/187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns," and TI 2515/188, "Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns"

a. Inspection Scope

Inspectors accompanied the licensee on a sampling basis, during its flooding and seismic walkdowns, to verify that the licensee's walkdown activities were conducted using the methodology endorsed by the NRC. These walkdowns are being performed at all sites in response to a letter from the NRC to licensees, entitled “Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident,” dated March 12, 2012 (ADAMS Accession No. ML12053A340).

Enclosure 3 of the March 12, 2012, letter requested licensees to perform seismic walkdowns using an NRC-endorsed walkdown methodology. Electric Power Research Institute (EPRI) document 1025286 titled, “Seismic Walkdown Guidance” (ADAMS Accession No. ML12188A031) provided the NRC-endorsed methodology for performing seismic walkdowns to verify that plant features, credited in the current licensing basis for seismic events, were available, functional, and properly maintained.

Enclosure 4 of the letter requested licensees to perform external flooding walkdowns using an NRC-endorsed walkdown methodology (ADAMS Accession No. ML12056A050). Nuclear Energy Institute 12-07, “Guidelines for Performing Verification Walkdowns of Plant Protection Features” (ADAMS Accession No. ML12173A215), provided the NRC-endorsed methodology for assessing external flood protection and mitigation capabilities to verify that plant features, credited in the current licensing basis for protection and mitigation from external flood events, are available, functional, and properly maintained.

b. Findings

Findings or violations associated with the flooding and seismic walkdowns, if any, will be documented in the 4th quarter integrated inspection report.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 3, 2012, the inspectors presented the inspection results to Mr. P. Karaba, Site Vice-President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- the review of TI 2515/182, the industry initiative to control degradation of underground piping and tanks, with Mr. D. Rhoades and other members of the licensee staff on July 3, 2012;
- the TI 2515/177 inspection results with Mr. H. Vinyard and other members of the licensee staff on August 17, 2012; and
- the results of the triennial portion of the heat sink inspection with Mr. D. Rhoades, and other members of the licensee staff on July 20, 2012.

The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements, which meets the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as an NCV.

.1 Failure to Evaluate the Effects of Dynamic Loads on the Containment Spray Piping

Title 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to this, on or about May 25, 2012, the licensee identified the requirements associated with dynamic loading contained in the original construction code of the containment spray piping system was not incorporated into the specifications of the system and initiated AR 1370636. Specifically, the normally voided section of the containment spray piping had not been analyzed for dynamic loading during spray initiation as required by ASME, Section III, which was the original construction code. As a result, the licensee performed a dynamic loading analysis during spray initiation. The performance deficiency was determined to be more than minor because it was associated with the Containment Barrier Cornerstone attribute of structures, systems, components, and barrier performance and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as of very low safety significance because the dynamic loading was verified to be within the capability of the piping design.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

P. Karaba, Site Vice President/Plant Manager
H. Vinyard, Plant Manager/Site Engineering Director
K. Hedgspeth, Radiation Protection Manager
J. Washko, Operations Director
J. Houston, Nuclear Oversight Manager
T. Simpkin, Regulatory Affairs Manager
R. Conley, Manager, Technical Support
T. Hapak, Chemistry
M. Sharma, Engineering Program Manager
S. Shields, Regulatory Affairs Acting Manager
J. Smith, Operations Training Manager
J. Hughes, Emergency Preparedness Coordinator
K. Hall, LaSalle Buried Piping Program Owner
J. Feeney, LaSalle Nuclear Oversight
J. Miller, System Manager
B. Hilton, Design Manager
G. Ford, System Engineering Manager
A. Meyers, Engineering Manager, Balance of Plant
S. Tanton, Engineer
A. Schierer, Engineer
D. Amezaga, System Engineer
G. Ford, Engineer
J. Bendis, Engineer

U.S. Nuclear Regulatory Commission

M. Kunowski, Chief, Reactor Projects Branch 5
A.M. Stone, Chief, Engineering Branch 2

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000373/2012004-01; 05000374/2012004-01	NCV	Lack of Adequate Design Review of Effects of Fish Kills on Systems Needed During an Ultimate Heat Sink Design Basis Accident (Section 1R07)
05000373/2012004-02; 05000374/2012004-02	NCV	Failure to Follow Plant Barrier Control Process for High Energy Line Break Protection Doors (Section 1R15)
05000373/2012004-03; 05000374/2012004-03	NCV	Failure to Maintain an Adequate Testing Program for Safety-Related Watertight Doors (Section 1R22)
05000373/2012004-04; 05000374/2012004-04	NCV	Operability of Low Pressure Core Injection and Containment Cooling In Mode 3 Not Maintained (Section 4OA5.1c.(1))
05000373/2012004-05; 05000374/2012004-05	NCV	Inadequate Assessment of Pressure Locking and Thermal Binding of the RHR Suction Isolation Valves from the Suppression Pool (Section 4OA5.1c.(2))
05000373/2012004-06; 05000374/2012004-06	NCV	Piping Interaction Between SW and RHR Systems Was Not Evaluated (Section 4OA5.1c.(3))

Closed

05000373/2012004-01; 05000374/2012004-01	NCV	Lack of Adequate Design Review of Effects of Fish Kills on Systems Needed During an Ultimate Heat Sink Design Basis Accident (Section 1R07)
05000373/2012002-01; 05000374/2012002-01	URI	Potential Impact on Operability of Safety-Related Components Due to Defeated High Energy Line Break Barriers (Section 1R15)
05000373/2012004-02; 05000374/2012004-02	NCV	Failure to Follow Plant Barrier Control Process for High Energy Line Break Protection Doors (Section 1R15)
05000373/2012004-03; 05000374/2012004-03	NCV	Failure to Maintain an Adequate Testing Program for Safety-Related Watertight Doors (Section 1R22)
05000373/2012004-04; 05000374/2012004-04	NCV	Operability of Low Pressure Core Injection and Containment Cooling In Mode 3 Not Maintained (Section 4OA5.1c.(1))
05000373/2012004-05; 05000374/2012004-05	NCV	Inadequate Assessment of Pressure Locking and Thermal Binding of the RHR Suction Isolation Valves from the Suppression Pool (Section 4OA5.1c.(2))
05000373/2012004-06; 05000374/2012004-06	NCV	Piping Interaction Between SW and RHR Systems Was Not Evaluated (Section 4OA5.1c.(3))

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection ◦effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R04 Equipment Alignment

Procedures:
- LOP-LP-02; Preparation for Standby Operation of Low Pressure Core Spray System; Rev. 16
- LOP-RH-11; Preparation for Standby Operation of the Low Pressure Coolant Injection (LPCI) System; Rev. 27
- OP-AA-108-203; Locked Equipment Program; Rev. 2
- UFSAR B 3.5.1; LPCS System; Rev. 0

Assignment Reports:
- 1360917; Remove/Test/Regrease/Reinstall Snubber 2LP02-2825S

Figures and Drawings:
- UFSAR 9.5-1; Fire Protection System; Rev. 19

Working Documents:
- LOP-LP0-01E; Unit 1 Low Pressure Core Spray Electrical Checklist; Rev. 6
- LOP-LP0-01M; Unit 1 Low Pressure Core Spray Mechanical Checklist; Rev. 13
- LOP-LP-02E; Unit 2 Low Pressure Core Spray System Electrical Checklist; Rev. 5
- LOP-LP-02M; Unit 2 Low Pressure Core Spray System Mechanical Checklist; Rev. 5
- LOP-RH-02E; Unit 1 Residual Heat Removal System Electrical Checklist; Rev. 19
- LOP-RH-1AM; Unit 1 A Residual Heat Removal System Mechanical Checklist; Rev. 3
- LOP-RH-1BM; Unit 1 B Residual Heat Removal System Mechanical Checklist; Rev. 3
- LOP-RH-1CM; Unit 1 C Residual Heat Removal System Mechanical Checklist; Rev. 1

Miscellaneous:
- Shift Log Entries (Search Criteria LOP-LP-02); 2002 – 2012
- Shift Log Entries (Search Criteria LOP-RH-11); 2002 – 2012

1R05 Fire Protection

Miscellaneous:
- LaSalle County Generating Station Pre-Fire Plan; 7/13/2012

1R07 Heat Sink Performance

Assignment Reports:
- 1101063; Dual Unit LCO Entered Due to High Lake Temperature; 8/12/2010
- 1246554; U1/U2 Average CW Inlet Temperature Exceeded 99ºF; 8/1/2011
- 1363917; Eddy Current Testing On 2E22-S001 HX; 5/8/2012
- 1365191; 2B D/G Cooler HX Has Appx 2 GPM Leak When Cooling Pump On; 5/11/2012

Assignment Reports Generated as a Result of NRC HS Inspection
- 1390774; NRC Identified Lack of DBA Fish Kill Analysis; 7/18/2012

- 1389896; NRC Question on Pipe Support Base Plate in CSCS Room; 7/17/2012
- 1390288; NRC ID: Changes Needed to Calculation L-000857; 7/17/2012
- 1390634; Licensing Basis for Use of CMTRs in CSCS Piping Analysis; 7/18/2012

Working Documents:
- EC 388666, Rev. 000; Revise Design for Post Accident UHS Temperature of 107 F; 6/22/2012
- WO 88736-01; Replace T/C with RTD on 1TE-CW010 and 1TE-CW011; 3/16/2006
- WO 916144-08; Replace T/C with RTD on 2TE-CW010 and 2TE-CW011; 3/11/2007
- WO 01086155; OP LOS-VY-SR1 VY03A Air Flow Test and Inspection; 5/21/2009
- WO 01289587; OP LOS-VY-SR1 VY03A Air Flow Test and Inspection; 5/19/2011
- WO 01472059; 1VY03A Water Flowrate DP Test LOS-DG-SR6; 4/9/2012
- WO 01421061; 1VY03A Water Flowrate DPT Test LOS-DG-SR6; 9/14/2012
- WO 01074675; 1VY03A Inspection and Air Side Cooling Coil Cleaning; 9/14/2009

Miscellaneous:
- 1101063; Root Cause Investigation, Dual Unit LCO Entered Due to High Lake Temperature; 9/21/2010
- 97-199; VY Cooler Thermal Performance Model – 1(2)VY03A; Rev. B03
- DWG S-79; CSCS Pond Water Inlet Chutes Plan and Sections; 5/8/1975
- L-001077; RHR Pumps B and C Cubicle Ventilation System; Rev. 002B
- Specification J-2582; VY03A B/C RHR Room Cooler Specifications; 2/3/1975 DWG 28SW404553; VY03A Drawing; 7/21/1976

1R11 Licensed Operator Requalification Program

Procedures:
- LIS-FW-401; Unit 2 Reactor Vessel High Water Level 8 Main Turbine/Feedwater Pump Trip Functional Test; Rev. 14
- LOP-VR-02; Reactor Building Ventilation System Shutdown; Rev. 35
- LOS-CS-Q1; Secondary Containment Damper Operability Test; Rev. 33
- OP-AA-101-113-1006; 4.0 Crew Critique Guidelines; Rev. 3
- TQ-AA-155; Conduct of Simulator Training and Evaluation; Rev. 0

1R12 Maintenance Effectiveness

Procedures:
- ER-AA-1001; Maintenance Rule – Scoping; Rev. 4
- ER-AA-1002; Maintenance Rule Functions – Safety Significance Classification; Rev. 3
- ER-AA-1003; Maintenance Rule – Performance Criteria Selection; Rev. 3
- ER-AA-1004; Maintenance Rule – Performance Monitoring; Rev. 10
- ER-AA-1007; Maintenance Rule – Periodic (a)(3) Assessment; Rev. 4
- ER-AA-1008; Exelon Maintenance Rule Process Map; Rev. 0
- ER-AA-2002; System Health Monitoring; Rev. 15
- ER-AA-310; Implementation of the Maintenance Rule; Rev. 8
- ER-AA-310-1001; Maintenance Rule Scoping Template; Rev. 4
- ER-AA-310-1002; Maintenance Rule Function Safety Significance Determination; Rev. 3
- ER-AA-310-1003; Maintenance Rule Performance Criteria Selection; Rev. 3
- ER-AA-310-1005; Maintenance Rule – Dispositioning Between (a)(1) and (a)(2); Rev. 6
- ER-AA-310-1007; Maintenance Rule – Periodic (a)(3) Assessment; Rev. 4
- ER-AA-390-1001; Control Room Envelope Habitability Program Implementation; Rev. 6
- LCSC-UFSAR 6.4; Habitability Systems; Rev. 19
- LCSC-UFSAR 6.5; Fission Product Removal and Control Systems; Rev. 19

- LCSC-UFSAR 9.4; Heating, Ventilation, and Air Conditioning Systems; Rev. 14
- LOS-VY-SR1; ECCS Cubicle Area Cooler Air Flowrate Test; Rev. 5
- UFSAR B 3.7 Plant Systems, Control Room AC; Rev. 0
- UFSAR B 3.7 Plant Systems, Control Room Area Filtration System Instrumentation; Rev. 0
- UFSAR B 3.7 Plant Systems, Control Room Area Filtration System; Rev. 36

Assignment Reports:
- 1091482; High Suction Superheat on 0VC05CB Compressor
- 1091507; Small Leak on 0PDS VE 106 LSV Instrument Valve
- 1092256; No Power to VC Ammonia Detector 0XY-VC125A
- 1094635; 0 DG CWP Auto Trip When Secured per LOP-RH-13
- 1095012; VY to PPC EC/Mod Request
- 1095959; CCP Found Pump DP Low During LOS-FC-Q1 Att. 2B
- 1098490; 2B FC EMU Pump DP Low
- 1098495; AEER DP Readings on Panel 0PA10J
- 1100159; VC Compressor Pump Down Feature Not Working
- 1108613; U2 B RHR WS Strainer Backwash Sensing Line Plugged
- 1111114; B VE Receiver Level Low
- 1116890; Unable to Achieve Required Flows While Performing LOS-DG-Q1
- 1117515; Accumulated Hours on 0A VC/VE Charcoal Filters
- 1119063; Faulty Contact Found During Inspection of Contactor
- 1120702; VC Braze Joint Failed Pressure Test
- 1121103; B VE Receiver Low Level
- 1121137; LOS-DG-Q1 Pump Flow Less Than Specified By Step 8.1
- 1122067; Div. 2 RHR Corner Room VY Duct Temp Indication
- 1124299; CCP-0VE17YA Local Position Ind Tabs are Reversed
- 1125815; 2A RHR Pump Seal Cooler Inlet Line Not Full of Water
- 1126191; 0A VC HVAC Compressor Failed to Start
- 1132166; 0VE04CB Low Suction Pressure at Startup
- 1138008; Flange Leak on HPCS Dg Cooler 1E22-S001
- 1140815; 0A VC HVAC Compressor Oil Temperature Low
- 1145058; A VE Oil Temperature Low
- 1153636; AEER Condensor Coil 0VE02AA Diff Press Hi Alarm
- 1155423; 2A RHR Area Temperature Indication Reads Low
- 1160199; Safety – 2B DG Cooling Water Leak Getting Worse
- 1160771; U-1 LPCS Corner Room Vent Duct Temp Indicates Low
- 116959; B VE In Standby Found on Rounds Out of Spec at 118PSIG
- 1176233; A VC Compressor Suction Pump Down Circuit Not Working
- 1177248; 2B DG Cooling Water Strainer Binding / Trip Thermals
- 1181140; 2HS-VY001 Difficult to Place in PTL
- 1182015; 2A RHR WS Pump Auto Trip Alarm and Light Did Not Work
- 1183598; Leak Identified on Piping to 2B RHR Room Cooler 2VY03A
- 1189384; 2TIC-VY017 Measured Lower (112.5 Vac) Supply Voltage
- 1197440; 0A VE Compressor Tripped on Low Oil Pressure
- 1198603 Broken Suction Valve and Un-Loaders in a VE Compressor
- 1198625; 2DG011 Has a Packing Leak
- 1198889; U1 LPCS Vent Duct Temperature Reads High
- 1199417; Passport Update Required
- 1200990; Multiple Failures on VE/VC Oil Cooler Solenoid Valves
- 1204583; 1A RHR Seal Cooler Inlet Pipe 1RH84BA-1.5” Line Is Degraded
- 1214679; Failed PMT – Strainer Fails to Operate Following Maintenance

- 1214959; 2B DG Heat Exchanger Water Leak Failed PMT.
- 1217081; WO To Remove 3A4 VE LLSVS as Forensic Evidence for EACE
- 1228107; Generate EACE Assignments for “A” VE Compressor Failure
- 1234824; “A” VC Leaks Refrigerant When Not Backseated Open
- 1236001; 2B FC Emergency Makeup Pump Failed IST Testing
- 1237126; 2B FC EMU System T/S Results
- 1240079; No Flow Indicated During LOS-VC-M1;
- 1243055; A VC Compressor Does Not Cool Well
- 1243188; 2A RHR Seal Cooler Flow Less than 12.5 GPM
- 1244236; 2B DG CLG WTR PP Strnr Troubleshooting Findings
- 1245754; 0VC15YB Limit Switch Indication
- 1246555; “B” VE Compressor Pressure Indication Swinging 150#
- 1253196; SightGlass Had No Water in It for 0A Emergency Makeup Train
- 1257417; Water Collecting Around Conduit on DG Roof
- 1257637; 0VE04TB Receiver Level < 5
- 1259418; B VE Receiver Level Low
- 1259879; B VE Receiver Level is Low
- 1260004; Administrative Change to LOS-VY-SR1
- 1262217; A VE Return Fan Isolation Damper Failed to Open
- 1262901; Potential Change Needed to PPC ESF Inputs
- 1263274; Tygon Hose for VY Cooler Cleaning Needs Replaced *(sic)*
- 1268354; Dirt – ALARA Dose Reduction Suggestions
- 1273593; 2B FC Makeup Pump Leaking During Restoration
- 1277814; Alarm 1H13-P601-C202 “1A RHR Service Water Strainer DP Hi
- 1278049; Oil Pressure Sensing Hose on 0VE04CA
- 1278062; Pressure Sensing Hose on 0RG087
- 1280380; 2.5 Hr Delay in Chemical Cleaning of 2VY03A Process
- 1280838; Degraded Flow Condition in 2VY03A (SE Area Cooler)
- 1280848; B VE Refrigeration Unit Low on Freon Had To Be Swapped Off
- 1281152; 0RG077A Valve’s Handwheel Is Broken
- 1281344; Dose Savings and Procedure Change for LOS-DG-SR6
- 1282225; Leak Found on B VE Suction Pipe
- 1286311; Critique of Station Response to Emergent “B” VE Equip Probs
- 1287538; Inst. OOT., 2TIC-VY018, Trend Code B4
- 1288460; Leaking Flange on Tube Side East End of Heat Exchanger
- 1292025; 1A DG Strainer Doesn’t Backwash in Auto Properly
- 1299852; Leaks Found on “B” VC System
- 1300077; Flow Was Below Minimum Required During LOS-DG-SR7
- 1302140; 1A DG Cooling Water Strainer Leak
- 1302719; 0A VE Compressor Inoperable
- 1305423; LPCS Area Vent Temp Instrument Reading High
- 1305648; Enhancements Identified During 2A DG EACE Challenge
- 1313354; A VE Receiver Level < 5
- 1315194; “A” VC & “A” VE Panel Trouble Alarms
- 1316139; 2HS-VY001 Unable To Be Put Into Pull To Lock
- 1319815; 2B DG B/W Strainer Tech Spec Window > 10% Allowance
- 1320084; 2E22-D300 Strainer Stop Collar May Be Degraded
- 1320532; Work Request for Summer Tuning of 0VE04CB Compressor
- 1320695; NOS ID: Degraded Equipment on AB 786
- 1321763; PMRQ 95619 for LIP-VY-601A Scheduled Past Crit Date
- 1321991; 0PA10J Alarm in the MCR

- 1325759; A RHR Service Water Pump Has Leaking Outboard Seal
- 1326284; 1A RHR PMP Cubicle Temp Hi
- 1331487; 1A DG Cooling Water Pump Control Power Fuse Blown
- 1338990; WCI – IMD WO 1186109 Requesting 1A DG OOS
- 1343474; 0PDI-VE-28 Erratic Gauge Reading During Panel Check
- 1344144; VC/VE Oil Cooler Manual Actions
- 1347781; Request RP to Downpost Locked Rad gate – Lesson Learned
- 1347877; Need Work Orders to Support Min Wall UT
- 1355590; Clean Air Side of 1VY01A Cooling Coil
- 1359600; B VC Compressor Tripped
- 1362087; Generic Letter 89-13 Program FASA Deficiency
- 1363666; 2E22-F028 Check Valve Inspection Unsatisfactory
- 1364100; Work Order Task Not Completed Due to Quad Cities Part Issue
- 1364189; Min. Wall Thickness of 2HP51A-10 (2E22-F028)
- 1367604; SPC on the 2E22-D300 Strainer per IR 1237911-03 for EACE
- 1367852; Erroneous Reading on Surveillance
- 1368644; B VE Receiver Tank 0VEE04TB Out-Of-Spec High Per Rounds
- 1370016; A VE Compressor Oil Level is Below the Rounds Minimum
- 1376074; VY System Manager OOT Trending
- 1384865; B/C RHR Room Temperature Indication
- 1386442; 2B DG Cooling Water Heat Exchanger Leakage
- 1387910; Delayed Start of “A” VC Compressor During Swap
- 1388599; Small Refrigerant Leak Found During LES-GM-111
- 1390634; Licensing Basis For Use Of CMTRS in CSCS Piping Analysis
- 1395233; IEMA Question GL 89-13 Low Flow Lines
- 1397139; Loss of Freon Leads to B VE Compressor Being Inoperable
- 1397256; 2E22-F310 Would Not Close Following Backwash As Required
- 1407376; IEMA Concern: Inspection of Lines for Min Wall Requirements
- 1407384; Packing Leak – 2DG011 2A DG Cooling Wtr Strnr
- 1412876; 1A DG Cooling Water Pump Strainer Tripping on Thermals
- 1416934; PCRA Required for LOP-DG-08M IAW LOS-DG-SR5

Figures and Drawings:
- UFSAR Figure 6.4-1; Control and Auxiliary Electric Equipment Room Layout; Rev. 0
- VC/VE-1; Training Document: Control Room HVAC and AEER HVAC Systems; Rev. 4
- CSCS-1; Core Standby Cooling Training Figure; Rev. 3

Miscellaneous:
- CSCS Performance (Availability) Data, MR Website; 7/2010 – 9/2012
- ER-AA-310-1008; Exelon Maintenance Rule Process Map; Rev. 0
- LAS Common Unit; System Health Report, VC Control Room Ventilation; 2nd Quarter, 2012
- LAS Common Unit; System Health Report, VE – Aux Elect Equip Room HVAC; 2nd Quarter, 2012
- LAS Failure Report, VC; 7/2/2011 – 9/5/012
- LAS Failure Report, VE; 7/2/2011 – 9/5/012
- LAS U1; System Health Report, CSCS, 2nd Quarter, 2012
- LAS U1; System Health Report, VY-CSCS Ventilation, 1st Quarter, 2012
- LAS U2; System Health Report, CSCS, 2nd Quarter, 2012
- LAS U2; System Health Report, VY-CSCS Ventilation, 1st Quarter, 2012
- List of IR’s Not Reviewed with No Systems Assigned; 9/20/2012
- LSCS-UFSAR 9.2-1; Water Systems; Rev. 13

- LSCS-UFSAR Table 3.2-1; Structures, Systems and Component Classifications; Rev. 18
- Maintenance Rule Scoping Document, Core Standby Cooling System; 9/21/2012
- Maintenance Rule Scoping Document, VC System; 3rd Quarter 2012
- Mod. 065; Core Standby Cooling System/Equipment Cooling Water Operations Training; 2/5/2010
- Performance Monitoring Summary, Core Standby Cooling System; 3rd quarter 2012
- Performance Summary (LIM) Unavailability Listing; 9/20/2012
- Review Status Report (CSCS); 9/20/2012
- Scoping/Risk Significance – Summary Report; 9/20/2012
- Systems Status Report; 9/25/2012
- U2 "At Risk" Evaluation for 9/1/2010 – 8/31/2012; 9/20/2012
- UFSAR B.3.7.1; Residual Heat Removal Service Water System; Rev. 0
- UFSAR B.3.7.2; Diesel Generator Cooling Water System; Rev. 0

1R13 Maintenance Risk Assessments and Emergent Work Control

Procedures:
- PC-AA-1014; Risk Management; Rev. 2
- PC-AA-1014-F-1; Project Risk Management Plan; Rev. 1
- OP-AA-108-101; Control of Equipment and System Status; Rev. 10
- OP-AA-108-117; Protected Equipment Program; Rev. 2

Assignment Reports:
- 1383748; 345KV Bus 1 Lockout Trip
- 1383770; TR 81 Fault
- 1383816; U1 Div 3 Switchgear and CSCS Supply Fan Found Off
- 1383822; Unit 2 Alternate RPS Power EPMAS Tripped
- 1383835; Unit 2 Div 3 Switchgear Rm. & CSCS Supply Fan Found Off
- 1383863; HWC Cryo Pumps Tripped in Thunderstorm
- 1384007; LOA-Torn Entry Due to Severe Weather
- 1384061; Discovered 2B RR Subloop #1 HPU Tripped on Thermals
- 1412892; BT 1-0 Bus 9 Disconnect Blades Slightly Out of Adjustment
- 1414271; Contingency to Install Power to RPS Bus if Power Loss
- 1414490; Unit 2 RB 761' Interlock Allows Both Doors to be Opened
- 1414490; Unit 2 RB 761' Interlock Allows Both Doors to be Opened
- 1414932; Vendor Was Late For Attending HLA Brief for '0" Diesel
- 1415001; U1 Div 1 Ground Troubleshooting '0' DG 0DG03J

Figures and Drawings:
- 6.3-80; UFSAR Post LOCA Time-Pressure in Secondary Containment; Rev 15

Calculations:
- L-003068; Leak, Transport, and Release Path; Rev. 2
- VG-3; Secondary Containment Internal Pressure Pulldown Time; Rev. 1

Working Documents:
- 1A DG Protected Equipment Log; 8/8/2012
- HU-AA-1211; HLA Briefing Worksheet for LaSalle's TRM Requirement: DG Fuel Oil Storage Tanks 10 Year Maintenance; 9/17/2012
- LS-AA-1110; Reportable Event SAF 1.8; Rev. 17
- OP-LA-101-111-1002; Attachment 5 U1 TSC UPS on Alt AC Bus 1 Unavailable; 9/11/2012

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- OP-LA-101-111-1002; Protected Equipment Log, Bus 1 Unavailable; 9/10/2012
- Protected Equipment Log; 0 DG Inop; 9/16/2012
- WO 1231882-01; OP LOS-CS-SR1, Secondary Containment Leak Rate; 3/22/2011
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- EN 48317; Malfunctioning Mechanical Door Interlock Could Have Prevented Fulfillment of Safety Function Needed to Control Release of Radioactive Material

Miscellaneous:
- Station Ownership Committee (SOC) Guide; 4/21/2004
- Operator Log Entries Report; 9/18/2012
- Operator Log Entries Report; 9/20/2012 – 9/21/2012
- Operator Log Entries Report; 6/29/2012 – 7/2/2012
- Operator Log Entries Report; 12/7/2012 – 12/17/2012
- U1 RIS Report for the 0DG Window; 9/18/2012
- LSCS-UFSAR 15.6; Radiological Consequences; Rev. 13
- LSCS-UFSAR 7.3; Reactor Building Ventilation and Pressure Control System; Rev. 13
- LSCS-UFSAR 9.4; Safety Evaluation; Rev. 13
- LSCS-UFSAR 9.1 – 9.4; Reactor Building/Spent Fuel; Rev. 19
- LSCS-UFSAR 6.5; Fission Product Removal and Control Systems; Revs. 19, 14, 17
- EN 20111223; Retraction of Event Notification "Reactor Building Ventilation Differential Pressure Above Technical Specifications"; 12/22/2011
- B 3.6.4.1; Secondary Containment Bases and Surveillance Requirements, Amendments No. 200/187, 197/184, 147/133; Rev. 51

<u>1R15 Operability Determinations and Functional Assessments</u>

Procedures:
- LOP-DG-02; Diesel Generator Startup and Operation; Rev. 52
- LOP-DO-01; Receiving and Sampling New Diesel Fuel Oil; Rev. 34

Assignment Reports:
- 1272534; Discrepancy in SC Piping Analysis
- 1295948; 2C41-R002 Out of Bank Rounds Reading
- 1326937; L1R14 Conditions for PBI Not Maintained
- 1332389; NOS ID: Questionable Answers to Two Op Eval Questions
- 1336959; RM – Change 2C41-R601 Hot & Cold Shutdown Boron Level Marks
- 1360872; Relief VLV. 2C41-F029B Failed Test
- 1365331; LOS-SC-07; Flush of SBLC Test Tank Required
- 1370176; GEH Containment Analysis
- 1371332; U-1 SBLC Flushing
- 1375300; U-1 TBV #4 No Fast Open
- 1380656; U1 SBLC Test Tank High Conductivity Following LOS-SC-Q1 1A
- 1383984; U2 MCR SBLC Storage Tank Level Reads High
- 1395931; Simulator HVAC Not Cooling Effectively

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- EC 366261-000; Diesel Fuel Oil Engineering Change; 8/21/2007

- EC 389155; Consequences of Failure to Properly Implement PBI Compensatory Actions Regarding Doors to Unit 1 TDRFP Rooms; Rev. 0
- OE 10-005; Potential Non-Conservative Tech Spec for EDG Fuel Oil; Rev. 3
- WO 1053110-02; Change Valve Stem Lubricant Using FEL-Pro N-5000; 8/27/2012
- WO 1136071-03; Op Eval 10 – 005 Compensatory Measure #2 Assignment Completion Notes; 11/23/2010
- WO 1136071-03; Op-Eval 10-005 Compensatory Measure #2: Ensure EDG Storage Tanks Minimum Fuel Level Monitored; 11/24/2010
- WO 1313478-02; PMT:2C41-F001B SBLC Storage Tank Outlet VLV; 8/27/2012

Operability Evaluations:
- OE 11-002; Drywell Temp Used as Input for the Containment Analysis; Rev. 3

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- 2P-81; Power Pointers, Published by Electro-Motive Division of General Motors, 2/25/1981
- FAI/12-0246; LaSalle Unit 1 Evaluation of TDRFP Access Plug Removal with Loss of Room Integrity During a Postulated Unit 2 HELB Event; Rev. 0

1R19 Post-Maintenance Testing

Procedures:
- LOP-VC-01; Control Room HVAC Operation; Rev. 43
- LOP-VE-01; Auxiliary electric Equipment Room HVAC Operation; Rev. 50
- LOS-DG-M2; 1A(2A) Diesel Generator Operability Test; Rev. 86
- LOS-DG-Q2; 1A(2A) Diesel Generator Auxiliaries Inservice Test; Rev. 53
- LOS-RD-SR12; Scram Insertion Times; Rev. 01
- LOS-VC-M1; Control Room Emergency Makeup Unit Operability Test; Rev. 27

Assignment Reports:
- 1238398; 1A D/G Day Tank Deluge Valve Leak
- 1242982; “0” Diesel Generator Fuel Oil Storage Tank Low Level Alarm
- 1387910; Delayed Start of ‘A’ VC Compressor During Swap
- 1400370; 0B AEER Condenser Coil Filter D/P High
- 1401060; Error on Eddy Current Report and Maps for 1DG01A
- 1407023; 1APA9E Unloaded to Loaded Voltage 1.95 Volts Different
- 1411411; Deformed Or Worn Seal on Damper 0VC08YA
- 1411785; ‘A’ VC Supply Fan Start Delay Time Excessive
- 1412370; Delay in Restoration of VC/VE Following Maintenance

Working Documents:
- CEA Exh. C; Concrete Expansion Anchors Re-Installation Checklist; 8/30/2012
- WO 1275317-04; Perform Internal Inspection OP PMT: 0VC53YA Outside Air Isolation Damper; 9/11/2012
- WO 1288562-04; Perform Internal Inspection OP PMT 0VE06YA; 9/11/2012
- WO 1288564-04; Perform Internal Inspection OP PMT 0VC14YA; 9/11/2012
- WO 1445924-01; LOS-DG-M2 1A Diesel Generator Att 1A-Idle; 8/15/2012
- WO 1485312-02; OPS PMT Control Switch for 0VC01CA Hard to Turn; 9/11/12
- WO 1523903-01; EM: Replace U2 ALT RPS Transformer; 3/16/2012
- WO 1523903-01; Replace 1APA9E Alternate RPS Transformer; 8/30/2012
- WO 1523903-03; Conduct Post-Maintenance Unloaded Voltage Checks; 8/30/2012
- WO 1523903-03; FNE PMT:U-1 ALT RPS Supplies Proper Output; 8/28/2012
- WO 1530378-04; Suspect Damper Is Not Fully Shutting OP PMT; 9/12/2012

- WO 1550435-01; 1A DG Fuel Oil Transfer Pump Test; 9/10/2012

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- PMT Traveler; RPS Bus Alternate Feed Voltage Regulating Transformers Post-Maintenance Load Test; 8/30/2012
- UFSAR Fig. 7.2-1; Reactor Protection System IED; Rev. 18

1R22 Surveillance Testing

Procedures:
- ER-AA-321; Administrative Requirements for Inservice Testing; Rev. 11
- ER-AA-321-1001; Inservice Testing, Bases Document Format and Content; Rev. 5
- ER-AA-330; Conduct of Inservice Inspection Activities; 8/22/2012
- IST-LAS-BDOC-V-10; LaSalle Inservice Testing Program Bases Document; High Pressure Core Spray; 5/25/2011
- IST-LAS-BDOC-V-26; LaSalle Inservice Testing Program Bases Document; Residual Heat Removal; 5/24/2011
- LOP-LP-04; Low Pressure Core Spray/System Normal Startup and Shutdown; Rev. 13
- LOP-PR-06; Startup and Operation of the Liquid Process Radiation Monitoring System; Rev. 18
- LOP-RH-13; Suppression Pool Cooling Operation; Rev. 31
- LOS-DG-M2; 1A(2A) Diesel Generator Operability Test; Rev. 87
- LOS-DG-Q3, Att. 5; 1B(2B) Diesel Generator Auxiliaries Inservice Test; Rev. 59
- LOS-RH-Q1; RHR (LPCI) and RHR Service Water Pump and Valve Inservice Test for Modes 1,2,3,4 and 5; Rev. 79
- LOS-RI-Q5; Reactor Core Isolation Cooling (RCIC) System Pump Operability, Valve Inservice Tests in Modes 1,2,3 And Cold Quick Start; Rev. 34
- OP-AA-108-106; Inservice Testing; Rev. 4

Assignment Reports:
- 1237460; LOS-DG-M3 Requires LOS-OG-SR7 To Be Performed
- 1237692; Low Backwash Flow on LOS-OG-SR7
- 1237911; 28 DG CWP Strainer Stopped Rotating While In 'Hand'
- 1239517; 2E51-F356 Has 1 Drop Per 2 Min. Packing Leak
- 1254413; DG Operability During WS Backwash Strainer VLV Oil Changeout
- 1263812; Valve Leaks By - Was Not Repaired Under WO: 930423-01
- 1265333; Site Review of Limerick OE 33580 on EDG Output Breaker
- 1266015; 1 Drop Per 3 Minute Leak from 1E51-F356 Stem
- 1266027; Unable to Adjust Pressure
- 1294906; 2DG08DA No Power
- 1294907; 2DG08DA No Power
- 1299332; Inspections Required For Raw Water Corrosion Program
- 1300472; 2B DG Cooling Water HX Leakage 0.25 GPM
- 1300540; 28 DG Service Water Strainer Failed To Auto B/W
- 1319815; 2B DG B/W Strainer Tech Spec Window > 10% Allowance
- 1326957; 1E51-F084 Failed IST Closure Test
- 1327349; RCIC Pressure Instrument 1E51-R901 Is Degraded
- 1334550 1E51-F084 As-Left Failed IST Closure Test
- 1335742; 1E51-F084 RCIC Check Valve IST Failure, Start Up Issue
- 1348409; Small Steam Leak from RI Level Detector
- 1354525; Inst. OOT., LPS-CD124,Trend Code B4

- 1357577; Need T-Gap Measurement on 20G011
- 1364109; 2E22-S001 HX End Cover Found Degraded
- 1364535; 2E51-N010 Steam Leak Increase
- 1365191; 2B Dig Cooler HX Has Appx 2 GPM Leak When Cooling Pump On
- 1374942; Minor Leakage from the 2B DG Cooling Water Heat Exchanger
- 1376925; Post-Job Review Of 2B DG Work Window
- 1377020; U-2 RCIC Pump Min Flow Valve Failed to Open When Required
- 1384983; Procedure Attachment I Size Does Not Match the D030 Panel
- 1386442; 2B DG Cooling Water Heat Exchanger Leakage
- 1388117; Screw Loose and Too Long on Annunciator Alarm Horn
- 1392995; Oil Analysis Identifies Increased Wear in COMPR-0DG08CA
- 1393998; IEMA: Question Related to Op Eval 10-005
- 1395542; Received LOR-1H13-P601-A501 1B DG Engine Trouble Alarm
- 1395764; 0DG Room Floor Coating Chipping – 0ZZ-DG000
- 1397256; 2E22-F319 Would Not Close Following Backwash as Required
- 1400185; Inst. OOT, 1TS-DG041, Trend Code B4
- 1400318; Inst. OOT, 1TS-DG040, Trend Code B4
- 1400383; 1DG075 Coolant Leak
- 1401060; Error on Eddy Current Report and Maps for 1DG01A
- 1401103; EDG Overspeed Limit Switch Lessons Learned for LMS-DG-01
- 1403228; 2E12F336A Not Open with a RHR WS Strainer Backwashing
- 1406125; Instrumentation Spike While Returning to Service
- 1436963; 1E51-F082 Failed IST Closure Test

Figures and Drawings:
- CSCS-1: Core Standby Cooling; 9/3/2009

Working Documents:
- LOS-DG-M2; Tech Spec Surveillance, U2 2A Diesel Generator Idle Start Att 2A-IDLE; 8/26/2012
- LOS-DG-Q3; Attachment B5, 2B DG Cooling Water Pump Inservice Test Results; 8/6/2012
- LOS-RH-Q1; Att. 2D, Unit 2 A RHR Service Water System Operability and Inservice Test
- WO 1540926-01; LOS-DG-Q3, 2B D/G Cooling Water Pump Inservice Test, Att. B5; 8/3/2012
- WO 1544149-01; LOS-RH-Q1 2A RHR WS Operability & Inservice Test; 8/20/2012
- WO 1550151-01; LOS-RI-Q5 U2 RCIC Cold-Quick Start Att 2A; 9/10/2012

Miscellaneous:
- UFSAR 3.7.1; Residual Heat Removal Service Water (RHRSW) System; Amendment 194/181

<u>1EP6 Drill Evaluation</u>

Miscellaneous:
- EP-AA-122-1001; Conduct of Drive-In Augmentation (DID) Drills; Rev. 15

<u>4OA1 Performance Indicator Verification</u>

Procedures:
- ER-AA-2008; Mitigating Systems Performance Index (MSPI) Failure Determination Evaluation; Rev. 2
- ER-AA-2020; Equipment Performance and Information Exchange (IPIX); Rev. 6
- ER-AA-600-1047; Mitigating Systems Performance Index Basis Document; Rev. 7
- LS-AA-2001; Collecting and Reporting of NRC Performance Indicator Data; Rev. 14

- LS-AA-2200; Mitigating System Performance Index Data Acquisition and Reporting; Rev. 5
- LS-MSPI-001;ROP Mitigating Systems Performance Index Basis Document; Rev. 13

Working Documents:
- MSPI Indicator Margin Remaining in Green, Units 1 & 2; 6/2012
- MSPI Indicator Values, Units 1 & 2; 6/2010 – 6/2012

4OA2 Identification and Resolution of Problems

Assignment Reports Resulting from NRC/IEMA Inspection:
- 1385730; IEMA IDNS Concern
- 1389457; IEMA ID – Fire Door 377 Is Degraded
- 1390287; Procedure Guidance for Start of SBGT
- 1390288; NRC ID Changes Needed to Calc L 000857
- 1390634; Licensing Basis for Use of MTRS in CSCS Piping Analysis
- 1390774; NRC Triennial Inspection Issue UHS Fish Mortality
- 1394856; IEMA Concern: CO2 System Channel Functional Test
- 1395168; NRC Id'd: Revision Needed for ER-AA-335-007
- 1395168; Revision Needed for ER-AA-335-007
- 1395233; IEMA Question GL 89-13 Low Flow Lines
- 1395277; IEMA Question: Clarify Requirements for Leak Tight Barriers
- 1395739; EC372452 Needs Revision; August 1, 2012
- 1397628; NRC ID: Potential Enhancements to SR 3.5.1.1 Surveillances
- 1397628; Potential Enhancements to SR 3.5.1.1 Surveillances
- 1398957; Discrepancies Identified In Calculation PC-05
- 1399327; IEMA Concern: RCIC Underground Suction Line Pressure Test
- 1400648; NRC Question - Seismic Interaction/Clearance – Documentation
- 1400648; Seismic Interaction/Clearance Documentation
- 1400893; EP NRC Graded Exercise: Facilities and Equipment Issues
- 1400909; EP NRC Graded Exercise: Procedure Quality Issue
- 1400931; EP NRC Graded Exercise: SIM UNSAT Demonstration Criteria
- 1400941; EP NRC Graded Exercise: SIM Performance Issues
- 1400953; EP NRC Graded Exercise: TSC UNSAT Demonstration Criteria
- 1401029; EP NRC Graded Exercise: TSC Performance Issues
- 1401051; EP NRC Graded Exercise: OSC Unsat Demonstration Criteria
- 1401078; EP NRC Graded Exercise: OSC Performance Issues
- 1401163; NRC ID LPCI Inoperability During Shutdown Cooling in Mode 3
- 1401165; E12-F004A/B GL 95-07 Disposition
- 1401165; NRC ID E12-F004A B Generic Letter 9507 Disposition
- 1402050; Excessive Waste Generated
- 1402166; IEMA ID – FP Values
- 1402755; IEMA Questioned Stable Frequency Range in LOS-DG-M2
- 1403050; Open Question Remaining from GL-2008-01 NRC Inspection
- 1403210; IEMA Questions
- 1403422; IEMA Concern U2 MSIV Limit Switch EQ
- 1405399; OE Security Review from xxxx Site (Non-Exelon)
- 1407147; IEMA Question on Unit 1 SPDS SP Temperature
- 1407182; WS Support Followup Report (IEMA)
- 1407376; IEMA Concern: Inspection of Lines for Min Wall Requirements
- 1409097; NRC Request for Additional Information for UHS LAR
- 1410181; NRC Triennial 50.59 Mod Inspection – Typo in Screening L10-128

- 1410193; NRC Id'd – Enhancement to LFP-100-1
- 1410906; Questions from IEMA Representative
- 1411858; Post Inspection Lessons Learned: 2012 NRC UHS and GL 89-13
- 1415864; NRC ID: Issues Found in Calculation L-003226
- 1416141; Inadequate 10CFR50.59 Screening
- 1416167; OPEX Review Identifies Non-conservative Atmospheric Pressure

4OA5 Other Activities - TIs

Procedures:
- ATI-1245672-06; NRC IN 2011-17; 9/12/2011
- ATI-935272-05; Prairie Island LER 2009-004-00 RHR Inoperability While in Mode 4; 8/26/2009
- CC-AA-102; Design Input And Configuration Change Impact Screening; Rev. 23
- ER-AA-2009; Managing Gas Accumulation; Rev. 1
- ER-AA-335-007; Ultrasonic Inspection for Determination of Sedimentation in Piping Systems or Components and Fluid Level Measurements; Rev. 3
- ER-AA-5400; Buried Piping and Raw Water Corrosion Program (BPRWCP) Guide; Rev. 5
- ER-AA-5400-1002; Buried Piping Examination Guide; Rev. 4
- ER-AA-5400-1003; Buried Pipe and Raw Water Corrosion Program (BPRWCP) Performance Indicators; Rev. 4
- ISI-HP-1001; ISI Isometric HPCS Southeast Loop; 6/7/1994
- ISI-HP-1005; ISI Isometric HPCS; 3/25/2002
- ISI-LP-1001; ISI Isometric LPCS North Loop; 6/8/1994
- ISI-RH-1002; ISI Isometric RHR System; 6/21/1994
- ISI-RH-1003; ISI Isometric RHR System; 4/26/2000
- ISI-RH-1006; ISI Isometric RHR System; 6/22/1994
- ISI-RH-1020; ISI Isometric RHR System; 6/23/1994
- LGA-003; Primary Containment Control; 3/4/2012
- LIS-CM-101; Level Indication Calibration Data Table; Rev. 13
- LOP-RH-06; Venting the RHR Shutdown Cooling System Suction Leg; 1/5/2004
- LOP-RH-07; Shutdown Cooling System Startup, Operation, and Transfer; 12/2/2011
- LOR-1H13-P601-A406; HPCS Header Pressure High; 4/3/2009
- LOS-HP-M1; HPCS System Operability Test; 4/24/2009
- LOS-LP-M1; LPCS System Operability Test; 12/15/2011
- LOS-RH-M1; RHR System and RHR System Operability Test; 4/9/2012
- LOS-RH-Q2; Attachment 6B, 2B RHR MOV IST – 2 Year Frequency; 4/4/2012
- LTS-900-2; Low Pressure Core Spray Pressure Isolation Valves Water Leak Test 1(2)E21-Foo6 and 1(2)E21-F005; 1/25/2012
- OP-AA-108-106; Equipment Return to Service; Rev. 4
- SA-AA-122; Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic Containers/Dewars; Rev. 10

Assignment Reports:
- 0988330; LOP-RH-07 Procedure Enhancements Identified
- 1010327; UT Finds Small Void Upstream of 2E12-F016B After LOS-RH-Q2
- 1030374; HPCS LOP-HP-01 Confirmatory Fill and Vent UT Data Trending
- 1317312-04; Preparation for NRC Inspection on GL 2008-01
- 1357866-01; Buried Piping (NRC Inspection TI-2515/182) - CHECK-IN Assessment
- 1370636; Containment Spray Piping Analyses

Figures and Drawings:
- ISI-RH-1031; Inservice Inspection Isometric Residual Heat Removal System; Rev. A
- ISI-RH-2001; Inservice Inspection Isometric Residual Heat Removal System; Rev. A
- ISI-RH-2002; Inservice Inspection Isometric Residual Heat Removal System; Rev. A
- ISI-RH-2007; Inservice Inspection Isometric Residual Heat Removal System; Rev. A
- ISI-RH-2008; Inservice Inspection Isometric Residual Heat Removal System; Rev. A
- ISI-RH-2036; Inservice Inspection Isometric Residual Heat Removal System; Rev. A
- M-94; P&ID Low Pressure Core Spray (LPCS); Rev. AN
- M-95; High Pressure Core Spray (HPCS); Rev. AP
- M-96 Sheet 1; P&ID Residual Heat Removal System (R.H.R.S); Rev. AY
- M-96 Sheet 2; P&ID Residual Heat Removal System (R.H.R.S); Rev. AY
- M-96 Sheet 3; P&ID Residual Heat Removal System (R.H.R.S); Rev. AT
- M-140; P&ID Low Pressure Core Spray (LPCS); Rev. AO
- M-141; High Pressure Core Spray (HPCS); Rev. AR
- M-142 Sheet 1; P&ID Residual Heat Removal System (R.H.R.S); Rev. AX
- M-142 Sheet 2; P&ID Residual Heat Removal System (R.H.R.S); Rev. AW
- M-142 Sheet 3; P&ID Residual Heat Removal System (R.H.R.S); Rev. BB
- M-142 Sheet 4; P&ID Residual Heat Removal System (R.H.R.S); Rev. AD

Calculations:
- L-001249; Determination of Allowable Pressure Drop for ECCS Suction Strainers; 6/15/2011
- L-002319; Vortex Worksheet for LPCS; 4/3/2000
- L-002320; Vortex Worksheet for HPCS; 4/29/2000
- L-002321; Vortex Worksheet for RHR; 5/1/2000
- L-003354; ECCS and RCIC NPSH Road Map Calculation; 6/15/2011
- L-003491; Allowable Air Pocket in Water Filled RHR (LPCI) Piping; Rev. 6
- PC-5; Suppression Pool Level Required for Conditions 4 and 5; 7/23/1981
- PMRQ92024; 1HP02A-12 Gas Pocket Volume Check; Rev. 2
- PMRQ92025; 2HP02A-12 Gas Pocket Volume Check; Rev. 2
- PMRQ92190; 1LP02A-16 Gas Pocket Volume Check; Rev. 2

Working Documents:
- 034934(EMD); Piping Stress Report Subsystem 2RH14; Rev. 2B
- 035374(EMD); Piping Stress Report Subsystem 2RH15; Rev. 1E
- EC367684; NSRB Safety Issue – Post-LOCA H2 Mon Gas Storage; 11/5/2007
- EC371496; Potential for Trapped Air in the RHR A System; Rev. 1
- EC371572; GL 2008-01 System Evaluation LPCS; Rev. 3
- EC371601; GL 2008-01 System Evaluation HPCS; Rev. 3
- EC371602; GL 2008-01 System Evaluation RHR; Rev. 3
- EC372452; GL 2008-01 Void Calculation and Acceptance Criteria; Rev. 1
- WO 01079599-03; Perform LES-GM-109 for 2E12F016B @ MCC 236Y-1/C5 (2AP82E); 12/28/2009
- WO 01265097; Suppression Chamber Wide and Narrow Ring Water Level Indication; 7/28/2011
- WO 01329721; LOS-RH-Q2 ATT 5B, U1 B MOV IST; 4/4/2012
- WO 01472870; 1LP02A Gas Pocket Volume Check; 3/14/2012
- WO 01477741; LOS-HP-Q1 U1 HPCS Pump-Run; 1/5/2012
- WO 01490500; LOS-RH-Q1 1C RHR System Operability; 2/1/2012
- WO 01500020; LOS-LP-Q1 U1 LPCS; 3/21/2012

Miscellaneous:

- Buried Pipe and Raw Water Systems, Long Term Asset Management (LTAM) Strategy; Rev. 5
- Buried Pipe Inspection Plan – LaSalle County Station; Rev. 1
- CSI Report No. 0600.109-3; Exelon Buried Piping Risk Ranking – LaSalle County Generating Station; 11/12/2009
- LUCR-214; USAR 6.3.2.2.5 Change; 7/30/2010

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AR	Assignment Report (also known as Issue Report)
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
CAP	Corrective Action Program
CC	Containment Cooling
CFR	Code of Federal Regulations
CSCS	Core Standby Cooling System
DG	Diesel Generator
EC	Engineering Change
ECCS	Emergency Core Cooling System
GL	Generic Letter
HELB	High Energy Line Break
HPCS	High Pressure Core Spray
IMC	Inspection Manual Chapter
IP	Inspection Procedure
LCO	Limiting Condition for Operation
LPCI	Low Pressure Coolant Injection
LPCS	Low Pressure Core Spray
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	NRC Office of Nuclear Reactor Regulation
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post-Maintenance Testing
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RPS	Reactor Protection System
SBLC	Standby Liquid Control
SDP	Significance Determination Process
SSC	System, Structure, and Component
SW	Service Water
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UHS	Ultimate Heat Sink
URI	Unresolved Item
VC	Control Room Ventilation
VE	Auxiliary Electrical Equipment Room Ventilation
WO	Work Order
WS	Service Water

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/RA/

Michael Kunowski, Chief
Branch 5
Division of Reactor Projects

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