



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

May 13, 2011

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

**SUBJECT:** LASALLE COUNTY STATION, UNITS 1 AND 2 – NRC TEMPORARY  
INSTRUCTION 2515/183 INSPECTION REPORT 05000373/2011010;  
05000374/2011010

Dear Mr. Pacilio:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your LaSalle County Station, Units 1 and 2, using Temporary Instruction (TI) 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event." The enclosed inspection report documents the inspection results which were discussed on Thursday, May 5, 2011, with the Site Vice President, Mr. David Rhoades and other members of your staff.

The objective of this inspection was to promptly assess the capabilities of LaSalle County Station to respond to extraordinary consequences similar to those that have recently occurred at the Japanese Fukushima Daiichi Nuclear Station. The results from this inspection, along with the results from this inspection performed at other operating commercial nuclear plants in the United States, will be used to evaluate the U.S. nuclear industry's readiness to safely respond to similar events. These results will also help the NRC to determine if additional regulatory actions are warranted.

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in the next quarterly report. You are not required to respond to this letter.

M. Pacilio

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

Sincerely,

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Kenneth Riemer, Chief  
Branch 2  
Division of Reactor Projects

Docket Nos. 50-373; 50-374  
License Nos. NPF-11; NPF-18

Enclosure: Inspection Report 05000373/2011010; 05000374/2011010

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000373; 05000374;  
License Nos: NPF-11; NPF-18

Report No: 05000373/2011010; 05000374/2011010

Licensee: Exelon Generation Company, LLC

Facility: LaSalle County Station, Units 1 and 2

Location: Marseilles, IL

Dates: March 23, 2011, through April 29, 2011

Inspectors: R. Ruiz; Senior Resident Inspector  
F. Ramírez, Resident Inspector  
J. Yesinowski, Illinois Dept. of Emergency Management

Approved by: Kenneth Riemer, Chief  
Branch 2  
Division of Reactor Projects

Enclosure

## **SUMMARY OF FINDINGS**

IR 05000373/2011010; 05000374/2011010, 03/23/2011 – 04/29/2011; LaSalle County Station Temporary Instruction 2515/183 - Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event.

This report covers an announced Temporary Instruction (TI) inspection. The inspection was conducted by Resident and Region III inspectors. 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.

### **INSPECTION SCOPE**

The intent of the TI is to provide a broad overview of the industry's preparedness for events that may exceed the current design basis for a plant. The focus of the TI was on (1) assessing the licensee's capability to mitigate consequences from large fires or explosions on site, (2) assessing the licensee's capability to mitigate station blackout (SBO) conditions, (3) assessing the licensee's capability to mitigate internal and external flooding events accounted for by the station's design, and (4) assessing the thoroughness of the licensee's walk downs and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. If necessary, a more specific follow-up inspection will be performed at a later date.

### **INSPECTION RESULTS**

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in the next quarterly report.

03.01 Assess the licensee’s capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats, committed to as part of NRC Security Order Section B.5.b issued February 25, 2002, and severe accident management guidelines (SAMG) and as required by Title 10 of the Code of Federal Regulations (10 CFR) 50.54(hh). Use Inspection Procedure (IP) 71111.05T, “Fire Protection (Triennial),” Section 02.03 and 03.03 as a guideline. If IP 71111.05T was recently performed at the facility, the inspector should review the inspection results and findings to identify any other potential areas of inspection. Particular emphasis should be placed on strategies related to the spent fuel pool. The inspection should include, but not be limited to, an assessment of any licensee actions to:

<b>Licensee Action</b>	<b>Describe what the licensee did to test or inspect equipment.</b>
<p>a. Verify through test or inspection that equipment is available and functional. Active equipment shall be tested and passive equipment shall be walked down and inspected. It is not expected that permanently installed equipment that is tested under an existing regulatory testing program be retested.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>Licensee actions included the identification of equipment (active and passive) and procedures used for implementation of B.5.b and SAMG actions.</p> <p>To ensure B.5.b related procedures and equipment are in a state of readiness, the licensee conducted inspections and testing of LaSalle equipment using OP-AA-201-010-1001, B.5.b Mitigating Strategies Equipment Expectations. The scope of the equipment specifically designated for B.5.b included special hoses, fittings, portable diesel driven pump, etc. The licensee identified surveillances and performance tests for the identified equipment, and reviewed the results of recent tests. In addition, active equipment within the scope defined above was tested and verified to be operational. This included testing of the portable diesel driven pump and the portable generator. Passive equipment within the scope was also walked down and inspected by the licensee. Lastly, the licensee conducted an inventory of all B.5.b support equipment.</p> <p>To demonstrate readiness for SAMG strategies, procedures that directly support the execution of emergency operating procedure (or LGA, at LaSalle) were walked down, in addition to the LGA support procedures.</p>

	<p><b>Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).</b></p>
	<p>The inspectors conducted a review of the licensee’s walkdown activities and assessed their thoroughness. In addition, the inspectors independently walked down and inspected all major B.5.b contingency response equipment staged throughout the site. The inspectors also verified that the required preventive maintenance and surveillance requirements for B.5.b related equipment was current and that there were no outstanding equipment issues. Lastly, the inspectors reviewed open corrective action documents generated during the licensee’s inspection to identify vulnerabilities that may not have yet been addressed.</p>
	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>All equipment designated for B.5.b use was verified by the licensee to be in applicable procedures. All passive equipment was verified to be in place and ready for use. All applicable active equipment located at the site was verified in place by the licensee, and the ones that had surveillance and/or preventative maintenance tasks had those activities performed to verify readiness for use. This included operational testing of the B.5.b pump and of the portable generator. During testing of the portable diesel driven pump, the licensee identified minor issues, such as a failed pump discharge pressure gauge that was replaced, and some enhancements needed for the surveillance procedure. The issues described above were entered and addressed through the licensee’s corrective action program (CAP).</p> <p>The results of the inspectors’ independent walkdowns confirmed the results obtained by the licensee. This included an inventory of all B.5.b support equipment.</p>

<b>Licensee Action</b>	<b>Describe the licensee's actions to verify that procedures are in place and can be executed (e.g., walkdowns, demonstrations, tests, etc.)</b>
<p>b. Verify through walkdowns or demonstration that procedures to implement the strategies associated with B.5.b and 10 CFR 50.54(hh) are in place and are executable. Licensees may choose not to connect or operate permanently installed equipment during this verification.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>Licensee actions included the identification of those procedures used to mitigate the consequences of a B.5.b related event and severe accidents. To validate the adequacy of the procedures and to ensure that existing capabilities to mitigate conditions that result from beyond design basis events are in place, members of the licensee's operations and engineering departments walked down the procedures. The walkdowns also verified that the approved copies of the procedures were physically located in designated locations and that they were current and in good condition. The licensee then compiled verification documentation for procedure validations and any identified procedure issues.</p>
	<p><b>Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.</b></p>
	<p>The inspectors assessed the licensee's capabilities by conducting a review of the licensee's walkdown activities. In addition, the inspectors walked down a sample of the procedures reviewed by the licensee to independently verify the licensee's conclusions. The inspectors' review focused on the LOA-SY series of procedures that deal mainly with actions to supply cooling water to the plant through alternate methods during a beyond design basis event. The inspectors assessed the adequacy and completeness of the procedures, staging and compatibility of equipment and the practicality of the operator actions prescribed by the procedures, consistent with the postulated scenarios. Lastly, the inspectors reviewed open corrective action documents generated during the licensee's inspection to identify vulnerabilities that may not have yet been addressed.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
<p>LOA-SY-004, Extreme Damage Mitigation Strategies, was reviewed and walked down by the inspectors. This procedure provides plant operators guidance to use a portable diesel drive pump to transport water from an alternate source in the plant in case of a beyond design basis event. The inspectors noted that the strategy involves routing water throughout the plant using hoses to reach various locations specified in the procedure. The location depends on the type of scenario.</p>	

	<p>The inspectors observed that the procedure generally lacked specific detail in that it does not specify alternate routes in case the first option to route water were to be unavailable. If the preferred water route were to be unavailable, the operators would have to assess the situation and then devise a plan to route the hoses appropriately. Operators would have to accomplish this based on their own plant knowledge due to the apparent lack of related training or procedural guidance. The inspectors noted that while the operators could be forced to troubleshoot and formulate a new strategy to transport water real-time, the timeliness requirement to accomplish these steps could be challenged.</p> <p>The inspectors noted that the B.5.b pump has an alternate suction source, i.e., direct suction from the LaSalle Lake, to provide another water source in the event that the preferred source is unavailable; however, there is no existing procedural guidance to establish this alternate suction supply. The licensee stated that, should the need arise, this activity would be conducted through skill of the craft. The inspectors noted that taking suction directly from the lake is not currently a credited source of water for a B.5.b event at LaSalle, but the credited source of water may not be available following a seismic event or a station blackout of sufficient duration.</p> <p>Procedures used for B.5.b were reviewed by the licensee and walkdowns were performed by operators to ensure actions taken in the field in response to a B.5.b event could be performed. The licensee identified minor procedure enhancements for both SAMG and B.5.b procedures that were entered into the corrective action program.</p>
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Licensee Action	Describe the licensee's actions and conclusions regarding training and qualifications of operators and support staff.
<p>c. Verify the training and qualifications of operators and the support staff needed to implement the procedures and work instructions are current for activities related to Security Order Section B.5.b and severe accident management guidelines as required by 10 CFR 50.54 (hh).</p>	<p>Licensee actions included the identification of training/qualification requirements for operators for the implementation of actions needed to mitigate a B.5.b related event, and for the implementation of actions needed for the SAMGs. The licensee documented that operator training requirements were current, and identified the training cycles that would be provided to licensed and non-licensed operators as continuing training on B.5.b strategies. In addition, the licensee identified the tasks that were added to the training curriculum to satisfy B.5.b and SAMG procedural requirements.</p> <p>The licensee also identified the training/qualification requirements for applicable emergency response organization (ERO) command and support staff for the implementation of actions needed to mitigate a B.5.b related event and for the implementation of actions needed for the SAMGs. The licensee documented that ERO command and support staff training requirements were current.</p>
	<p><b>Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff</b></p>
	<p>The inspectors assessed the licensee's training and qualification activities by conducting a review of training and qualification materials and records related to B.5.b and SAMG event response. Specifically, the inspectors examined a sample of the introductory and refresher training provided to the Operations staff. The review consisted of examination of training presentations, lecture notes and training records. The inspectors also reviewed a sample of attendance rosters for training cycles that included B.5.b and SAMG training to verify that qualification for the operators was current and that training is being provided throughout levels of the Operations staff.</p>

	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The training requirements, qualifications, and associated records needed for operators for the implementation of SAMGs and B.5.b event response were reviewed by the licensee and determined to be up-to-date. Necessary continuing training for shift managers, unit supervisors, licensed and non-licensed operators was identified, and verified on the schedule for future training cycles. The training requirements, qualifications, and associated records needed for ERO command and support staff for the implementation of actions needed to mitigate a B.5.b event or implement the SAMGs were also reviewed. All ERO command and support staff training requirements were verified as current by the licensee. The inspectors did not identify any deficiencies.</p>
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<p><b>Licensee Action</b></p>	<p><b>Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.</b></p>
<p>d. Verify that any applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of these events.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>Licensee actions included the identification of all applicable contracts and agreements committed to be in place during times of extreme damage or unforeseen conditions. These include municipal fire departments, local hospital and police departments. The licensee verified that the contracts and agreements were current; however, the licensee did not verify that the required offsite equipment was available.</p>

	<p><b>For a sample of mitigating strategies involving contracts or agreements with offsite entities, describe inspector actions to confirm agreements and contracts are in place and current (e.g., confirm that offsite fire assistance agreement is in place and current).</b></p>
	<p>The inspectors verified that the licensee had, in place, current letters of agreement with off-site agencies to provide assistance in mitigation strategies. The inspectors reviewed a sample of the letters of agreement and interviewed Emergency Preparedness personnel in order to acquire an understanding of the agreements between LaSalle and other off-site agencies, and to ensure that documented measures were achievable.</p>
	<p><b>Discuss general results including corrective actions by licensee.</b></p>
	<p>The inspectors observed that during their review, the licensee did not evaluate the applicable agreements and contracts to verify that they were capable of meeting the conditions needed to mitigate the consequences that result from beyond design basis events. The licensee did not verify that the required offsite equipment was available. The licensee's review was limited to identifying the applicable agreements and verifying that the letters of agreement were current.</p> <p>During the review of the letters of agreement, the inspectors noted a general lack of detailed arrangements between the licensee and the involved outside organizations. Specifically, other than stating that the organization in question will provide support to the plant during an emergency, the letters of agreement included dates for which the agreement is valid and offered training and tours to the specific organization. The letters of agreement did not provide any detail explaining the conditions of the agreement and what was committed from each party during an event.</p>

Licensee Action	Document the corrective action report number and briefly summarize problems noted by the licensee that have significant potential to prevent the success of any existing mitigating strategy.
<p>e. Review any open corrective action documents to assess problems with mitigating strategy implementation identified by the licensee. Assess the impact of the problem on the mitigating capability and the remaining capability that is not impacted.</p>	<p>The licensee performed a review of past CAP documents related to B.5.b equipment or inspections starting in 2006 to present date. The objective of the review was to ensure that no outstanding action items were present with respect to their assessment of their readiness to respond to a beyond design basis event.</p> <p>During the assessment of their readiness to respond to a beyond design basis event, the licensee identified around 40 minor issues that were documented in the corrective action program. The majority of these issues involved procedure enhancements. A complete list of the issue reports documented in the licensee's corrective action program is documented in the List of Documents Reviewed in this report. The inspectors reviewed the issue reports for potential impact to the licensee's mitigation strategies. No significant impacts were identified.</p>

03.02 Assess the licensee’s capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63, “Loss of All Alternating Current Power,” and station design, is functional and valid. Refer to TI 2515/120, “Inspection of Implementation of Station Blackout Rule Multi-Plant Action Item A-22,” as a guideline. It is not intended that TI 2515/120 be completely reinspected. The inspection should include, but not be limited to, an assessment of any licensee actions to:

<b>Licensee Action</b>	<b>Describe the licensee’s actions to verify the adequacy of equipment needed to mitigate an SBO event.</b>
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee reviewed and walked down all procedures utilized in the response to an SBO condition to identify all required materials were functional and properly staged. Materials required for the execution of SBO response activities are inventoried by the licensee on a semi-annual frequency and were last performed on March 26 and 27, 2011. Additionally, the licensee performed a review of the NRC Safety Evaluation of LaSalle County Station’s response to the SBO to ensure continued compliance with the rule. Also, the licensee conducted a review of recent (2008 to present) CAP items to identify any outstanding items that may impact the SBO response capability of the station.</p>
	<p><b>Describe inspector actions to verify equipment is available and useable.</b></p> <p>The inspectors assessed the licensee’s capability to mitigate SBO conditions by conducting a review of the licensee’s walkdown activities. In addition, the inspectors selected a sample of equipment utilized/required for mitigation of an SBO and conducted independent walkdowns of that equipment to verify that required equipment was staged. The inspectors also performed an independent review of the preventive maintenance and technical specification surveillance testing records for the SBO credited systems (High Pressure Core Spray (HPCS) and Reactor Core Isolation Cooling (RCIC)) to verify that the required maintenance and testing is being performed.</p>

	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The inspectors concluded overall that the licensee's reviews verified that SBO equipment was ready to respond to an SBO condition. The licensee's walkdowns of procedures identified some minor procedure enhancements and were captured in the licensee's corrective action program. Licensee ARs generated as a result of this section are listed in the Attachment of documents reviewed.</p> <p>Through an independent review of applicable procedures, the inspectors observed that the inventory for LGA-required materials, LAP-820-11TG, did not contain steps to verify the staging of all required materials. Specifically, LGA-RI-103 and 203, Unit 1 and Unit 2 Reactor Pressure Vessel Injection using RCIC when loss of DC is Imminent or has Occurred, was not included in the inventory checklist. The licensee captured the issue in its CAP, as AR 01209052, confirmed that the necessary materials were actually present in the field, and plans to revise the inventory procedure to include the missing procedures in the inventory checklist.</p>
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<b>Licensee Action</b>	<b>Describe the licensee's actions to verify the capability to mitigate an SBO event.</b>
<p>b. Demonstrate through walkdowns that procedures for response to an SBO are executable.</p>	<p>The licensee walked down all procedures that contain actions to be performed during a station blackout to ensure that the procedures were executable. Additionally, a simulator scenario was performed as an added measure to assess the use of LOA-AP-101, Unit 1 AC Power System Abnormal, as it is the procedure governing the SBO actions., and identify any deficiencies in the procedure execution.</p>

	<p><b>Describe inspector actions to assess whether procedures were in place and could be used as intended.</b></p> <p>The inspectors assessed the licensee's capabilities by conducting a review of the licensee's walkdown and review activities. In addition, the inspectors selected a sample of the procedures walked down by the licensee and walked those down to independently verify the licensee's conclusions.</p>
	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee determined that all SBO procedures identified through this review were in place, approved for use, and fully executable. Through the licensee's walkdowns, some minor procedure enhancements were identified and were captured in the stations CAP. Controlled copies of the procedures identified were verified by the licensee to be located in those areas required to have them available, and to be in good condition and of the proper revision. Licensee ARs generated as a result of this section are listed in List of Documents Reviewed.</p> <p>Through an independent review of applicable procedures and the current licensing basis documents for SBO, including the Updated Final Safety Analysis Report (UFSAR) Chapter 15.9 SBO coping analysis, the inspectors observed that a time-critical SBO recovery step in the analysis was not included in the licensee's SBO response procedures. Specifically, the UFSAR section states that the SBO analyses for suppression pool temperature assumes that suppression pool cooling is established in 15 minutes or less following an SBO in order to keep pool temperatures within the environmental qualification temperature rating for various HPCS, RCIC and residual heat removal (RHR) system materials; however, no time-critical aspect of that recovery step is contained in any current station procedure. The licensee captured this observation in AR 01209674 and plans to determine if a change to any procedures is necessary to inform the operator to place an RHR heat exchanger in service within 15 minutes of SBO recovery.</p>

03.03 Assess the licensee’s capability to mitigate internal and external flooding events required by station design. Refer to IP 71111.01, “Adverse Weather Protection,” Section 02.04, “Evaluate Readiness to Cope with External Flooding,” as a guideline. The inspection should include, but not be limited to, an assessment of any licensee actions to verify through walkdowns and inspections that all required materials and equipment are adequate and properly staged. These walkdowns and inspections shall include verification that accessible doors, barriers, and penetration seals are functional.

<b>Licensee Action</b>	<b>Describe the licensee’s actions to verify the capability to mitigate existing design basis flooding events.</b>
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>Licensee actions included the identification of equipment and penetration seals used/required for mitigation of internal and external flooding. The licensee then conducted walkdowns of this equipment to ensure it was adequate and properly staged. Doors, barriers, and penetration seals that were used for mitigation of flooding were identified and inspected for material condition. In addition, the licensee identified the plant walls that create flood zones, lake-connected lines that were not confined by flood protected zones and they were walked down to assess material condition. Also, the Operations personnel reviewed and walked down any procedures associated with flooding mitigation strategies to verify that all actions in the procedures can be performed. The licensee then documented the results of their walkdowns, any vulnerabilities identified and plans to address the issues identified.</p>
	<p><b>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</b></p>
	<p>The inspectors assessed the licensee’s capabilities to mitigate flooding by conducting a review of the licensee’s walkdown activities. In addition, the inspectors conducted independent walkdowns of selected flood mitigation equipment to evaluate the overall assessment of the licensee’s flood mitigating capabilities. The inspectors also reviewed and walked down the licensee flood mitigation procedures to verify usability. The inspectors’ conclusions aligned with the results obtained by the licensee.</p>



	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee's walkdown of flooding equipment identified a vulnerability in isolating an internal flood to the plant from the circulating water system. LOA-FLD-001, Flooding, which is the plant procedure to mitigate internal flooding, directs having mechanical maintenance personnel install stop logs into each circulating water forebay to isolate the flood. These actions would have to be performed for each unit in case of a breach in the circulating water system to prevent the lake from gravity-draining into the plant. During the licensee's walkdown, it was identified that only four sets of stop logs were available at LaSalle, which is enough for two out of the six bays. The licensee entered this issue into its CAP, as AR 1194542, and plans to take measurements and order the stop logs for the other four bays. The inspectors plan to follow up on this issue through the baseline inspection program.</p>
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<p>03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. Assess the licensee's development of any new mitigating strategies for identified vulnerabilities (e.g., entered it in to the corrective action program and any immediate actions taken). As a minimum, the licensee should have performed walkdowns and inspections of important equipment (permanent and temporary) such as storage tanks, plant water intake structures, and fire and flood response equipment; and developed mitigating strategies to cope with the loss of that important function. Use IP 71111.21, "Component Design Basis Inspection," Appendix 3, "Component Walkdown Considerations," as a guideline to assess the thoroughness of the licensee's walkdowns and inspections.</p>	
<p><b>Licensee Action</b></p>	<p><b>Describe the licensee's actions to assess the potential impact of seismic events on the availability of equipment used in fire and flooding mitigation strategies.</b></p>
<p>a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>Licensee actions included walkdowns and assessments of permanent and temporary components of the fire protection system and internal flooding response equipment to identify any vulnerability to the systems that could prevent the system from performing its function in the event of a safe shutdown earthquake (SSE).</p>

	<p><b>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</b></p> <p>The inspectors conducted independent walkdowns of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during a seismic event. This equipment included, but was not limited to:</p> <ul style="list-style-type: none"> <li>• all major B.5.b contingency response equipment staged throughout the site;</li> <li>• a sample of accessible fire protection and suppression equipment throughout the plant;</li> <li>• the permanently installed diesel fire pumps and their controls; and</li> <li>• watertight doors, and other flood sealing locations such as reactor building ventilation dampers.</li> </ul> <p>Licensee flood and fire mitigation procedures were reviewed to verify usability. The results of the inspectors' reviews aligned with the licensee's conclusions that there were a number of seismic vulnerabilities that potentially need to be addressed, as described below.</p> <p><b>Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee as a result of their reviews.</b></p> <p>Overall, no issues that would have resulted in the inability of the fire protection system or internal flooding mitigation equipment to perform their functions were identified during either the licensee's or the inspectors' reviews.</p> <p>It was noted by both the licensee and the inspectors that the vast majority of the fire protection system, e.g., fire water header pipes inside and outside the plant, is not seismically designed and, as such, may fail during an SSE. Similarly, the components required for isolating the sources of internal flooding at the plant, e.g., non-safety related service water or circulating water system valves, are not seismically designed and may fail during an SSE. Additionally, most firefighting equipment staged to respond to B.5.b events was not stowed in seismically qualified buildings and locations, as a seismic event and B.5.b event have never been assumed to occur coincidentally. These vulnerabilities, which the licensee has classified as being beyond design basis assumptions (e.g., non-seismic systems vulnerable to a seismic event) will be addressed by an Ad Hoc industry working group in the future. This industry working group will address the potential need to revise plant design as part of reviewing all such beyond design basis vulnerabilities. The licensee has entered this item into its CAP, as AR 01201621, for tracking.</p>
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## Meetings

### .1 Exit Meeting

The inspectors presented the inspection results to Mr. David Rhoades., and other members of licensee management, at the conclusion of the inspection on May 5, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

D. Rhoades, Site Vice President  
P. Karaba, Plant Manager  
J. Houston, Regulatory Assurance  
S. Shields, Regulatory Assurance  
T. Simpkin, Regulatory Assurance Manager  
J. Washko, Operations Director

#### Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of 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.

03.01 Assess the licensee's capability to mitigate conditions that result from beyond design basis events		
<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
	Training Presentation Slides by Jim Spieler: Extreme Damage Mitigation B.5.b Phase 2 & 3	4/2011
	Work History Report by System, B.5.b pump / Completed Date	1/1/2010 – 4/1/2011
AR 1188456	PCR to LOA-SY-004	3/16/2011
AR 1188529	LOA-SY-003 Could Use Enhancements	3/17/2011
AR 1188805	B5B Revise LOS-SY-SR1 with the Following Enhancements	3/17/2011
AR 1188805	Revise LOS-SY-SR1 with the Following Enhancements	3/17/2011
AR 1188813	B.5.B Pump Surveillance	3/17/2011
AR 1189049	Enhancement to LGA FC-01	3/18/2011
AR 1189076	Walkdown Enhancements to LGA RD-01	3/18/2011
AR 1189103	Missing B5B 5 Inch Hose	3/18/2011
AR 1189111	B5B PDDP Discharge Pressure Gauge Failed	3/18/2011
AR 1189119	LOS-SY-SR1 Attachment B Needs Enhancement	3/18/2011
AR 1189491	LGA Discrepancies that do not Prevent Execution of LGA	3/18/2011
AR 1189538	LGA-VQ-02 Enhancements, PCR	3/19/2011
AR 1190245	Procedure Change Needed for LOS-SY-SR1	3/21/2011
AR 1190255	Add LOA-SY-003/4 to Controlled Sets 64A/95A/95B	3/21/2011
AR 1191254	B.5.b PDDP Fuel oil Analysis Results were not within Spec	3/23/2011
AR 1191528	Surveillances Pulled up to Support Red NER response	3/29/2011
AR 1192217	Need Banana Jacks Installed for LOA-DG-101	3/25/2011
AR 1192708	Discrepancies Noted During LGA Cabinet Audit	3/26/2011
AR 1192817	Missing LGA Stickers for LAP-820-11TG	3/27/2011
AR 1192851	Unable to Inspect LGA Label Due to Plant Active Leak	3/27/2011
AR 1192854	Discrepancies Noted During Plant LGA Labels Audit	3/27/2011
AR 1192891	Discrepancies Noted During Plant LGA Labels Audit	3/27/2011
AR 1193868	NOS ID B.5.b DFP Rounds Reading Not Taken/Recorded	3/29/2011
AR 1193942	NOS ID: B.5.b Equipment Storage Area Issues	3/29/2011
AR 1193957	LOA-UHS-001 Enhancements	3/29/2011
AR 1193960	NOS ID: B.5.b Storage Egress Path Issue	3/29/2011
AR 1193991	NOS ID: B.5.b Storage Maintenance	3/29/2011
AR 1194148	LAP-820-11TG Does Not Check Air Bottles in B.5.b Building	3/29/2011
AR 1194628	LOA-FC-201 Review and Enhancements	4/8/2011
AR 1194670	LOA-FC-101 Review and Enhancements	4/4/2011
AR 1197526	Actions for Previously Identified B.5.b Issues not Complete	4/4/2011

AR 1200995	IER 11-1: Other Systems May Have Impact on FP During SSE	4/11/2011
AR 1201658	WO Backlog Review for B.5.b Equipment	4/12/2011
AR 1202134	B.5.b EDMG Ops Cell Phone Does not Work	4/13/2011
AR 1208670	Emergent B.5.b Fire Pump Maintenance	4/27/2011
AT 1187702-09	Verify the capability to mitigate conditions that result from beyond design basis events	Undated
Cycle 09-5	EO Continuing Training Cycle	9/8/2009 – 10/23/2009
Cycle 10-2	EO Continuing Training Cycle	3/1/2010 – 4/16/2010
Cycle 10-4	EO Continuing Training Cycle	6/7/2010 – 7/23/2010
INPO ER 11-1	INPO Event Report Level 1 11-1 Response: Fukushima Daiichi Nuclear Station Fuel Damage / LaSalle Station	3/23/2011
LGA-001	Emergency Operating Procedure: RPV Control	10/22/2010
LGA-003	Emergency Operating Procedure: Primary Containment Control	3/2/2011
LGA-005	Emergency Operating Procedure: RPV Flooding	3/2/2011
LGA-010	Emergency Operating Procedure: Failure to Scram	3/2/2011
LGA-011	Emergency Operating Procedure: Hydrogen Control	5/15/2007
LOA-SY- 004	Extreme Damage Mitigation Strategies	3/18/2011
LOA-SY-002	Supplemental Security Abnormal Procedure	8/5/2008
LOA-SY-003	Extreme Damage Mitigation Guideline	3/21/2011
LOA-SY- Procedure	Licensed Requal – Cycle 10-2 LORT Cycle Extreme Damage Mitigation	3/4/2010
LOS-SY-004 DBIG	Extreme Damage Mitigation Strategies/Portable Diesel-Driven Pump Operation	Rev. 1
LOS-SY-SR1	B.5.b Mitigating Strategies Equipment Surveillance	3/18/2011
LOS-SY-SR1	B.5.b Equipment Inventory	3/18/2011
MABAS-IL	Mutual Aid Alarm Box Alarm System – IEMA – IFCA Initiative Overview	8/2009
N-01NOCT4	Class Rosters: LaSalle – Non-Licensed Operator Requal Cycle 4	6/2010 - 7/2010
N-01NOCT5	Training, LaSalle – Non-Licensed Operator Requal Cycle 05 Component Completion Report	1/1/2009 – 4/27/2011
N-01ORQM3	Training, LaSalle –Requal Module 03 Component Completion Report	1/1/2009 – 4/27/2011
NER NC-11-009	Nuclear Event Report: Japan Crisis Follow-up – Mitigation Strategies for Sever Accident Scenarios/ Template for Site Review in Response to Japan Earthquake and Tsunami	4/2011
N-LA-NLO-B5BNLOCT0905	Non-Licensed Operator Continuing Training for Extreme Damage Mitigation Strategies B5b PDP Operation	8/25/2009
OP-AA-201-010-1001	B.5.b Mitigating Strategies Equipment Expectations	Rev. 0
S-10-2-1 LOA-SY-02	Licensed Operator Requalification Scenario Guide	3/10/2010
S-10-4-4	Site Security Threat with Loss of Power	6/1/2010
WO 1372661-01	B.5.B Diesel Driven Pump Annual Flow Test	9/17/2011

03.02 Assess the licensee's capability to mitigate station blackout (SBO) conditions		
<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
	Work History Report for High Pressure Core Spray Min Flow Bypass	1/1/2010 – 4/1/2011
	Work History Report for Reactor Core Isolation Cooling Relay, 2H13P621 Track Cont 2E51R600	1/1/2010 – 4/1/2011
	Work History Report High Pressure Core Spray LOS-DO-M1 2B DG Day Tank Monthly DFO Sample	1/1/2010 – 4/1/2011
	Work History Report for Reactor Core Isolation Cooling Relay, 1H13P621 Track Cont 1E51R600	1/1/2010 – 4/1/2011
AR 1189480	LGA-VG-201 Procedure Deficiencies	3/18/2011
AR 1189481	LGA-VG-101 Procedure Change needed	3/18/2011
AR 1189532	LOA-DG-101(201): No Dedicated Welder for Alt DC PWR	3/19/2011
AR 1189538	LGA-VQ-02 Enhancements, PCR	3/19/2011
AR 1189563	LGA-RI-103 Enhancements	3/19/2011
AR 1189564	LGA-RI-203 Enhancements	3/19/2011
AR 1189694	LGA-RI-201 Valves Need LGA Tags	3/19/2011
AR 1192670	Discrepancies Noted During Plant LGA Labels Audit	3/26/2011
AR 1192894	U2 LGA Panel Label Surveillance Deficiency	3/27/2011
AR 1193933	Fuel Pool Cooling Possibility with Loss of Offsite Power	3/29/2011
AR 1193946	Equipment Needed to Support LOA-DG-101/201	3/29/2011
AR 1194033	Possible Revision to LOA-AP-101(201)	3/29/2011
AR 1208125	NRC Identified: Emergency Lighting Question during SBO	4/26/2011
AR 1209052	LAP-820-11TG Missing Inventory for Tools Used in LGA-RI-103	4/28/2011
AR 1209674	NRC ID: Station Black Out Analysis	4/29/2011
AT 1191308	During walkdown of LOA-AP-101, Spare Breaker Identified	3/24/2011
LGA-001	Emergency Operating Procedure: RPV Control	10/22/2010
LGA-003	Emergency Operating Procedure: Primary Containment Control	3/2/2011
LGA-005	Emergency Operating Procedure: RPV Flooding	3/2/2011
LGA-010	Emergency Operating Procedure: Failure to Scram	3/2/2011
LGA-011	Emergency Operating Procedure: Hydrogen Control	5/15/2007
LGA-FC-01	Alternate Vessel or Primary Containment Injection Using B Fuel Pool Emergency Makeup Pump	2/23/2011
LGA-FP-01	Alternate Vessel Injection Using the fire protection System	3/22/2011
LGA-FW-01	Alternate Vessel Injection Using MDRFP by Defeating MDRFP High level Trip	1/2/2001
LGA-HG-101	Operation of the Hydrogen Recombiner as a Mixing System (Unit 1)	7/16/2010
LGA-HP-01	Alternate Vessel Injection by Defeating HPCS High Level Isolation	7/22/2000
LGA-MS-02	Using Main Steam Lines for Emergency RPV Blowdown	12/27/2007
LGA-RI-103	Unit 1 RPV Injection Using RCIC when Loss of DC is Imminent or has Occurred	3/22/2011
LOA-AP-101	Unit 1, AC Power System Abnormal	3/28/2011

LOA-DG-101	DG Failure	3/23/2011
LOA-FLD-001	Flooding	4/4/2011
LOA-FX-101	Unit 1 Safe Shutdown with a Fire in the Control OR AEER	10/26/2010
LOA-SY-001	Security Abnormal Procedure	3/18/2011
LOA-SY-003	Extreme Damage Mitigation Guideline	3/21/2011
LOP-DC-02	DC System Unit Tie Operations	1/12/2007
WO 1295869-01	LAP-820-11TG LGA Panel Labels Att 2D	3/23/2011
WO 1295870-01	Lap-820-QQtg Panel Labels Att. 1D	3/23/2011
WO 1297499-01	LAP-820-11TG LGA Entry Inst/Alarm Label Inventory Att 2H	3/23/2011
WO 1297500-01	LAP-820-11TG LGA Entry inst/Alarm Label Inventory Att 1H;	3/23/2011
WO 1338850-01	LAP-820-11TG LGA Support LKR Labels Att 2C	3/23/2011
WO 1383837-01	LAP-820-11TG LGA LKR Bags Sealed Att A	3/23/2011
WO 1383851-01	LAP-820-11TG LGA Support LKR Bags Sealed Att. B	3/23//2011
WO 1391035-01	LAP-820-11TG Att F: LGA Support Procedure & ATT G Review	3/23/2011
WO 1397003-01	LAP-820-11TG LGA Labels in Plant	3/23/2011
WO 1397004-01	LAP-820-11TG Att 2E: U2 LGA Valves in Plant Labels	3/23/2011

03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design		
<b><u>Number</u></b>	<b><u>Description or Title</u></b>	<b><u>Date or Revision</u></b>
	Emergency Action Plan: LaSalle County Station – Cooling Lake Dike	7/2007
A-273	Drawing: Diesel Generator Room Basement Plan West Area	2/9/1981
A-274	Drawing: Diesel Generator Room Basement Plan East Area	6/7/1978
A-279	Drawing: Diesel Generator Room Basement Plan	6/25/1976
A-567	Drawing: Plumbing Diesel Generator Bldg Basement & Upper Floor Plans	5/18/1976
A-568	Drawing: Plumbing Diesel Generator Bldg Basement & Upper Floor Plans	3/25/1977
A-569	Drawing: Plumbing Diesel Generator Bldg Basement & Upper Floor Diagrams	5/18/1976
AR 1188526	Clarification Needed in Procedure LOA-FLD-001	3/17/2011
AR 1188843	LOA-FX-201 Procedure Needs Corrections	3/17/2011
AR 1189678	Cabinets in Harms Way for Any LSH Flooding Event	3/19/2011
AR 1191390	Door Should be Upgraded for Safety Margin / Have More Dogs	3/24/2011



AR 1191392	Door Should be Upgraded for Safety Margin / Have More Dogs	3/24/2011
AR 1193540	SWGR Below Grade, Door Should be Watertight	3/28/2011
AR 1193541	SWGR Below Grade, Door Should be Watertight	3/28/2011
AR 1193826	LOA-FLD-001 Enhancements	3/29/2011
AR 1193957	LOA-UHS-001 Enhancements	3/29/2011
AR 1194542	Flooding Vulnerability Identified During INPO IE Response	3/30/2011
LGA-001	Emergency Operating Procedure: RPV Control	10/22/2010
LGA-003	Emergency Operating Procedure: Primary Containment Control	3/2/2011
LGA-005	Emergency Operating Procedure: RPV Flooding	3/2/2011
LGA-010	Emergency Operating Procedure: Failure to Scram	3/2/2011
LGA-011	Emergency Operating Procedure: Hydrogen Control	5/15/2007
LMS-ZZ-04	Water Tight Door Inspection	6/10/2010
LOA-DIKE-001	Lake Dike Damage/Failure	9/28/2007
LOA-FLD-001	Flooding	4/4/2011
LOP-PF-01	Closure of Water Tight Doors	9/17/2008
LS PSA-013	LaSalle PRA Summary Document	11/2003
LS PSA-013	LaSalle PRA Summary Document	2/2008

03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
AR 1188956	LGA-FP-01 Requires Enhancement	3/17/2011
AR 1194615	Walkdown of LOA Shows FP Valves Not Properly Identified	3/30/2011
AR 11946615	Walkdown of LOA Shows FP Valves Not Properly Identified	3/30/2011
AR 1199952	IER 11-1: FP Pipe Hanger Has a Loose Lock Nut	4/8/2011
AR 1205085	NOS ID: Non-Seismic Storage Vulnerability	4/20/2011
LOA-FLD-001	Flooding	4/4/2011
LOA-FP-001	Unit 0 Fire Protection System Abnormal	12/17/2007

## LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
AR	Action Request
CAP	Corrective Action Program
CFR	Code of Federal Regulations
ERO	Emergency Response Organization
HPCS	High Pressure Core Spray
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SAMG	Severe Accident Management Guideline
SBO	Station Blackout
SSE	Safe Shutdown Earthquake
TI	Temporary Instruction
UFSAR	Updated Final Safety Analysis Report

M. Pacilio

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Sincerely,

*/RA/*

Kenneth Riemer, Chief  
Branch 2  
Division of Reactor Projects

Docket Nos. 50-373; 50-374  
License Nos. NPF-11; NPF-18

Enclosure: Inspection Report 05000373/2011010; 05000374/2011010

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SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – NRC TEMPORARY  
INSTRUCTION 2515/183 INSPECTION REPORT 05000373/2011010;  
05000374/2011010

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