



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

May 13, 2011

Mr. Christopher L. Burton  
Vice President  
Carolina Power and Light Company  
Shearon Harris Nuclear Power Plant  
P. O. Box 165, Mail Code: Zone 1  
New Hill, North Carolina 27562-0165

**SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC TEMPORARY  
INSTRUCTION 2515/183 INSPECTION REPORT (05000400/2011010)**

Dear Mr. Burton:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris, using Temporary Instruction 2515/183, "Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event." The enclosed inspection report documents the inspection results which were discussed on May 10, 2011, with Mr. E. Kapopoulos and other members of your staff.

The objective of this inspection was to promptly assess the capabilities of Shearon Harris 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 a separate report. You are not required to respond to this letter.

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

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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,

*/RA/*

Randall A. Musser  
Reactor Projects Branch 4  
Division of Reactor Projects

Docket Nos.: 50-400  
License No.: NPF-63

Enclosure: NRC Inspection Report 05000400/2011010  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to Christopher L. Burton from Randall A. Musser dated May 13, 2011

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC TEMPORARY  
INSTRUCTION 2515/183 INSPECTION REPORT (05000400/2011010)

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U. S. NUCLEAR REGULATORY COMMISSION

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-400

License No.: NPF-63

Report No.: 05000400/2011010

Licensee: Carolina Power and Light Company

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road  
New Hill, NC 27562

Dates: March 23, 2011 – April 29, 2011

Inspectors: J. Austin, Senior Resident Inspector  
P. Lessard, Resident Inspector

Approved by: Randall A. Musser, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Enclosure

## **SUMMARY OF FINDINGS**

IR 05000400/2011010, 03/23/2011 – 04/29/2011; Shearon Harris Nuclear Power Plant; Temporary Instruction 2515/183 – Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event

This report covers an announced Temporary Instruction inspection. The inspection was conducted by Resident 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 a separate report.

Enclosure

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 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:

Licensee Action	<i>Describe what the licensee did to test or inspect equipment.</i>
<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) utilized for implementation of B.5.b actions and any additional equipment used in Incident Stabilization Guidelines (ISGs) and Severe Accident Management Guidelines (SAMGs). Permanent plant equipment (i.e., in situ equipment) was not considered in the scope, since it is normally in service, subjected to planned maintenance, and/or checked on operator rounds. The licensee then identified surveillances/tests and performance frequencies for the identified equipment, and reviewed the results of recent tests. Active equipment within the scope defined above that did not have recent test results was tested. Passive equipment within the scope was inventoried and inspected.</p> <p><i>Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).</i></p> <p>A portion of the licensee's actions as discussed above were completed prior to the issuance of NRC TI 2515/183. The inspectors assessed the licensee's capabilities by conducting a review of the licensee's walkdown activities. In addition, the inspectors walked down and inspected all major active and passive B.5.b contingency response equipment staged throughout the site. Deficiencies and improvements identified are outlined below.</p> <p>Specific actions completed by the inspectors include:</p> <ul style="list-style-type: none"> <li>• Reviewed completed inspection and testing records for B.5.b components</li> <li>• Observation of a functional test of the Emergency Diesel Makeup Pump (EDMP)</li> <li>• Performed a partial walkdown of the licensee's ORT-3001, Fire Equipment</li> </ul>

Inspection Monthly Interval

- Performed a partial walkdown of the licensee's ORT-8002, ISG Materials Semiannual Interval

The inspectors accompanied the licensee to inspect the physical condition of selected portable equipment used to mitigate B.5.b events associated with spent fuel pool mitigating strategies.

*Discuss general results including corrective actions by licensee.*

Discrepancies were entered into the licensee's corrective action program. No discrepancy was evaluated as significant enough to impact any overall strategy. Discrepancies deemed noteworthy are listed below;

- Action Request (AR) 459882 was written to document that emergency response equipment (EDMP, trailers, fire hoses and nozzles, radios, self contained breathing apparatuses, satellite phones and turnout gear) were stored in locations susceptible to seismic events.
- AR459478 was initiated to address the need for spare keys to the EDMP.
- AR 459541 was initiated to allow the licensee's radios to interface with local emergency responders through a bridge network.
- AR 461885 documents the fact that only one set of adapters is available that could be needed to perform ISGs. This AR will explore the value of fabricating a spare set of adapters in case the others are damaged or lost.

Licensee Action	<i>Describe the licensee's actions to verify that procedures are in place and can be executed (e.g. walkdowns, demonstrations, tests, etc.)</i>
<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 utilized to mitigate the consequences of a B.5.b related event and severe accidents. The licensee then compiled verification documentation for procedure validations and identified any procedures not issued or validated and any with open change requests. Open change requests were reviewed for potential impacts on procedure functionality. Licensee personnel were then dispatched to walk down all applicable procedures to verify the ability of the procedures to be executed.</p>
	<p><i>Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.</i></p>
	<p>The inspectors performed table top exercises with operations personnel on the following procedures (Procedures that the inspectors walked down are marked with an *):</p> <ul style="list-style-type: none"> <li>• ISG-FAFC, Function Availability Flow Chart*</li> <li>• ISG-CC, Containment Cooling*</li> <li>• ISG-CVCS, Chemical And Volume Control System</li> <li>• ISG-DC, DC Power</li> <li>• ISG-FP, Fire Protection*</li> <li>• ISG-HS, Heat Sink</li> <li>• ISG-SAC, Safety AC Power*</li> <li>• ISG-SFP, Spent Fuel Pool*</li> <li>• ISG-SS, Spray Scrubbing</li> <li>• ISG-SW, Filling Cooling Tower Basin*</li> <li>• AOP-022, Loss of Service Water*</li> <li>• FPP-012-09-LAF, Large Area Fire Pre-Plan</li> <li>• EDMG-001, Extreme Damage Event Initial Actions</li> <li>• EOP-EPP-001, Loss of AC Power to 1A-SA and 1B-SB Buses</li> </ul>

	<p><i>Discuss general results including corrective actions by licensee.</i></p> <p>Discrepancies were entered into the licensee's corrective action program. No discrepancy was evaluated as significant enough to impact any overall strategy. Discrepancies deemed noteworthy are listed below;</p> <ul style="list-style-type: none"> <li>• AR 459485 was initiated to create an additional external spray capability that does not require offsite support.</li> <li>• AR 459816 was written to develop a calculation to evaluate the radiological conditions that may affect the licensee's mitigating strategies in the Fuel Handling Building (FHB) during lowering Spent Fuel Pool (SFP) level.</li> <li>• AR 459224 was written to include a caution in the ISGs to consider radiological conditions for responders.</li> <li>• AR 461883 was initiated to include the capabilities of the Alternate Seal Injection Diesel Generator (ASIDG) to support the mitigating strategies of the ISGs.</li> <li>• AR 461875 was written to develop procedures for opening a closed tornado door which could provide an additional entry path into the Reactor Auxiliary Building (RAB).</li> <li>• AR 461901 documented the need for guidance to direct offsite emergency responders to the designated staging area in the event that they are not immediately needed onsite.</li> </ul>
<p>Licensee Action</p>	<p><i>Describe the licensee's actions and conclusions regarding training and qualifications of operators and support staff.</i></p>
<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</p>	<p>The licensee reviewed the qualification and training requirements of the operators and support staff in the emergency response organization (ERO). Additionally, the licensee reviewed the current qualification status of those operators and support staff. No qualification discrepancies were noted.</p>

<p>accident management guidelines as required by 10 CFR 50.54 (hh).</p>	<p><i>Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff.</i></p>
	<p>The inspectors reviewed selected training materials and qualification records for the following ERO positions:</p> <ul style="list-style-type: none"> <li>• Senior Reactor Operator</li> <li>• Reactor Operator</li> <li>• Fire Brigade</li> <li>• Site Emergency Coordinator</li> <li>• Shift Technical Advisor</li> <li>• SAMG Implementer</li> <li>• SAMG Decision Maker</li> <li>• SAMG Evaluator</li> <li>• Medical Response Personnel</li> <li>• Site Incident Commander</li> <li>• Local Emergency Response Fire Departments</li> </ul> <p>The inspectors observed that there were no specific qualifications for B.5.b for operators. However, the licensee incorporates this material into the training program, both as initial and continuing training. The continual training is conducted during their respective training sessions. The training sessions consists of classroom instructions, simulator instructions, plant walkdowns and practical sessions of equipment operations.</p>
	<p><i>Discuss general results including corrective actions by licensee.</i></p>
	<p>No discrepancies were identified.</p>

Licensee Action	<i>Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.</i>
<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>The licensee confirmed that memorandums of understanding, letters of agreement, and contracts are in place to provide aide in combating beyond design basis events.</p> <p><i>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).</i></p> <p>The inspectors reviewed the letters of agreements/understanding and verified the licensee had confirmed their contents with the various stakeholders. The inspectors did not identify any content concerns which would negatively impact a mitigation strategy.</p> <p><i>Discuss general results including corrective actions by licensee.</i></p> <p>No discrepancies were identified.</p>
Licensee Action	<i>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.</i>
<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>No problems were identified that have significant potential to prevent the success of any existing mitigating strategy.</p>

<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:</p>	
<p>Licensee Action</p>	<p><i>Describe the licensee’s actions to verify the adequacy of equipment needed to mitigate an SBO event.</i></p>
<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 utilized/required for mitigation of a SBO. The licensee then conducted walkdowns of this equipment to ensure they were adequate and equipment was properly staged.</p>
	<p><i>Describe inspector actions to verify equipment is available and useable.</i></p>
	<p>The inspectors reviewed the licensee’s actions and independently walked down the ASIDG and support equipment to verify no material conditions were present that would impact the availability of the ASIDG. Additionally, the inspectors reviewed the capability of the ASIDG to be used to power station batteries in the event of an SBO.</p>
	<p><i>Discuss general results including corrective actions by licensee.</i></p>
	<p>The inspectors reviewed the following open action request generated as a result of the licensee’s reviews and walkdowns;</p> <ul style="list-style-type: none"> <li>• AR 461880 was initiated to consider pre-staging of required materials such as batteries and cables to support field flashing the Emergency Diesel Generators.</li> </ul> <p>None of the identified issues would significantly impact the success of the licensee’s mitigation strategies.</p>

Licensee Action	<i>Describe the licensee's actions to verify the capability to mitigate an SBO event.</i>
<p>b. Demonstrate through walkdowns that procedures for response to an SBO are executable.</p>	<p>The licensee walkdowns included the following procedures;</p> <ul style="list-style-type: none"> <li>• OP-101, Sampling System</li> <li>• OP-107, Chemical And Volume Control System (CVCS)</li> <li>• OP-107.01, CVCS Boration, Dilution, And Chemistry Control</li> <li>• OP-126, Main Steam, Extraction Steam, And Steam Dump Systems</li> <li>• OP-139, Service Water System</li> <li>• OP-148, Essential Services Chilled Water System</li> <li>• OP-151.01, Compressed Air</li> <li>• OP-153.02, Generator Gas System</li> <li>• OP-155, Diesel Generator Emergency Power System</li> <li>• OP-156.01, DC Electrical Distribution</li> <li>• OP-156.02, AC Electrical Distribution</li> <li>• OP-169, Containment Cooling And Ventilation</li> <li>• OP-173, Control Room Area HVAC System</li> <li>• OP-185, Alternate Seal Injection</li> <li>• EOP-EPP-001, Loss Of AC Power To 1A-SA And 1B-SB Buses</li> <li>• EOP-EPP-002, Loss Of All AC Power Recovery Without SI Required</li> <li>• EOP-EPP-003, Loss Of All Ac Power Recovery With SI Required</li> <li>• EOP-Guide-1, Path-1 Guide</li> <li>• EOP- Path-1</li> <li>• AOP-002, Emergency Boration</li> </ul>

	<p><i>Describe inspector actions to assess whether procedures were in place and could be used as intended.</i></p> <p>The inspectors independently verified through walkdowns, interviews and procedure reviews that the following procedures could be used to implement the planned strategy:</p> <ul style="list-style-type: none"> <li>• EOP-EPP-001, Loss Of AC Power To 1A-SA And 1B-SB Buses</li> <li>• EOP- Path-1</li> <li>• AOP-022, Loss of Service Water</li> <li>• AOP-025, Loss of One Emergency AC Bus (6.9 kV) or One Emergency DC Bus (125V)</li> </ul> <p><i>Discuss general results including corrective actions by licensee.</i></p> <p>The inspectors reviewed open action requests generated as a result of the licensee’s reviews and walkdowns, the issues included items such as the following;</p> <ul style="list-style-type: none"> <li>• AR 459454 was developed to add training and procedures to provide direction for manually charging and closing 6.9 kV breakers.</li> <li>• AR 461888 was written to identify and add guidance to establish a means to vent containment in the event of an SBO.</li> </ul> <p>None of the identified issues would significantly impact the success of the licensee’s mitigation strategies.</p>
<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.</p>	

Licensee Action	<i>Describe the licensee's actions to verify the capability to mitigate existing design basis flooding events.</i>
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p><b>External Flooding</b></p> <p>The licensee reviewed their design documents to confirm the following regarding the threat of external flooding to the site.</p> <p>Seismic Category I structures, systems, and components whose failure could prevent safe shutdown of the plant or result in uncontrolled release of significant radioactivity are protected from the effects of the design basis flood levels or flood conditions by the following methods:</p> <ul style="list-style-type: none"> <li>a) Designed to withstand effects of the design basis flood level or flood condition.</li> <li>b) Positioned to preclude effects of the design basis flood level or flood condition.</li> <li>c) Housed within structures which satisfy method "a" or "b" above.</li> </ul> <p>The plant grade has been established at a minimum elevation of 260 ft. which is 21.1 ft. above the maximum main reservoir still water level of 238.9 ft. and 4.0 ft. above the maximum auxiliary reservoir still water level of 256.0 ft. Maximum wave run-up and wind setup level along the plant site in the Main and Auxiliary Reservoirs are expected to be at elevation 240.2 ft. and 257.7 ft. respectively. The design basis of the plant site drainage is a storm of five in. per hour rainfall intensity. The maximum net accumulated water on the plant grade due to the probable maximum precipitation (PMP) for the project drainage area of 71.0 sq. mi. is approximately 6 inches. The maximum net accumulated water on the plant island due to a more severe PMP computed for a drainage area of one sq. mi. is approximately 15 in. All structures on the plant site are protected to at least Elevation 261 ft. and no structure has any access openings below Elevation 261 ft.</p> <p>The maximum elevation to which water will pond on the plant site during a PMP event assuming the entire drainage system became blocked would be 261.27 ft. The storm runoff will flow freely into the Main and Auxiliary Reservoirs through the open channels and flow over the plant roads (crown elevation 261.0 ft.). However, ponding to elevation 261.27 ft. will not impact on the plant ability to safely shutdown, if necessary. All safety-related structures which have entrances at elevation 261 ft. are protected against any ponding during a PMP event by the following features:</p>

- a) Artificial barriers such as watertight or airtight doors, or
- b) Low structural barriers, i.e., curbs. The minimum curb elevation is 262.0 ft.

The rain storm water collected in the area between the Retaining Wall and the FHB will be pumped out to the storm drainage system by using sumps and pumps. In addition to the direct rainfall and groundwater infiltration through the retaining wall, this area will collect storm water as overflow from the Waste Processing Building and the FHB if the drains are assumed to be plugged during the PMP occurrence. If the failure of pumps is postulated, the water will accumulate to a level below elevation 236 ft. in this area. All openings in the FHB and the Waste Processing Building below elevation 236 ft. have been closed and other penetrations sealed to preclude access of storm water to safety related areas inside the buildings. The storm water from the cancelled Unit No. 2 RAB and the Containment Building drains in to the centrally located sump and is pumped into the plant drainage system. The sump and pump are sized for the design basis rain fall intensity. However, the wall heights are adequate to accommodate the PMP considering that the pump has failed. All openings below EL 243.00 ft. have been closed and waterproofed to minimize water seepage from this area into Unit No. 1 structures.

#### **Internal Flooding**

The licensee reviewed their series of calculations performed to evaluate the impact of flooding on the plant and the equipment and processes used to mitigate the flooding are identified. The calculations include all systems in the plant that have the capability of releasing fluid to plant areas that could result in failure of equipment that would affect the frequency of core damage. The most limiting source of internal flooding was determined to be the 36" Normal Service Water (NSW) pipes in the 236' level of the RAB. The evaluation concludes the magnitude of the break is such that the RAB sump extra high level lights on the Main Control Board (MCB) would come in within a few minutes. The licensee concluded that thirty minutes from break initiation to break isolation is reasonable. Assuming the water drains away, there will be no significant accumulation of water. Conservatively assuming the water does not drain and instead pools in an area, the deepest depth of the water after thirty minutes would be 11.5 inches. Based upon this height of water, the licensee concluded that no safety related equipment would be damaged by flooding. However, as documented below, the basis for this conclusion was not readily available when requested by the inspectors. This was documented in CAP as AR 461904.

	<p><i>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</i></p> <p>The inspectors performed an independent review of the external and internal flooding vulnerabilities documented in the site's design documents. The inspectors reviewed the assumptions identified in the site flooding analysis and did not note any additional vulnerabilities in the licensee's mitigation capabilities.</p> <p>The inspectors performed independent walkdowns of areas throughout the RAB. The purpose of the walkdowns was to assess artificial barriers (such as watertight or airtight doors), low structural barriers (such as curbs) and floor drains designed to mitigate flooding accidents. The inspectors performed independent walkdowns of storm drains within the Protected Area (PA) to assess drainage capability.</p> <p>Additionally, the inspectors assessed the adequacy of AOP-022, Loss of Service Water. This procedure is designed to aid the operators in isolating significant internal flooding events. The inspector's observations were that the internal flood mitigation strategy in the auxiliary building was adequate.</p> <p><i>Discuss general results including corrective actions by licensee.</i></p> <p>The inspectors reviewed open action requests generated as a result of the licensee's reviews and walkdowns, the issues included items such as the following;</p> <ul style="list-style-type: none"> <li>• AR 461904 was developed to track the inspectors' question regarding the basis for concluding that no safety related equipment will be damaged as a result of the maximum internal flood level of 11.5 inches in the RAB.</li> <li>• AR 458651 was initiated to document inconsistent assumptions in one of the flooding calculations. These inconsistencies were determined to not affect the conclusion of the calculation.</li> </ul> <p>None of the identified issues would significantly impact the success of the licensee's mitigation strategies.</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>Licensee Action</p>	<p><i>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.</i></p>
<p>a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee identified the components used to mitigate fire and flood events using plant drawings, design basis documents and the Final Safety Analysis Report (FSAR). The licensee performed walkdowns of the fire and flood mitigating systems and procedures to assess their adequacy. The licensee noted the fire protection system (pumps, fire main, headers, etc.) is non-seismic and this vulnerability is beyond the design basis for the plant. Additionally, the licensee identified that some mitigating equipment is stored in locations that could be vulnerable to seismic activity. This issue was documented in CAP as AR 459882, listed below.</p>
	<p><i>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</i></p>
	<p>The inspectors conducted multiple walkdowns, both independently and in conjunction with licensee personnel, 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>• Major B.5.b contingency response equipment staged throughout the site</li> <li>• Fire protection and suppression equipment throughout the site</li> <li>• Artificial barriers (such as watertight or airtight doors), low structural barriers (such as curbs) and floor drains</li> </ul> <p>Licensee flood and fire mitigation procedures were reviewed to verify usability. The results</p>

	<p>of the inspectors' reviews aligned with the licensee's conclusions that there were a number of seismic vulnerabilities that potentially need to be addressed, listed in the AR below.</p> <p>Additionally, the inspectors reviewed OP-180, Plant Communications Systems as it related to the licensee's command and control capabilities during accident mitigation scenarios. Multiple improvements were identified and listed below.</p>
	<p><i>Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee as a result of their reviews.</i></p>
	<p>The inspectors reviewed the following open action request generated as a result of the licensee's reviews and walkdowns;</p> <ul style="list-style-type: none"> <li>• AR 459882 was written to document that emergency response equipment (EDMP, trailers, fire hoses and nozzles, radios, self contained breathing apparatuses, satellite phones and turnout gear) were stored in locations susceptible to seismic events.</li> <li>• AR 459541 was initiated to allow the licensee's radios to interface with local emergency responders through a bridge network.</li> <li>• AR 458827 was initiated to require additional items to be added to applicable inventories to allow site radios to be directly connected to the bridge network.</li> </ul>

Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. E. Kapopoulos and other members of licensee management at the conclusion of the inspection on May 10, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel**

C. Burton, Vice President Harris Plant  
P. Chriscoe, Supervisor, Civil and Mechanical Design  
J. Cook, Acting Manager, Outage and Scheduling  
D. Corlett, Supervisor, Licensing/Regulatory Programs  
J. Dufner, Manager, Engineering  
J. Dunlap, Senior Engineer  
E. Kapopoulos, Plant General Manager  
D. Griffith, Training Manager  
B. McCabe, Manager, Nuclear Oversight  
A. O'Tuel, Nuclear Shift Manager  
M. Parker, Superintendent, Radiation Protection  
L. Parks, Manager, Support Services  
J. Price, Manager, Design Engineering  
J. Robinson, Superintendent, Environmental and Chemistry  
T. Slake, Manager, Security  
B. Stephenson, Senior Reactor Operator  
J. Warner, Acting Manager, Operations

#### **NRC personnel**

R. Musser, Chief, Reactor Projects Branch 4, Division of Reactor Projects, Region II

## 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 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

Number	Description or Title
ORT-8002	ISG Materials Semiannual Interval
ORT-3001	Fire Equipment Inspection Monthly Interval
ISG-CC	Containment Cooling
ISG-CVCS	Chemical And Volume Control System
ISG-FP	Fire Protection
ISG-HS	Heat Sink
ISG-SFP	Spent Fuel Pool
ISG-SS	Spray Scrubbing
ISG-SW	Filling Cooling Tower Basin
FPP-012-09-LAF	Large Area Fire Pre-Plan
AOP-021	Seismic Disturbances
AOP-027	Response to Acts Against Plant Equipment
OP-169	Containment Cooling And Ventilation
OP-173	Control Room Area HVAC System
FSAR Section 2.5	Seismic Stability Analysis
	Summary of Facts, Data, and Arguments on which Applicant Proposes to Rely at the Subpart K Oral Argument
SAMG-SAG-002	Depressurize the Reactor Coolant System
SAMG-SCG-002	Depressurize Containment
OP-180	Plant Communication Systems

### 03.02 Assess the licensee's capability to mitigate station blackout (SBO) conditions

Number	Description or Title
ISG-FAFC	Function Availability Flow Chart
ISG-DC	DC Power
ISG-SAC	Safety AC Power
EDMG-001	Extreme Damage Event Initial Actions
EOP-EPP-001	Loss of AC Power to 1A-SA and 1B-SB Buses
OP-155	Diesel Generator Emergency Power System
OP-156.01	DC Electrical Distribution
OP-156.02	AC Electrical Distribution
OP-185	Alternate Seal Injection
EOP-EPP-001	Loss Of AC Power To 1A-SA And 1B-SB Buses

EOP-EPP-002	Loss Of All AC Power Recovery Without SI Required
EOP-EPP-003	Loss Of All Ac Power Recovery With SI Required
EOP-Guide-1	Path-1 Guide
EOP- Path-1	
AOP-025	Loss of One Emergency AC Bus (6.9KV) or One Emergency DC Bus (125V)

03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design

<u>Number</u>	<u>Description or Title</u>
AOP-022	Loss of Service Water
EDMG-001	Extreme Damage Event Initial Actions
OP-139	Service Water System
FSAR Section 3.4	Water Level Design

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>
ORT-8002	ISG Materials Semiannual Interval
ORT-3001	Fire Equipment Inspection Monthly Interval
ISG-CC	Containment Cooling
ISG-CVCS	Chemical And Volume Control System
ISG-FP	Fire Protection
ISG-HS	Heat Sink
ISG-SFP	Spent Fuel Pool
ISG-SS	Spray Scrubbing
ISG-SW	Filling Cooling Tower Basin
FPP-012-09-LAF	Large Area Fire Pre-Plan
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OP-173	Control Room Area HVAC System
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