



**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: BYRON STATION UNITS 1 AND 2 – NRC TEMPORARY  
INSTRUCTION 2515/183 INSPECTION REPORT 05000454/2011014;  
05000455/2011014**

Dear Mr. Pacilio:

On April 27, 2011, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Byron Station, Unit 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 April 27, 2011, with Mr. T. Tulon and other members of your staff.

The objective of this inspection was to promptly assess the capabilities of Byron Station, Unit 1 and 2, 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 inspection 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 the 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/**

Eric R. Duncan, Chief  
Branch 3  
Division of Reactor Projects

Docket Nos. 50-454; 50-455  
License Nos. NPF-37; NPF-66

Enclosure: Inspection Report 05000454/2011014; 05000455/2011014  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-454; 50-455  
License Nos: NPF-37; NPF-66

Report No: 05000454/2011014; 05000455/2011014

Licensee: Exelon Generation Company, LLC

Facility: Byron Station, Units 1 and 2

Location: Byron, IL

Dates: March 23, 2011, through April 27, 2011

Inspectors: B. Bartlett, Senior Resident Inspector  
J. Robbins, Resident Inspector  
C. Thompson, IEMA

Approved by: E. Duncan, Chief  
Branch 3  
Division of Reactor Projects

Enclosure

## **SUMMARY OF FINDINGS**

IR 05000454/2011014; IR 05000455/2011014; 03/23/2011 – 04/27/2011; Byron Station, Units 1 and 2; Temporary Instruction 2515/183 - Followup 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 Temporary Instruction 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event," 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 inspection 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 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 transport and testing of the portable pump that is utilized within the applicable licensing basis. The pump was tested in accordance with a predefined preventative maintenance work instruction. In addition to the pump, the licensee performed hydrostatic testing of the fire hoses that would be utilized with this pump to ensure adequate equipment performance. Permanently installed equipment such as diesel generators and emergency core cooling system (ECCS) pumps were not specifically tested as a result of this effort since this equipment was routinely tested and checked on daily operator rounds.</p> <p>The licensee performed an inventory inspection of equipment staged in the B.5.b pump warehouse in accordance with station procedures. Additionally, the licensee performed a walkdown within the plant for equipment utilized within the Severe Accident Management Guidelines (SAMGs). The licensee conducted this review to ensure that equipment used in SAMG strategies was available and accessible for use.</p> <p>The licensee reviewed the materials and equipment storage locations to determine if the specific locations provided adequate shelter from postulated security-related or natural phenomena events.</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 reviewed the licensee’s assessment related to this area to ensure that the licensee’s review was consistent with the expectations provided in the operating experience. Additionally, the inspectors reviewed the issues, and observations identified by the licensee and by the inspectors to ensure that they were entered into the corrective action program.</p> <p>The inspectors conducted independent reviews and walkdowns to ensure that the B.5.b pump and ancillary equipment was available and capable for use consistent with the licensing basis. The inspectors performed a walkdown of the B.5.b equipment warehouse to ensure B.5.b equipment was properly staged and available. The inspectors verified that</p>

	<p>equipment utilized to transport the B.5.b pump was both available and capable. Additionally, the inspectors conducted plant walkdowns for the station auxiliary feedwater, fire protection, and diesel generator systems to ensure that this equipment was accessible and available for use in implementing the station's SAMGs.</p> <p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The inspectors observed that the licensee did not identify any unplanned challenges in implementing various B.5.b mitigating strategies. Some minor issues and improvement opportunities were identified both by the licensee and the inspector. Examples included:</p> <ul style="list-style-type: none"> <li>• Miscellaneous B.5.b equipment was not labeled (IR 1193472); and</li> <li>• The Work Control procedure did not have a specific coding to identify equipment that was related to B.5.b. Without this coding, equipment that was otherwise not important may not be repaired in a timely manner (IR 1195557).</li> </ul> <p>The testing of the B.5.b pump was being treated as a preventative maintenance activity rather than a testing activity. As such, the structure of the acceptance criteria was embedded in the work instruction as compared to clearly identifiable acceptance criteria more commonly found in a surveillance activity. The inspectors did not identify a violation associated with these observations since the B.5.b pump was not safety-related or of augmented quality. Additionally, the licensee informed the inspectors that it was typical for the vendor to observe the annual pump performance test and that flow was monitored.</p> <p>The licensee identified that the B.5.b pump warehouse was not seismically qualified, and was not required to be seismically qualified. The licensee entered this observation in the station's corrective action program (IR 1193472).</p>
<b>Licensee Action</b>	<p><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>
<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</p>	<p>The licensee reviewed the B.5.b strategies and applicable Severe Accident Management Strategies to ensure that the implementing procedures were available at their required locations. The licensee performed system walkdowns of selected procedures to verify that the equipment was accessible, adequately labeled, and that the procedure could be executed as written.</p>

<p>operate permanently installed equipment during this verification.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</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 reviewed the licensee’s assessment related to this area to ensure that the licensee’s review was consistent with the expectations provided in the operating experience. Additionally, the inspectors reviewed the issues and observations identified by the licensee and by the inspectors to ensure that they were entered into the corrective action program.</p> <p>The inspectors independently verified that the procedures were available at a sample of the assumed locations and were the correction revision. The inspectors conducted independent walkdowns at the B.5.b building and within the station to verify that equipment utilized in the Extensive Damage Mitigation Guidelines (EDMGs) and SAMGs was available for use.</p> <p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee did not identify any issues. The inspectors did not identify any issues. A number of suggestions and enhancements were identified and entered into the corrective action program. These will be assessed by the licensee as part of the next phase of their review.</p>
<p><b>Licensee Action</b></p>	<p><b>Describe the licensee’s actions and conclusions regarding training and qualifications of operators and support staff.</b></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 accident management guidelines as required by 10 CFR 50.54 (hh).</p>	<p>The licensee’s review included the identification of operator training and qualification requirements for the implementation of actions needed to mitigate B.5.b related events, and for the implementation of the SAMGs. The licensee reviewed the station’s learning management training system records to verify that the required Maintenance first line supervisors and Operations personnel met the B.5.b and SAMG training qualification requirements. In addition, the licensee 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 for the SAMGs. The licensee ensured that a sample of the 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 reviewed the licensee’s assessment related to this area to ensure that the licensee review was consistent with the expectations provided in the operating experience.</p> <p>The inspectors independently reviewed records from the station’s learning management system and independently sampled a population of ERO command and support staff SAMG training records to ensure that the staff’s training was up to date. Additionally, the inspectors reviewed a sample of the training material for SAMGs and B.5.b to understand the type of training that was provided.</p> <p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee did not identify any issues. The inspectors did not identify any issues.</p>
<p style="text-align: center;"><b>Licensee Action</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><b>Describe the licensee’s actions and conclusions regarding applicable agreements and contracts are in place.</b></p> <p>The licensee conducted a review of the Byron B.5.b and severe accident management strategies to identify any applicable off-site agreements and contracts necessary to support implementation. These contracts and agreements involved the local fire department, hospitals, law enforcement, and diesel fuel oil vendor, as well as contracts with engineering vendors. Additionally, the licensee verified that these contracts were adequate to meet the intent for which they were comprised.</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 reviewed the licensee’s assessment related to this area to ensure that the licensee’s review was consistent with the expectations provided in the operating experience. Additionally, the inspectors verified that issues, observations, and enhancements were entered into the station’s corrective action program as appropriate.</p> <p>The licensee did not identify any issues with the final review. The inspectors did not identify any issues with the off-site agreements from a current licensing basis perspective.</p>



	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee determined that the off-site contractual agreements would be adequate for events pertaining to B.5.b and applicable SAMGs.</p>
<p><b>Licensee Action</b></p>	<p><b>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.</b></p>
<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>Corrective Action Program issue report numbers are listed in the attachment to this report.</p> <p>The inspectors reviewed each of the IRs for potential impact to the licensee's B.5.b mitigating strategies. Any findings and/or violations identified as a result of this inspection will be documented in a separate inspection report.</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 whether 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 re-inspected. The inspection should include, but not be limited to, an assessment of any licensee actions to:</p>	
<p><b>Licensee Action</b></p>	<p><b>Describe the licensee's actions to verify the adequacy of equipment needed to mitigate an SBO event.</b></p>
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee performed walkdowns and inspections of contingency and portable equipment relative to mitigating a station blackout event in accordance with the station's quarterly surveillance procedure. Additionally, the licensee utilized the operator daily shift round checks performed on the emergency power sources credited during a station blackout event.</p>

	<p><b>Describe inspector actions to verify equipment is available and useable.</b></p> <p>The inspectors reviewed the licensee’s assessment related to this area to ensure that the licensee’s review was consistent with the expectations provided in the operating experience. Additionally, the inspectors verified that issues, observations, and enhancements were entered into the station’s corrective action program as appropriate.</p> <p>The inspectors verified that a sample of equipment maintained in the station’s quarterly surveillance checklist was available and properly staged. Additionally, the inspectors performed a walkdown of all the station’s diesel generators to identify any apparent issues that could affect operability. The inspectors reviewed the licensee’s corrective action program for any known issues that could challenge the functionality of the equipment to ensure that the licensee had performed an adequate assessment and corrective actions were in place.</p> <p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee identified a number of minor issues and enhancement opportunities.</p> <p>The inspectors determined that the issues identified by the licensee were minor in nature. The inspectors identified one additional observation.</p> <p>The inspectors observed that there was no direct indication of the station’s spent fuel pool level or temperature in the main control room. The inspectors did not identify a regulatory issue with this observation. Additionally, the inspectors observed that the station did not calculate a spent fuel pool time to boil when the units were operating at power. In the case that spent fuel pool cooling was lost, the station had a bounding analysis for the onset of spent fuel pool boiling.</p>
<p><b>Licensee Action</b></p> <p>b. Demonstrate through walkdowns that procedures for response to an SBO are executable.</p>	<p><b>Describe the licensee’s actions to verify the capability to mitigate an SBO event.</b></p> <p>The licensee verified that implementing procedure’s for the station blackout strategies were up to date and available at their required locations. The licensee performed walkdowns of these strategies to verify that areas were accessible, procedures could be executed, and equipment labeling was correct.</p>

	<p><b>Describe inspector actions to assess whether procedures were in place and could be used as intended.</b></p> <p>The inspectors reviewed the licensee’s assessment related to this area to ensure that the licensee’s review was consistent with the expectations provided in the operating experience. Additionally, the inspectors verified that issues, observations, and enhancements were entered into the station’s corrective action program as appropriate.</p> <p>The inspectors reviewed a sample of the station procedures that would be utilized during a station blackout event. The inspectors conducted equipment walk downs of the diesel generators and auxiliary feedwater systems to identify any apparent issues or challenges in implementing the procedures. Additionally, the inspectors specifically reviewed the capability for the Units to share aspects of their auxiliary feedwater system through a common cross-tie piping connection.</p> <p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The license identified a number of issues which were entered into the station’s corrective action program. The inspectors reviewed these issues and did not identify any findings of significance.</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>	
<p><b>Licensee Action</b></p>	<p><b>Describe the licensee’s actions to verify the capability to mitigate existing design basis flooding events.</b></p>
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee identified the flooding procedures that would be utilized for both internally and externally generated flooding events. These procedures were verified to be approved and in place. The licensee performed walkdowns to verify that all equipment identified in plant procedures conformed to the licensing requirements and was staged appropriately. Doors, barriers, penetration seals, and curbs that were utilized for flooding mitigation were inspected to identify deficiencies and to ensure that they would provide a sufficient barrier.</p> <p>Additionally, the licensee reviewed outstanding work orders and corrective action assignments to evaluate if any vulnerability existed. Identified issues were re-evaluated to ensure compliance with the current licensing basis or evaluated if the issue posed a beyond design basis risk to the plant.</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 reviewed the licensee's assessment related to this area to ensure that the licensee's review was consistent with the expectations provided in the operating experience. Additionally, the inspectors verified that issues, observations, and enhancements were entered into the station's corrective action program as appropriate.</p> <p>With regard to external flooding, the inspectors review included checking for deviations from the descriptions provided in the Updated Final Safety Analysis Report (UFSAR) for features intended to mitigate the potential for flooding from external factors. The inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined whether barriers required to mitigate a flooding event were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written.</p> <p>With regard to internal flooding, the inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flooding analyses and design documents, including the UFSAR; engineering calculations; and abnormal operating procedures, to identify licensee commitments. In addition, the inspectors conducted plant system walkdowns to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the essential service water system area to assess the adequacy of watertight doors and to verify that drains and sumps were clear of debris and were operable, and that the licensee complied with all commitments.</p>
--	---

	<p><b>Discuss general results including corrective actions by licensee.</b></p> <p>The licensee did not identify any regulatory issues, but did identify the following enhancements.</p> <ul style="list-style-type: none"> <li>• The flood barrier surveillance procedure did not require that heavy floor plugs be removed periodically to check the condition of their seals. A concern with the condition of the plug seals had been previously identified by the NRC inspectors in the spring of 2007 and in response the licensee had enhanced their flood seal inspections to add a requirement that when a floor plug was removed that flood seal be inspected. Additional enhancements were being considered by the licensee (IR 1196756).</li> </ul>
<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 into 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>a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.</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>The licensee identified the applicable procedures that would be utilized to mitigate a fire and or flood event to identify any potential that the equipment’s function could be lost during a design basis seismic event at the station. The licensee performed walkdowns associated with the storage of fire protection equipment, such as the station’s fire brigade truck and trailer, carbon dioxide storage tanks, halon bottles, and the diesel generator fuel oil storage tanks’ foam suppression system. The licensee evaluated if the equipment and particular storage location was seismically qualified to ascertain if it would be reasonable to conclude if the equipment would be available for use during and following a design basis earthquake.</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 reviewed the licensee's assessment related to this area to ensure that the licensee's review was consistent with the expectations provided in the operating experience. Additionally, the inspectors verified that issues, observations, and enhancements were entered into the station's corrective action program as appropriate.</p> <p>The inspectors independently reviewed the procedures that would be utilized during an earthquake, fire, and/or flooding event. The inspectors conducted multiple independent walkdowns and reviewed the documented assessment for the walkdowns conducted by the licensee. These walkdowns included, but were not limited to:</p> <ul style="list-style-type: none"> <li>• B.5.b pump warehouse and ancillary equipment;</li> <li>• Selected fire protection and suppression equipment in the auxiliary building;</li> <li>• The diesel generator fuel oil storage tank rooms; and</li> <li>• The main feedwater pump and condensate and condensate booster pump areas.</li> </ul> <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>The licensee did not identify any new mitigating strategies as a result of their review.</p>
--	--

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 27, 2011, the inspectors presented the inspection results to Mr. T. Tulon, 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

T. Tulon, Site Vice President  
B. Adams, Plant Manager  
J. Feimster, Engineering  
D. Gudger, Regulatory Assurance Manager

#### Nuclear Regulatory Commission

E. Duncan, Chief, Branch 3, Division of Reactor Projects

### **LIST OF ITEMS OPENED**

#### Opened

None

#### Closed

None

#### Discussed

None



## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion in this list does not imply that the NRC inspectors 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.

- IR 1103521; IER 11-1, Flooding Mitigation Vulnerability – Floor Plug Above 2B CS PP Room, April 04, 2011
- IR 1103522; IER 11-1, Flooding Mitigation Vulnerability – Floor Plug Above 2B RH PP Room, April 04, 2011
- IR 1187702; Exelon Fleet Response to Earthquake in Japan, March 15, 2011
- IR 1188395; Training, Corporate Operator Training Review of IER 11-1, March 16, 2011
- IR 1188450; DAIICHI, Consider Use of DG FO Crosstie Capability, March 16, 2011
- IR 1188451; DAIICHI, DG Flooding Susceptibility, March 16, 2011
- IR 1188454; DAIICHI, Need Comprehensive Resource Allocation Plan, March 16, 2011
- IR 1188507; DAIICHI, DG DOST Room Flooding Issue, March 17, 2011
- IR 1188517; DAIICHI, SX Pump Room Flooding Via Sump Backflow, March 17, 2011
- IR 1188525; DAIICHI, Potential Submerged Cable – Unit 2 Tendon Tunnel, March 17, 2011
- IR 1188554; DAIICHI, Safety of Byron Operators Not Addressed, March 17, 2011
- IR 1188559; DAIICHI, (and Current), SX PP Room Flooding Vulnerability, March 19, 2011
- IR 1187702; Exelon Fleet Response to Earthquake in Japan, March 15, 2011
- IR 1189323; DAIICHI, SFP Water Inventory Makeup (B5B) Enhancements, March 18, 2011
- IR 1189343; DAIICHI, SFP Water Inventory Makeup (B5B) Enhancements, March 23, 2011
- IR 1190774; IER 11-1, Review Identified Areas for Improvement, March 22, 2011
- IR 1190916; Conflict Between OPS Policy 600-04 and Security Procedure, March 22, 2011
- IR 1190984; INPO Level 4 IER 11-5, Fall 2010 Outage Summary, March 17, 2011
- IR 1191071; Japanese Fallout Expected in United States, March 23, 2011
- IR 1191228; DAIICHI/B.5.B Increase Capacity AF Crosstie Drain Connection, March 23, 2011
- IR 1191327; Deficiencies and Lessons Learned for IER 11-1 Responses, March 23, 2011
- IR 1193028; IER 11-SH Pipe Rubbing on Fire Protection Pipe in Turbine Building, March 28, 2011
- IR 1193472; IER 11-1, Enhancements EDMGS and B.5.B Equipment, March 28, 2011
- IR 1193492; IER 11-1, SBO Review Identified Areas for Improvement, March 28, 2011
- IR 1193496; IER 11-1, SBO Review Identified Areas for Improvement, March 28, 2011
- IR 1193499; IER 11-1, SBO Review Identified Areas for Improvement, March 28, 2011
- IR 1193502; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193503; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193504; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193505; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193507; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193509; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193510; IER 11-1, Flooding Mitigation Vulnerability, Floor Plug Above 1A RH HX Room, April 04, 2011
- IR 1193512; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193513; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193515; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193516; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193517; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193518; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193519; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193521; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011
- IR 1193522; IER 11-1, Flooding Mitigation Vulnerability, March 28, 2011

- IR 1193692; IER 11-1, Fukushima DAIICHI Flood Walkdown, March 29, 2011
- IR 1194299; IER 11-1, Hose Station Supply Line in Contact with Stairs, March 30, 2011
- IR 1194303; IER 11-1, FP Spray Line in Contact with Pipe Hanger, March 30, 2011
- IR 1194407; IER 11-1, Level 1 Issued, LS-AA-115-1001 Not Followed, March 30, 2011
- IR 1194871; Documentation For NRC Inspection Readiness TI 2515/138, March 30, 2011
- IR 1194877; Documentation For NRC Inspection Readiness TI 2515/138, March 30, 2011
- IR 1195493; IER 11-1, FP Header Piping Partially Insulated Against Vent, March 31, 2011
- IR 1195495; IER 11-1, FP Potential Vulnerability – Small Propane Tanks, March 31, 2011
- IR 1195502; IER 11-1, FP Sprinkler Pipe Rubbing Against Pipe Hanger Rod, March 31, 2011
- IR 1195514; IER 11-1, FP Sprinkler Pipe Support Has No Rod Attached, March 31, 2011
- IR 1195516; IER 11-1, FP Sprinkler Piping Contacting Conduit, March 31, 2011
- IR 1195557; IER 11-1, Work Coding for B.5.B, March 31, 2011
- IR 1195932; IER 11-1, DG Start Capability Without DC Should Be Evaluated, April 01, 2011
- IR 1196722; IER 11-1, Flooding Mitigation Vulnerability, April 02, 2011
- IR 1196744; IER 11-1, Flooding Walkdown - WF Vulnerabilities, April 03, 2011
- IR 1196750; IER 11-1, Flooding Mitigation Vulnerability, April 03, 2011
- IR 1196751; IER 11-1, Fukushima DAIICHI Walkdown – Junction Boxes, April 03, 2011
- IR 1196756; IER 11-1, Fukushima DAIICHI Walkdown – Floor Plug Seal, April 03, 2011
- IR 1196765; IER 11-1, Fukushima DAIICHI Walkdown – Valve Strokes, April 03, 2011
- IR 1196779; IER 11-1, Fukushima DAIICHI Walkdown – Inaccessible Rooms, April 03, 2011
- IR 1197103; IER 11-1 DAIICHI, Beyond Design Basis Tornado (Smart Tornado), April 04, 2011
- IR 1197526; Actions for Previously Identified B.5.B Issues Not Complete, April 05, 2011
- IR 1197550; IER 11-1, Reviews Failed to ID Multiple Procedure & PM Issues, April 04, 2011
- IR 1197672; IER 11-1 LL, No HU-AA-1212, April 04, 2011
- IR 1197697; IER 11-1, IA Hanger Contacting FP Piping in Radwaste Building, April 05, 2011
- IR 1197716; Fukushima DAI-ICHI Walkdowns – Changing Requirements, April 05, 2011
- IR 1199966; IER 11-1, Fire Protection Walkdown of Unit 2 Containment, April 08, 2011
- IR 1199970; IER 11-1, Fukushima Daiichi Walkdown – Floor Drain, April 08, 2011
- IR 1201621; IER 1111, Followup Action, REC 4 Identified Vulnerabilities, April 12, 2011
- SACRG-1; Severe Accident Control Room Guideline Initial Response, Revision 4
- SAG-1; Inject Into the Steam Generators, Revision 0
- SAG-4; Inject Into Containment, Revision 2
- DFC; TSC Diagnostic Flow Chart, Revision 2
- SACRG-2; Severe Accident Control Room Guideline for Transients After the TSC is Functional, Revision 3
- TI 2515/171; Verification of Site Specific Implementation of B.5.B Phase 2 & 3 Mitigating Strategies
- Byron Station Units 1 and 2, and Braidwood Station Units 1 and 2 – Conforming License Amendments to Incorporate the Mitigation Strategies Required By Section B.5.B of Commission Order EA-02-026 (TAC Nos. MD4502, MD4503, MD4500, and MD4501)

## LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
AF	Auxiliary Feedwater
CAP	Corrective Action Program
CFR	Code of Federal Regulations
EDMG	Extensive Damage Mitigation Guideline
ERO	Emergency Response Organization
IP	Inspection Procedure
IR	Issue Report
NOS	Nuclear Oversight
NPDES	National Pollutant Discharge Elimination System
NRC	United States Nuclear Regulatory Commission
RWST	Refueling Water Storage Tank
SAMGs	Severe Accident Management Guidelines
SBO	Station Blackout
TI	Temporary Instruction
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WM	Non-Essential Service Water

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 the 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/**

Eric R. Duncan, Chief  
Branch 3  
Division of Reactor Projects

Docket Nos. 50-454; 50-455  
License Nos. NPF-37; NPF-66

Enclosure: Inspection Report 05000454/2011014; 05000455/2011014  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

DOCUMENT NAME: G:\DRPIII1-Secy\1-Work In Progress\TI Reports\Byron 2011 014.docx

Publicly Available     Non-Publicly Available     Sensitive     Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII						
NAME	EDuncan:ntp						
DATE	05/11/11						

**OFFICIAL RECORD COPY**

Letter to M. Pacilio from E. Duncan dated May 13, 2011.

SUBJECT: BYRON STATION UNITS 1 AND 2 – NRC TEMPORARY  
INSTRUCTION 2515/183 INSPECTION REPORT 05000454/2011014;  
05000455/2011014

DISTRIBUTION:

Daniel Merzke  
RidsNrrDorLpl3-2 Resource  
RidsNrrPMByron Resource  
RidsNrrDirslrib Resource  
Cynthia Pederson  
Steven Orth  
Jared Heck  
Allan Barker  
Carole Ariano  
Linda Linn  
DRPIII  
DRSIII  
Patricia Buckley  
Tammy Tomczak  
ROPreports Resource