



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

May 13, 2011

Mr. John Carlin  
Vice President  
R.E. Ginna Nuclear Power Plant, LLC  
1503 Lake Road  
Ontario, NY 14519

SUBJECT: R.E. GINNA NUCLEAR POWER PLANT – NRC TEMPORARY INSTRUCTION  
2515/183 INSPECTION REPORT 05000244/2011008

Dear Mr. Carlin:

On April 21, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your R.E. Ginna Nuclear Power Plant, using Temporary Instruction 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 21, 2011, with Mr. Sullivan and other members of your staff.

The objective of this inspection was to promptly assess the capabilities of R.E. Ginna Nuclear Power Plant 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 United States 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.

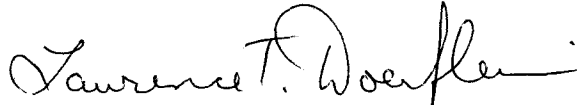
All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC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

J. Carlin

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Sincerely,

A handwritten signature in cursive script, reading "Lawrence T. Doerflein".

Lawrence T. Doerflein, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket No.: 50-244  
License No.: DPR-18

Enclosure: Inspection Report No. 05000244/2011008

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J. Carlin

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Sincerely,

/RA/

Lawrence T. Doerflein, Chief  
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-244

License No: DPR-18

Report No: 05000244/2011008

Licensee: Constellation Energy Nuclear Group, LLC

Facility: R.E. Ginna Nuclear Power Plant, LLC

Location: Ontario, NY

Dates: April 13, 2011, through April 21, 2011

Inspector: G. Hunegs, Senior Resident Inspector

Approved by: Lawrence T. Doerflein, Chief  
Engineering Branch 2  
Division of Reactor Safety

## **SUMMARY OF FINDINGS**

IR 05000244/2011008; 04/13/2011 – 04/21/2011; R.E. Ginna Nuclear Power Plant, LLC; 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 a resident inspector. 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 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. If necessary, a more specific followup 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.

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	Describe what the licensee did to test or inspect equipment.
<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>The licensee reviewed the B.5.b equipment inspection and testing preventive maintenance tasks to ensure that the tasks were up to date and that the equipment was available and functional. The B.5.b diesel driven pump and emergency generator, were also tested satisfactorily. The site fire truck and satellite phone were operated. The licensee completed applicable attachments of SC-3.15.15, "Emergency Fire Equipment Inventory and Inspection," to ensure that the emergency equipment inventories were maintained. Additional equipment used in Severe Accident Management Guidelines (SAMG) was verified to be available and functional.</p> <p>Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).</p>

	<p>The inspector assessed the licensee's capabilities by conducting a review of the licensee's walkdown activities. In addition, the inspector independently walked down and inspected all major B.5.b contingency response equipment staged throughout the site using applicable attachments of SC-3.15.15, "Emergency Fire Equipment Inventory and Inspection." The inspector also reviewed the following surveillance tests that were completed on B.5.b equipment:</p> <ul style="list-style-type: none"> <li>• STP-O-12.8, "DC Diesel Generator Test," Rev. 00101, which was completed on April 3, 2011;</li> <li>• STP-O-12.8.1, "DC Diesel Generator Load Test," Rev. 0000, which was completed on March 21, 2011; and</li> <li>• STP-O-13.4.1, "B.5.b Pump Annual Flow Test," Rev. 0001, which was completed on March 19, 2011.</li> </ul>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>The inspector concluded that the equipment used for B.5.b and SAMGs mitigation strategies was available and functional. The licensee did identify that the B.5.b emergency generator did not have a routine test performed and a test was scheduled and performed satisfactorily. Additionally, the licensee identified several enhancements to increase the survivability of portable equipment in beyond-design basis type events. The licensee documented the discrepancies as listed in the Attachment to this inspection report.</p>
<p>Licensee Action</p>	<p>Describe the licensee's actions to verify that procedures are in place and can be executed (e.g., walkdowns, demonstrations, tests, etc.)</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 operate permanently installed equipment during this verification.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>The licensee walked down procedures that implement B.5.b and SAMG mitigation strategies to verify that procedures were in place and are executable. The procedures reviewed included emergency response, emergency plan implementing procedures, site contingency, security and severe accident mitigation guidelines. Walkdown verification sheets were used which specified verification criteria.</p>
	<p>Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.</p>
	<p>The inspector examined the station's established guidelines and implementing procedures for the B.5.b and SAMGs mitigation strategies. The inspector assessed how the licensee coordinated the interface/transition between existing off-normal and Emergency Operating Procedures with the mitigation strategies. The inspector selected the following procedures and conducted plant walkdowns with plant operators to assess the adequacy and completeness of the procedures; familiarity of operators with the procedure objectives and specific guidance; staging and compatibility of equipment and the practicality of the operator actions prescribed by the procedures, consistent with the postulated scenarios:</p> <ul style="list-style-type: none"> <li>• ER-SFP.2, "Diverse SFP Makeup and Spray;" and</li> <li>• ER-AFW.3, "Alternate Standby Auxiliary Feedwater."</li> </ul>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>Based on the samples reviewed, the inspector concluded that the procedures required to implement the strategies associated with B.5.b and SAMG were in place and are executable. Procedures used for B.5.b and SAMG were reviewed by the licensee and walkdowns were performed by operators to ensure actions taken could be performed. The licensee identified and documented some procedure discrepancies and enhancements as listed in the Attachment to this inspection report.</p>

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>The licensee conducted initial and continuing B.5.b and SAMG training and verified that training was completed for applicable operations personnel. Both B.5.b and SAMG training is required in accordance with the licensee's Nuclear Emergency Response Training Program. The licensee reviewed training records and documentation to ensure that the training was up to date and verified that there was a sufficient number of trained personnel to implement the B.5.b and SAMGs response.</p>
	<p>Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff.</p>
	<p>The inspector reviewed training qualification transcripts and continuing training attendance records for G-OTA-0904a, "SAMG Overview." Additionally, the inspector interviewed several operators to assess their level of B.5.b and SAMG knowledge.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>Based upon the inspector's review of formal training, interviews, and observations of plant staff during the walkdown of mitigating strategies in the field, the inspector concluded that overall B.5.b and severe accident management guideline training was consistent with regulatory and industry guidelines. The licensee identified that nine of 16 designated Technical Support Center responders had not received continuing table top training on SAMG actions as specified in the Nuclear Emergency Response Plan Training Program. These responders had previously completed the training. The licensee conducted the training for the individuals as required. The licensee identified and documented some additional training program implementation discrepancies and enhancements as listed in the Attachment to this inspection report.</p>

Licensee Action	Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.
<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 verified that the Ginna Emergency Plan contains letters of agreement from local and state response organizations that provide support of the emergency plan consistent with mutual aid response. These organizations included: Wayne County, Monroe County, New York State Division of Homeland Security and Emergency Services, U.S. Dept. of Commerce National Oceanic and Atmospheric Administration, New York State Police, Rochester General Hospital and Newark-Wayne Community Hospital, Ontario Fire Company, Wayne County Sheriff's Department, and the Department of Energy.</p>
	<p>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).</p>
	<p>The inspector verified that the licensee had in place current letters of agreement (LOA) with off-site agencies to provide assistance in mitigation strategies. Additionally, a letter dated January 15, 2011, from the Ontario Fire Company, Ontario, NY, and a letter dated January 12, 2011 from the Wayne County Board of Supervisors, Lyons, NY, which specify assistance agreements were reviewed in detail.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>Agreements to provide assistance are in place and a process exists to ensure that the agreements are maintained current. The inspector concluded that the agreements that were in place were appropriate for the strategies that were evaluated.</p>

<p>Licensee Action</p>	<p>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>
<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 identified minor equipment and procedural issues that would not preclude the successful implementation of existing mitigating strategies. Condition reports (CR) that were documented to address the procedure and program deficiencies are listed in the Attachment. The inspector concluded that the licensee could successfully implement mitigation strategies.</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:

Licensee Action	Describe the licensee's actions to verify the adequacy of equipment needed to mitigate an SBO event.
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee actions included the identification of equipment that is utilized and required for the mitigation of an SBO. The licensee conducted walkdowns of SBO related equipment, including staged prefabricated hoses and fittings to ensure that the equipment was adequate, properly staged, tested and maintained. The diesel driven air compressor is credited in responding to an SBO event and this was also walked down and operated satisfactorily.</p>
	<p>Describe inspector actions to verify equipment is available and useable.</p>
	<p>The inspector assessed the licensee's capability to mitigate SBO conditions by conducting a review of the licensee's walkdown activities. In addition, the inspector selected a sample of equipment utilized/required for mitigation of an SBO and conducted independent walkdowns of that equipment to verify that the equipment was properly aligned and staged. The inspector verified that the diesel driven air compressor, prefabricated hoses and fittings were in accordance with O-6.11, "Surveillance Requirement/Routine Operations Check Sheet," Attachment 13, "Miscellaneous Equipment Inventory;" and O-6.11, Attachment 7, "Portable Diesel Air Compressor Checks;" was reviewed to verify satisfactory completion.</p>
	<p>Discuss general results including corrective actions by licensee.</p>

	<p>The licensee verified that SBO equipment was ready to respond to an SBO condition.</p> <p>During their review, the licensee noted several deficient conditions associated with AC power restoration through an emergency offsite backfeed method. Although recovery of AC power using this method is not an action credited for compliance with 10 CFR 50.63, the licensee initiated CR-2011-001736, "Vulnerabilities exist with respect to station blackout recovery actions in ER-ELEC.3, Emergency Offsite Backfeed Via Main and Unit Transformers," to address this concern.</p> <p>Several additional CRs were initiated to document and track resolution of equipment issues and procedure enhancements. The inspector determined these deficiencies would not impact the licensee's ability to respond to an SBO event. The CRs are listed in the Attachment of this report.</p> <p>The inspector concluded that the licensee's reviews verified that SBO equipment was adequate to respond to an SBO condition.</p>
<p>Licensee Action</p>	<p>Describe the licensee's actions to verify the capability to mitigate an SBO event.</p>
<p>b. Demonstrate through walkdowns that procedures for response to an SBO are executable.</p>	<p>The licensee actions included the identification of procedures required for response to an SBO, along with the verification that the identified procedures were current and properly validated. The procedures were reviewed and walkdowns were performed. Particular attention was paid to operator time critical actions. In addition, the licensee conducted a review of open corrective action program items for potential impact on SBO procedures.</p> <p>Describe inspector actions to assess whether procedures were in place and could be used as intended.</p>

	<p>The inspector assessed the licensee's capabilities by conducting a review of the licensee's walkdown activities and observing portions of the performance of ECA-0.0, "Loss of All AC Power," in the simulator. The inspector selected several procedures and independently verified that these procedures could be accomplished. The procedures walked down included ER-ELEC.4, "TSC D/G Feed to Bus 16 to Supply Charging Pumps, Instrument Bus D and Battery B;" ER-D/G.2, "Alternate Cooling for Emergency D/Gs;" ATT-11.2, "Attachment Diesel Air Compressor;" and ATT-5.2, "Attachment Alternate Cooling to TDAFW Pump." In addition, the inspector questioned several operators on the performance of the procedures and location of equipment necessary to respond to an SBO.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>Procedure ECA-0.0, "Loss of All AC Power," is the controlling procedure for an SBO. Training is frequently conducted for this event. Several CRs that were written to document procedure and staged equipment deficiencies are listed in the Attachment. The inspector concluded that the licensee's reviews verified that SBO procedures were adequate to respond to an SBO condition.</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</p>	<p>Describe the licensee's actions to verify the capability to mitigate existing design basis flooding events.</p>
<p>a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee conducted walkdowns and inspections of all required materials and equipment necessary to mitigate an internal or external flood to ensure that they were adequate and properly staged. As part of these walkdowns, the licensee considered the potential that the equipment's function could be lost during seismic events at the site. The licensee verified that non-permanent flood mitigation equipment was properly staged and tested satisfactorily.</p> <p>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</p> <p>The inspector independently walked down flood protection features and structures associated with the emergency diesel generators, battery rooms, auxiliary building and intake structure. The inspector also walked down portions of ER-SC.2, "High Water (Flood) Plan," Revision 00800 and reviewed the design qualification and installation of a selected sample of flood seals including the control room air handling room dewatering flapper valve gagging device. Flood protection mitigation strategies related to the auxiliary building door flood barriers were walked down. The equipment was compared with requirements in procedure SC-3.17, "Auxiliary Building Flood Barrier Installation/Removal/Inspection." The inspector also reviewed a sample of flood related corrective actions and verified that the licensee has an existing preventive maintenance program to walkdown permanent flood barriers.</p>



	<p>Discuss general results including corrective actions by licensee.</p>
	<p>The inspector concluded that all required materials are adequate and properly staged, tested, and maintained to respond to an internal or external flood within the plant's design basis. While no operability or significant concerns were identified, the licensee identified several procedure and administrative program deficiencies and appropriately entered them into the corrective action program, as listed in the Attachment to this report. The inspector reviewed the associated condition reports and determined that the licensee's initial responses, including their assessment and prioritization, were appropriate.</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>Licensee Action</p>	<p>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.</p>
<p>a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee actions included the identification of equipment that is utilized or required for mitigation of fire and flood events. An engineering plan was developed to govern the conduct of walkdowns and inspections of permanent and temporary equipment. Licensee engineering personnel determined if the equipment was seismically qualified or evaluated and assessed the seismic survivability. Seismic vulnerabilities were identified along with possible mitigating strategies, as necessary for equipment that was not seismically qualified.</p>

	<p>The licensee utilized industry guidance to assess the potential impact of seismic events on the availability of equipment used in fire and flooding mitigation strategies. These guidelines were established to govern the conduct of walkdowns and inspections of the equipment, both permanent and temporary. The licensee conducted walkdowns and documented the results in an internal report dated April 15, 2011.</p>
	<p>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</p>
	<p>The inspector reviewed the scope of the licensee assessments and the results of their walkdowns. The inspector also independently walked down a sample of risk significant areas of the plant to assess beyond design basis seismic and flooding vulnerabilities. This equipment and areas included:</p> <ul style="list-style-type: none"> <li>• All major B.5.b contingency response equipment staged at the site;</li> <li>• Installed fire protection and suppression equipment in the intake structure, turbine building, technical support center, and battery rooms; and</li> <li>• The installed diesel and electric fire pumps.</li> </ul> <p>The licensee flood and fire mitigation procedures were reviewed to verify usability. The results of the inspector review aligned with the licensee's conclusions that there were vulnerabilities identified as described below. The inspector determined that the licensee meets the current licensing and design bases for B.5.b, fire protection, and flooding.</p>
	<p>Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee as a result of their reviews.</p>

The inspector concluded that the licensee's reviews were comprehensive. In reviewing the beyond design basis flooding and seismic interactions, the licensee identified several potential vulnerabilities and associated enhancements that could improve the survivability of equipment or strategies. Although these issues were previously evaluated in the NRC's Integrated Plant Safety Assessment Systematic Evaluation Program and determined to be within the licensing basis of the plant, the licensee has appropriately identified the issues as vulnerabilities. The following summarizes the more significant licensee general conclusions:

- The house heating steam lines located in the screenhouse are not seismic and their failure would create a vulnerability for safety related equipment operation;
- Diesel driven and motor driven fire pumps are not seismic and the loss of these pumps would make all suppression systems and hose reels in the plant unavailable;
- Natural gas piping to the house heating boiler located in the screenhouse is not seismic and the piping failure could create an additional fire hazard;
- Fire suppression systems are not seismic and would be impacted by a seismic event; and
- Hydrogen storage and supply systems are not seismic and could be a source of fire due to a seismic event.

The licensee's assessments were summarized in documents titled "Recommendation 4, 4a and 4b, Assessment of Fire Protection Equipment, Assessment of Fire Fighting Abilities, Assessment of Flood Mitigation Features and Equipment and Vulnerabilities."

## Meetings

### 4OA6 Exit Meeting

The inspector presented the inspection results to Mr. Joseph Sullivan, Acting Plant General Manager and other members of licensee management at the conclusion of the inspection on April 21, 2011. Proprietary information reviewed by the inspector during the inspection was returned to the licensee. The inspector verified that the inspection report does not contain proprietary information.