



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

May 8, 2018

Mr. Bryan C. Hanson  
Senior VP, Exelon Generation Company, LLC  
President and CNO, Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

**SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2—NRC TRIENIAL INSPECTION OF  
EVALUATION OF CHANGES, TESTS AND EXPERIMENTS INSPECTION  
REPORT 05000373/2018010 AND 05000374/2018010**

Dear Mr. Hanson:

On April 6, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an Evaluation of Changes, Tests and Experiments Inspection at your LaSalle County Station, Units 1 and 2. On April 6, 2018, the NRC inspectors discussed the results of this inspection with Mr. Bill Trafton and other members of your staff. The results of this inspection are documented in the enclosed report.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very-low safety significance (Green). The NRC has also determined that one violation is associated with this issue. Because the licensee initiated condition reports to address this issue, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report.

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

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC resident inspector at the LaSalle County Station.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations*, Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Mark T. Jeffers, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket Nos. 50-373; 50-374; 72-070  
License Nos. NPF-11; NPF-18

Enclosure:  
IR 05000373/2018010; 05000374/2018010

cc: Distribution via ListServ®

Letter to Bryan C. Hanson from Mark T. Jeffers dated May 8, 2018

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Numbers: 50-373; 50-374; 72-070

License Numbers: NPF-11; NPF-18

Report Numbers: 05000373/2018010; 05000374/2018010

Enterprise Identifier: I-2018-010-0010

Licensee: Exelon Generation Company, LLC

Facility: LaSalle County Station, Units 1 and 2

Location: Marseilles, IL

Dates: April 2, 2018, through April 6, 2018

Inspectors: J. Corujo-Sandín, Reactor Inspector (Team Lead)  
V. Meghani, Reactor Inspector  
G. O'Dwyer, Reactor Inspector

Approved by: M. Jeffers, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

**SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee’s performance by conducting an Evaluations of Changes, Tests and Experiments Inspection at LaSalle County Station, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. A NRC and self-revealed findings, violations, and additional items are summarized in the table below.

**List of Findings and Violations**

Failure to Translate Reactor Building Superstructure Design Basis			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000373/2018010-01; 05000374/2018010-01 Opened and Closed	[H.12] – CCA Avoid Complacency	71111.17T
<p>Inspectors identified a Green finding and associated Non-Cited Violation of Title 10 of the <i>Code of Federal Regulations</i>, Part 50, Appendix B, Criterion III, “Design Control,” for licensee’s failure to assure that applicable Updated Final Safety Analysis Report described design basis for the Reactor Building (RB) superstructure were correctly translated to field documents was a performance deficiency. Specifically, Updated Final Safety Analysis Report Tables 3.8-9 and 3.8-11 define the design basis load combinations and the corresponding design stress limits applicable to the RB superstructure. Design calculation L-003415 evaluates these load combinations and applies RB overhead crane lifting limitations which ensures these design basis are met. The licensee failed to translate these limitations into specifications, drawings, procedures, or instructions which would ensure the specified stress limits for RB design basis load combinations would not be exceeded while operating the RB overhead crane.</p>			

**Additional Tracking Items**

None

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.17T—Evaluations of Changes, Tests and Experiments (19 Samples)

The inspectors evaluated the following:

#### 10 CFR 50.59 Evaluations—71111.17T

- (1) L17-187; VY Coolers Design Document Update; Revision 0
- (2) L17-013; 50.59 Evaluation Defeat HWC Trip; Revision 0
- (3) L15-138; 50.59 Evaluation Online Noble Chemistry; Revision 0
- (4) L15-221; 50.59 Evaluation Increased number of SRV Actuations; Revision 0
- (5) L16-159; Increased Flow Through Reactor Water Cleanup; Revision 0
- (6) L17-091; Seismic Monitoring Instrumentation Upgrade; Revision 0

#### 10 CFR 50.59 Screening/Applicability Determinations—71111.17T

- (1) L17-239; Correct Licensing Bases regarding Design Basis Missiles; Revision 0
- (2) L16-030; Shutdown Cooling System Shutdown (LOP-RH-08); Revision 0
- (3) L15-196; EC 394135 increase closing force, Revision 0
- (4) L15-206; EC 403168 new RPS switch; Revision 0
- (5) L16-200; LOP-OG-09 Rev 22 Offgas clarifications; Revision 0
- (6) L15-166; EC 402921 Exhaust Duct Strut; Revision 0
- (7) L15-133; LOP-CD-03 Rev 34; Revision 0
- (8) L15-143; Revised Drawings for RHR and LPCS Pump Motor Space Heaters; Revision 0
- (9) L15- 228; 1DG05A Piping Replacement / Re-route for VY Cooler; Revision 2
- (10) L15-250; Concrete Encasement of 2CW14A-36" Circulating water Standpipe; Revision 0
- (11) L16-40; Installation of Watershed to Mitigate the Effects of RB Leak on RB Overhead Crane 0HC02G; Revision 0
- (12) L16-191; Increase Speed of the Unit 1 Refueling Bridge; Revision 0
- (13) L17-221; Permanent Change to Move South Crane Stops for RB Overhead Crane; Revision 0

## INSPECTION RESULTS

### 71111.17T—Evaluations of Changes, Tests and Experiments

Failure to Translate Reactor Building Superstructure Design Basis			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000373/2018010-01; 05000374/2018010-01 Opened and Closed	[H.12] – CCA Avoid Complacency	71111.17T
<p>Introduction: Inspectors identified a Green finding and associated Non-Cited Violation of Title 10 of the <i>Code of Federal Regulations</i>, Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to assure that the applicable Updated Final Safety Analysis Report (UFSAR) described design basis for the Reactor Building (RB) superstructure was correctly translated to field documents. Specifically, UFSAR Tables 3.8-9 and 3.8-11 define the design basis load combinations and the corresponding design stress limits applicable to the RB superstructure. Design Calculation L-003415 evaluates these load combinations and applies RB overhead crane lifting limitations which ensures these design bases are met. The licensee failed to translate these limitations into specifications, drawings, procedures, or instructions which would ensure the specified stress limits for RB design basis load combinations would not be exceeded while operating the RB overhead crane.</p>			
<p><u>Description:</u> Design of the RB steel superstructure is addressed in UFSAR Section 3.8.4, “Other Seismic Category I Structures,” the applicable design load combinations are defined in Table 3.8-9 and the load definitions are included in Table 3.8-11. Calculation L-003415, Revision 3, “Reactor Building Crane Supporting Structure Analysis” was issued on May 19, 2010, for evaluation of the safety-related RB crane steel support structure and for the design of necessary modifications in order to meet the UFSAR requirements. The calculation analyzed lifting of up to a 125 ton load (i.e., the crane’s rated load) over most of the refueling floor. However, for the south bay (i.e., between column lines 8.9 and 10) and the north bay (i.e., between column lines 20 and 21), specific limitations were identified in the calculation, because only a 40-ton steam dryer lift with specific travel limits was considered in the analysis. The licensee did not incorporate the limitations identified in the calculation into any field procedure, instructions or drawings.</p> <p>In response to inspectors’ questions, the licensee stated a position that in lieu of the L-003415, an older calculation, Calculation 29E, “Calculation for Reactor Building Crane Column Analysis,” could be used as the design basis for qualification of superstructure design for any non-single-failure-proof lift up to the 125-ton limit. Inspectors reviewed Calculation 29E and determined that the load combinations used were not consistent with Section 3.8.4, Table 3.8-9 and Table 3.8-11 of the UFSAR because it did not consider all crane loads as part of live load concurrent with seismic loads as required by their design basis stated in the UFSAR. Specifically, the crane lifted load was not included in the seismic load combinations. The inspectors noted that the 29E calculation was referenced as a “Historic Calculation,” in L-003415, and the cover page description on the 29E calculation itself described it as revised and pointed to Calculation L-003415 regarding the updated seismic analysis; therefore, the inspectors concluded that the evaluation of the UFSAR load combinations addressed in</p>			

L-003415 superseded the evaluations in 29E and thus L-003415 was the design basis evaluation for the RB overhead crane support structure used to ensure the RB superstructure remained with its design basis.

Corrective Action(s): The licensee identified corrective actions to perform a formal evaluation and to revise procedures as applicable. In addition, the licensee performed evaluations demonstrating that the UFSAR design bases would have been met for all known previous lifts performed in the two end bay areas.

Corrective Action Reference: AR 04130441

Performance Assessment:

Performance Deficiency: Inspectors determined the failure to assure that applicable UFSAR described design basis for the RB superstructure was correctly translated to field documents was a performance deficiency. Specifically, UFSAR Tables 3.8-9 and 3.8-11 define the design basis load combinations and the corresponding design stress limits applicable to the RB superstructure. Design Calculation L-003415 evaluates these load combinations and applies RB overhead crane lifting limitations which ensures these design basis are met. The licensee failed to translate these limitations into specifications, drawings, procedures, or instructions which would ensure the specified stress limits for the RB design basis load combinations would not be exceeded while operating the RB overhead crane.

Screening: The inspectors determined that the performance deficiency was more-than-minor because it adversely affected the Initiating Events cornerstone attribute of equipment performance and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, failure to translate the design basis and any applicable limitations into field documents could result in the operation of the RB overhead crane outside of its analyzed condition which could damage the crane runway/support structure and adversely affect the availability/reliability of the crane, a refueling/fuel handling equipment. In addition, at least one example was identified where the licensee performed a lift of the reactor recirculation pump motor with the RB overhead crane bridge/trolley locations outside the configurations analyzed in Calculation L-003415.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A. The finding screened to Green (very-low safety significance) because it did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event and affected mitigation equipment. Specifically, the inspectors did not identify any actual previous RB overhead crane lifting operation which resulted in a complete or partial loss of the RB superstructure support function.

Cross-cutting Aspect: The finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area, which states that the licensee will recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Specifically, during evaluations per EC 403064 and EC 619892, while expecting the reactor recirculation motor lift configuration to be bounded by calculation L-003415, the licensee reviewers had an opportunity to identify the limitations and incorporate these into field documents; however, they failed to do so. (H.12)



Enforcement:

Violation: Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, “Design Control,” states, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. The UFSAR Tables 3.8-9 and 3.8-11 define the design basis load combinations and the corresponding design stress limits applicable to the RB superstructure.

Contrary to the above, on May 19, 2010, when Calculation L-003415, Revision 3, was issued, the licensee failed to assure that applicable regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to translate the limitations specified in Calculation L-003415 into field documents which would ensure the safety-related RB superstructure design basis stress limits, established in the UFSAR, would not be exceeded when operating the RB overhead crane.

Disposition: This violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors confirmed that proprietary information was controlled to protect from public disclosure. The inspectors verified no proprietary information was documented in this report.

- On April 6, 2018, the inspectors presented the Evaluation of Charges, Tests and Experiments Inspection results to Mr. Bill Trafton, and other members of the licensee staff.

## **DOCUMENTS REVIEWED**

### 71111.17T—Evaluations of Changes, Tests and Experiments

- 143-B; Calculation for Tornado Loads on Concrete Targets; Revision 0
- 2014-09820; Evaluation of Reactor Water Cleanup Normal Flow Increase; Revision 0
- 29E; Calculation for Reactor Building Crane Column analysis; Revision 000A
- AR 01524532; Design Analysis L-003263 Input of 15 SRV actuations non-conservative; 06/13/2013
- AR 02528988; Incomplete EC 395842 Documentation about added manual actions
- AR 03962356; HWC System trouble alarm came in and then system tripped off
- AR 04041033; LST-2015-002 Was Not Turned Over to Records Timely; 08/10/2017
- AR 04122089; NRC ID – UFSAR Discrepancy on RWCU NPSH; 04/02/2018
- AR 04123596; NRC ID. UFSAR Discrepancy Between Sections 6 and 15; 04/05/2018
- AR 04123599; NRC ID- Documentation for Movement of RBOC Stops; 04/05/2018
- EC 394135; Increase IN system pressure regulator setpoint; Revision 000
- EC 395842; Increased # SRV Actuations that the ADS Accumulator Back-up Compressed Gas System (Bottle Banks) must Support; Revision 0
- EC 402711; Revised Drawings for RHR and LPCS Pump Motor Space Heaters; Revision 0
- EC 402921; TCCP to Temporarily Restrain Sway Strut on 2B TDRFP Exhaust Duct; Revision 0
- EC 403064; TCCP to Move South Crane Stops for the RB Overhead Crane; Revision 2
- EC 403168; RPS Power Transfer Switch Replacement; Revision 0

- EC 403363; Piping Replacement / Re-route for VY Cooler; Revision 3
- EC 403843; Seismic Monitoring Instrumentation Upgrade; Revision 0
- EC 404795; Installation of Watershed to Mitigate the Effects of RB Leak on RB Overhead Crane 0HC02G; Revision 0
- EC 406246; Increase Speed of the Unit 1 Refueling Bridge; Revision 0
- EC 619892; Permanent Change to Move South Crane Stops for RB Overhead Crane; Revision 0
- EC 620533; VY Cooler Design Document Update EC 620533; Revision 1
- EC397183; Concrete Encasement of 2CW14A-36" Circulating water Standpipe; Revision 0
- L-002404; CSCS Cooling Water System "Road Map" Calculation; Revision 1
- L-003263; Design Analysis, Volumes for ADS Back-up Compressed Gas System; Revision 3
- L-003415; Calculation for Reactor Building Crane Support Structure Analysis; Revision 3
- LAS-NPD-95-0015; Calculation for Moderate Energy Pipe Break Evaluation in Diesel and Turbine / Auxiliary Buildings; Revision 0
- LIS-RH-103A; Unit 1 RHR A (LPCI Mode) Minimum Flow Bypass Calibration; Revision 15
- LOP-DG-02; Diesel Generator Startup and Operation; Revision 63
- LOP-IN-05; Replacing Nitrogen Bottles on Instrument Nitrogen System; Revision 23
- LOP-IN-05; Replacing Nitrogen Bottles on Instrument Nitrogen System; Revision 24
- LOP-IN-05; Replacing Nitrogen Bottles on Instrument Nitrogen System; Revision 25
- LOP-OG-09; Offgas Catalytic Recombiner Trains Startup; Revision 22
- LOP-RH-08; Shutdown Cooling System Shutdown; Revision 47
- LOS-AA-W1; Technical Specifications Weekly Surveillances; Revision 83
- LOS-VY-SR1; ECCS Cubicle Area Cooler Air Flowrate Test; Revision 12
- LST-2015-002; Increased Flow Through Reactor Water Cleanup; Revision 0
- LUCR 390; Seismic Monitoring Instrumentation Upgrade; 07/18/2017
- LUCR-361; Changes to UFSAR Appendix J, Table J-2 associated with EC 403363; 02/10/2016
- LUCR-396; VY Cooler Flow Update per EC 620533; 09/28/2017
- LUCR-400; Alignment of Seismic Category I Tornado Missile Protection with Design Calculations; 01/03/2018
- M-66, Drywell Pneumatic System P&ID sheet 1; Revision AG
- M-66, Drywell Pneumatic System P&ID sheet 2; Revision V
- M-773; Turbine Driven Feed Pumps Exhaust Duct; Revision C
- OP-LA-102-106; LaSalle Station Operator Response Time Program; Revision 9