



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

August 9, 2017

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

SUBJECT: BYRON STATION, UNITS 1 AND 2—BASELINE EMERGENCY  
PREPAREDNESS BIENNIAL EXERCISE INSPECTION REPORT  
05000454/2017502; 05000455/2017502

Dear Mr. Hanson:

On July 27, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Byron Station, Units 1 and 2, and the NRC inspectors discussed the results of this inspection with Mr. T. Chalmers and other members of your staff. The results of the inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Kenneth Riemer, Acting Chief  
Plant Support Branch  
Division of Reactor Safety

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

Enclosure:  
IR 05000454/2017502; 05000455/2017502

cc: Distribution via LISTSERV®

Letter to Bryan C. Hanson from Kenneth Riemer dated August 9, 2017

SUBJECT: BYRON STATION, UNITS 1 AND 2—BASELINE EMERGENCY  
PREPAREDNESS BIENNIAL EXERCISE INSPECTION REPORT  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-454; 50-455  
License No: NPF-37; NPF-66

Report No: 05000454/2017502; 05000455/2017502

Licensee: Exelon Generation Company, LLC

Facility: Byron Station, Units 1 and 2

Location: Byron, IL

Dates: July 24–27, 2017

Inspectors: G. Hansen, Senior Emergency Preparedness Inspector  
M. Garza, Emergency Preparedness Inspector  
C. Hunt, Resident Inspector  
D. Sargis, Reactor Engineer

Approved by: K. Riemer, Acting Chief  
Plant Support Branch  
Division of Reactor Safety

Enclosure

## **SUMMARY**

Inspection Report 05000454/2017502; 05000455/2017502; 07/24/2017–07/27/2017; Byron Station, Units 1 and 2; Baseline Emergency Preparedness Biennial Exercise Inspection; Exercise Evaluation Scenario Review; Performance Indicator Verification.

This report covers a 1-week period of announced baseline inspection by 4 regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6, dated July 2016.

### **NRC-Identified and Self-Revealed Findings**

#### **Cornerstone: Emergency Preparedness**

No findings were identified.

### **Licensee-Identified Violations**

None

## REPORT DETAILS

### 1. REACTOR SAFETY

#### Cornerstone: Emergency Preparedness

#### 1EP1 Exercise Evaluation (71114.01)

##### .1 Exercise Evaluation

##### a. Inspection Scope

The inspectors reviewed the July 26, 2017, Biennial Emergency Preparedness Exercise's objectives and scenario to ensure that the exercise would acceptably test major elements of the licensee's Emergency Plan and to verify that the exercise's simulated problems provided an acceptable framework to support demonstration of the licensee's capability to implement its plan. The inspectors also reviewed records of other drills and exercises conducted from 2015 through 2017, to verify that those drills' scenarios were sufficiently different from the scenario used in the July 26, 2017, exercise.

The inspectors evaluated the licensee's exercise performance, focusing on the risk-significant activities of emergency classification, notification, and protective action decision making, implementation of accident mitigation strategies, and correction of past exercise weaknesses in the following emergency response facilities:

- Control Room Simulator;
- Technical Support Center;
- Operations Support Center; and
- Emergency Operations Facility.

The inspectors also assessed the licensee's recognition of abnormal plant conditions, transfer of responsibilities between facilities, internal communications, interfaces with offsite officials, readiness of emergency facilities and related equipment, and overall implementation of the licensee's Emergency Plan.

The inspectors attended post-exercise critiques in the control room simulator, technical support center, operations support center, and emergency operations facility to evaluate the licensee's initial self-assessment of its exercise performance. The inspectors later met with the licensee's lead exercise evaluators and managers to obtain the licensee's findings and assessments of its exercise participants' performances. These self-assessments were then compared with the inspectors' independent observations and assessments to assess the licensee's ability to adequately critique its exercise performance. Documents reviewed are listed in the Attachment to this report.

This exercise evaluation inspection constituted one sample as defined in Inspection Procedure (IP) 71114.01.

##### b. Findings

No findings were identified.

1EP8 Exercise Evaluation – Scenario Review (71114.08)

a. Inspection Scope

Prior to the inspection activity onsite, the inspectors conducted an in-office review of the exercise objectives and scenarios submitted to the U.S. Nuclear Regulatory Commission using IP 71114.08, “Exercise Evaluation - Scenario Review,” to determine if the exercise would test major elements of the Emergency Plan as required by Title 10 of the *Code of Federal Regulations*, Part 50.47(b)(14). Documents reviewed are listed in the Attachment to this report.

This review of the exercise objectives and scenario constituted one inspection sample as defined in IP 71114.08.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

**Cornerstone: Emergency Preparedness**

4OA1 Performance Indicator Verification (71151)

.1 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise Performance Indicator (PI) for the period from the second quarter 2016 through second quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, were used. The inspectors reviewed the licensee’s records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions, and performance during other drills. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one Drill/Exercise Performance sample as defined in IP 71151.

b. Findings

No findings were identified.

## .2 Emergency Response Organization Drill Participation

### a. Inspection Scope

The inspectors sampled licensee submittals for the Emergency Response Organization Drill Participation PI for the period from the second quarter 2016 through second quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2016 and 2017 exercises and drills; and revisions of the roster of personnel assigned to key emergency response organization positions. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one Emergency Response Organization Drill Participation sample as defined in IP 71151.

### b. Findings

No findings were identified.

## .3 Alert and Notification System

### a. Inspection Scope

The inspectors sampled licensee submittals for the Alert and Notification System (ANS) PI for the period from the second quarter 2016 through second quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI and results of periodic scheduled ANS operability tests. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one ANS sample as defined in IP 71151.

### b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 27, 2017, the inspectors presented the biennial exercise inspection results to Mr. T. Chalmers, 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. Chalmers, Plant Manager  
C. Cote, Operations Director (Acting)  
R. Lloyd, Emergency Preparedness Manager  
R. Kartheiser, Emergency Preparedness Coordinator  
K. Aleshire, Director EP-Corp  
A. Daniels, Midwest Emergency Preparedness Manager  
R. Martin, Emergency Preparedness Specialist (Corporate)  
E. Maloni, Emergency Preparedness Specialist (Corporate)  
D. Spitzer, Regulatory Assurance Manager  
Z. Cox, NRC Coordinator

#### U.S. Nuclear Regulatory Commission

J. McGhee, Senior Resident Inspector  
C. Hunt, Resident Inspector

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### Opened, Closed, and Discussed

None

### **LIST OF ACRONYMS USED**

ANS	Alert and Notification System
IP	Inspection Procedure
NEI	Nuclear Energy Institute
PI	Performance Indicator

## LIST OF DOCUMENTS REVIEWED

The following is a partial 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 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.

### 1EP1 Exercise Evaluation (71114.01)

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 28
- EP-AA-1002; Exelon Nuclear Radiological Emergency Plan Annex for Byron Station; Revision 34
- EP-AA-1002, Addendum 1; Byron Station On-Shift Staffing Technical Basis; Revision 1
- EP-AA-1002, Addendum 3; Exelon Nuclear Emergency Action Levels for Byron Station; Revision 1
- EP-AA-110-200; Dose Assessment; Revision 8
- EP-AA-110-302; Core Damage Assessment; Revision 7
- EP-AA-111; Emergency Classification and Protective Action Recommendations; Revision 19
- EP-AA-111-F-03; Byron Plant Based PAR Flowchart; Revision F
- EP-AA-112; Emergency Response Organization (ERO)/Emergency Response Facility Activation and Operation; Revision 18
- EP-AA-113; Personnel Protective Actions; Revision 13
- EP-AA-114; Notifications; Revision 13
- EP-AA-115; Termination and Recovery; Revision 9
- EP-AA-121; Emergency Response Facilities and Equipment Readiness; Revision 15
- EP-AA-122-300-F-01; Drill and Exercise Evaluation Criteria; Revision H
- Byron 2013 NRC Graded Exercise Evaluation Report; November 20, 2013
- Byron 2015 HAB NRC Exercise Evaluation Report; May 20, 2015
- Byron 2016 Off-Year Exercise Evaluation Report; May 25, 2016
- Byron 2017 Pre-Exercise Evaluation Report; June 21, 2017
- PowerPoint Presentation; Byron Biennial Exercise – Exercise Evaluation Results; July 26, 2017
- Two-Year List of Drill and Exercise Condition Reports; July 2015 – July 2017
- Two Years of Drill and Exercise Timelines; July 2015–July 2017-
- AR 02531368; EP Respirator Qualification Margin – Declining Trend MMD; July 22, 2015
- AR 02537107; Shift Staffing Less Than Desired Per BAP 320-1; August 4, 2015
- AR 02650932; MMD Less Than 50% EP Pool Members Respiratory Qualified; March 5, 2016
- AR 02638846; Loss of EP Capabilities Lessons Learned – Ops Focus; March 10, 2016
- AR 02646532; Ops Focus – Shift Manning Below Desired; March 28, 2016
- AR 02679551; Shift Personnel EP Unusual Event Response Lessons Learned; June 9, 2016
- AR 02694100; ERO Notification System – Loss of Communication Capability; June 18, 2016
- AR 02684652; Byron Off Year Exercise – Facility and Equipment Issues; June 22, 2016
- AR 02684649; FA ID: Byron Off Year Exercise - TSC Performance; June 22, 2016
- AR 02684634; Byron Off Year Exercise - OSC Performance; June 22, 2016
- AR 04024687; Byron EP Pre Exercise Failed Facility Objective - TSC; June 22, 2017
- AR 04027115; Byron EP 2017 Pre Exercise - CR/SIM DC Failures; June 29, 2017
- AR 04027121; Byron EP 2017 Pre Exercise - TSC DC Failures; June 29, 2017
- AR 04027126; Byron EP 2017 Pre Exercise - OSC DC Failures; June 29, 2017
- AR 04027130; Byron EP 2017 Pre Exercise - Facilities and Equipment; June 29, 2017
- AR 04027175; Byron EP 2017 Pre Exercise - Procedure Issues; June 29, 2017

1EP8 Exercise Evaluation – Scenario Review (71114.08)

- Byron Station 2017 NRC Graded Exercise 60 Day Manual; May 24, 2017

4OA1 Performance Indicator Verification (71151)

- NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 7
- NRC PI Data Sheets; NRC Indicator ANS Reliability; April 2016–June 2017
- NRC PI Data Sheets; ERO Readiness; April 2016–June 2017
- NRC PI Data Sheets; Drill/Exercise Performance; April 2016–June 2017