



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

April 18, 2019

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—FIRE PROTECTION INSPECTION;
INSPECTION REPORT 05000454/2019011 AND 05000455/2019011

Dear Mr. Hanson:

On March 8, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Byron Station, Units 1 and 2 and discussed the results of this inspection with Mr. Mark Kanavos and other members of your staff. The results of this 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 Title 10 of the *Code of Federal Regulations*, Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Robert C. Daley, Chief
Engineering Branch 3

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

Enclosure:
IR 05000454/2019011; 05000455/2019011

cc: Distribution via LISTSERV®

Letter to Bryan C. Hanson from Robert C. Daley dated April 18, 2019.

SUBJECT: BYRON STATION, UNITS 1 AND 2—FIRE PROTECTION INSPECTION;
INSPECTION REPORT 05000454/2019011 AND 05000455/2019011

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000454 and 05000455

License Numbers: NPF-37 and NPF-66

Report Numbers: 05000454/2019011 and 05000455/2019011

Enterprise Identifier: I-2019-011-0025

Licensee: Exelon Generation Co., LLC

Facility: Byron Station, Units 1 and 2

Location: Byron, IL

Inspection Dates: February 04, 2019, to March 08, 2019

Inspectors: I. Hafeez, Reactor Inspector
G. Hausman, Senior Reactor Inspector
A. Shaikh, Senior Reactor Inspector

Approved By: Robert C. Daley, Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Fire Protection Inspection at Byron 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. Findings and violations being considered in the NRC's assessment are summarized in the table below.

List of Findings and Violations

No findings were identified.

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 (IMC) 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

71111.05T - Fire Protection

B.5.b Inspection Activities (IP Section 02.03) (2 Samples)

The inspectors evaluated the following B.5.b Mitigating Strategies:

- (1) Makeup to Refueling Water Storage Tank
- (2) Manual Operation of Auxiliary Feedwater Pump

Fire Protection Inspection Requirements (IP Section 02.02) (4 Samples)

The inspectors evaluated Fire Protection Program implementation in the following selected areas and/or fire zones, including analyzed electrical circuits:

- (1) 11.4C-0; Radwaste and Remote Shutdown Panel Control Room

Analyzed Circuits:

- Main Steam Isolation Valve 2B
- Main steam Isolation Valve 2A

- (2) 5.5-2; Unit 2 Auxiliary Electric Equipment Room

Analyzed Circuits:

- Valve Control Tank Outlet Isolation Valves 2CV112B & 2CV112C

- (3) 5.2-2; Division 21 Engineered Safety Feature Switchgear Room

Analyzed Circuits:

- Auxiliary Feed Water Regulating Valves 1AF005A

(4) 11.6-2; Division 22 Containment Electrical Penetration Area

Analyzed Circuits:

- Valve Control Tank Outlet Isolation Valves 2CV112B & 2CV112C

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

- On March 8, 2019, the inspector presented the Fire Protection Inspection results to Mr. Mark Kanavos and other members of the licensee staff.

DOCUMENTS REVIEWED

AR 00256389; PZR WR Level Indicator at RSD Panel Needs Repair; 09/23/2004
AR 00294699; Instrument Out of Tolerance (Indicator); 01/27/2005
AR 00481555; Heat Related Damage Noted on 2FW-0534 NSC Card; 04/21/2006
AR 00524664; Testing of Remote Shutdown Panel Switches; 08/28/2006
AR 00599367; SXCT Operability Concerns Require PED and RA Assistance; 03/05/2007
AR 00762615; B1R15 New Procedure Enhancement; 04/12/2008
AR 00763056; Tech Spec Indicator Failure, Unplanned LCOAR Entry; 04/14/2008
AR 00765886; 1FI-AF013A Failed Low; 04/21/2008
AR 00781340; 2MS018B M/A Station Did Not Transfer to RSP as Expected; 05/30/2008
AR 00809625; Damper 0VC20Y Did Not Fully Open in Purge Mode; 08/21/2008
AR 00856580; Unit Two Intermediate Range Channel Indications; 12/15/2008
AR 00862477; Unit 1 RSDP PPC Access Terminal Not Functioning; 01/04/2009
AR 01023545; RSDP AF Flow Indication Appears Failed Low; 01/30/2010
AR 02609407; Install Temperature Gauges in RSDP Rooms; 01/07/2016
AR 02692394; Station Page Console Does Not Work at U2 RSP; 07/13/2016
AR 02692395; U2 RSP Sound Power Page System Boosters; 07/13/2016
AR 02732846; 1AF005F RSP Controller Porting Air; 10/26/2016
AR 03986790; 1AF005F RSP Controller Porting Air; 03/19/2017
AR 03962506; U1 RSP Overhead Lighting Needs Relamping; 01/12/2017
AR 03976794; U1 RSP Sound Powered Phone Boosters Are Not Working; 02/21/2017
AR 04057804; B2R20 M2 U2 RSP Clock Not Operating; 10/01/2017
AR 04082497; Radwaste and RSP HVAC Supply, 0VI01C, Keeps Tripping; 12/09/2017
AR 04082875; 1PL04J RSP Light Socket; 12/11/2017
AR 04140171; 1D-13 RSP FD Zone Fire Alarm Toggling Randomly; 05/22/2018
AR 04207577; PMS for Switch Checks at RSPs Coming Due; 01/02/2019
AR 03971352; Unit 1CAF Fire Protection Issues; 02/07/2017
AR 04162840; Fire Protection Piping Broken; 08/08/2018
AR 01403934; Fire Protection Piping Broken; 08/08/2018
AR 04204023; 0B Diesel Fire Pump 0FP03PB Coolant Sightglass Dirty/Stained; 12/18/2018
AR 04204029; Diesel Drive Fire Pump 0FP03PB Head Gasket Leaking Coolant; 12/18/2018
AR 04209641; FP Pipe Frozen/Ruptured; 01/10/2019

1 BOA ELEC-5; Local Emergency Control of Safe Shutdown Equipment Unit 1; Revision 106
 2 BOA ELEC-5; Local Emergency Control of Safe Shutdown Equipment Unit 2; Revision 107
 BOP FR-1T7; Fire Zone 11.4C-0 Radwaste/Remote Shutdown Control Room 1D-13; Revision 7
 BOP FR-1T35; Fire Zones 5.5-1 & 5.5-2 Unit 1/Unit 2 Auxiliary Electrical Equipment Rooms
 1D-69/2D-69; Revision 12
 BOP FR-1T39; Fire Zones 11.6-1, 11.6-2 Unit 1/Unit 2 Containment Electrical Penetration Area
 1D-76, 2D-76; Revision 7
 BOP FR-1T40; Fire Zones 5.2-1 & 5.2-2, 5.1-1 & 5.1-2 Unit 1/Unit 2 ESF Switchgear Rooms
 1D-77/1D-78/2D-77/2D-78; Revision 9
 CC-AA-211; Fire Protection Program; Revision 8
 I1-OA-XL-16; BOA PRI-5, Control Room Inaccessibility, Revision 10; 10/28/2016
 Byron Technical Specifications; Section 3.3.4 Remote Shutdown Monitoring Instrumentation;
 Amendments 141, 171, & 106
 Byron Technical Specifications; Table 3.3.4-1 Remote Shutdown System; Amendment 106
 GL 86-10 Evaluation BYR-25; Fire Protection Evaluation for Fire Zones 11.3D-2 and 11.3-0
 Boundary to Demonstrate Separation Equivalent to BTP CMEB 9.5-1, C5.b (2); Revision 0
 LORT Cycle 18-4 BOA PRI-5; BOA PRI-5 Control Room Inaccessibility Review PowerPoint
 Presentation; 05/21/2018
 ML042310332; Byron Station, Units 1 and 2 NRC Inspection Report 05000454/2004005(DRS);
 05000455/2004005(DRS); 08/18/2004
 ML072211020; Byron Station, Units 1 and 2 NRC Integrated Inspection Report
 05000454/2007003 and 05000455/2007003; 08/08/2007
 N-BYLORT4; Byron Licensed Operator Requalification Training (LORT) Cycle 4 Roster;
 02/22/2019
 N-BYNLOR5; Byron Non-Licensed Operator Requalification Training Cycle 5 Roster;
 02/22/2019
 N-BY-TQ-ILT; BOA PRI-5, Control Room Inaccessibility PowerPoint Presentation; 10/28/2016
 P1-SBY-1758; BOA PRI-5 Equipment Operator PowerPoint Presentation, Revision 0;
 08/07/2017
 RS-18-144; Byron/Braidwood Updated Fire Protection Report (FPR), Amendment 28;
 12/17/2018
 Safe Shutdown Database Amend 27; Microsoft Access Byron Fire Protection Safe Shutdown
 Analysis Database; 09/07/2018
 WO 01925533 01; 2BOSR 3.1.13-2, Reactor Coolant Pump Breaker Position; 10/17/2017
 WO 01915176 01; BOSR PL-R2-CV.2, RSDP C/S Functionals, F.1 (Letdown); 10/06/2017
 WO 01915176 02; BOSR PL-R2-CV.2, RSDP C/S Functionals, F.2 (Emerg Boration);
 10/05/2017
 WO 01915176 03; BOSR PL-R2-CV.2, RSDP C/S Functionals, F.3 (Charging CV121);
 10/06/2017
 WO 01867315 01; 1BOSR 3.1.13-2, RCP Breaker Position 18M Surveillance; 03/19/2017
 WO 01860381 01; BOSR PL-R2-MS.1, RSDP C/S Functional Check (MSIVS); 03/23/2017
 EC-EVAL 395681; Evaluation of Non-Rated Ventilation Dampers in Technical Requirements
 Manual (TRM) Fire Walls at the SX Cooling Towers; Revision 0
 EC-EVAL 392627; Evaluation for High Energy Line Break (HELB) Modifications to Elevation
 401/426 L-Line Fire Doors; Revision 000
 EC-EVAL 381603; Evaluation of Deviations from NFPA 13-1983 for Foam Sprinkler System in
 the Unit 1 and Unit 2 Diesel Oil Storage Tank (DOST) Rooms; Revision 0
 EC- EVAL 403747; Evaluation for Use of Alternate Compensatory Measures Associated with
 Missing Fire Proofing on Structural Beams Due to Attached Secondary and Auxiliary Steel;
 Revision 1

EC-EVAL 395449; Evaluation of New Steel Support Members in the Diesel Generator 1B/2B and Switchgear Room Air Shafts; Revision 000
 Calculation BYR-97-118; Hydraulic Calculation for Fire Protection System Area 2-T1 Diesel Oil Storage Tank Room; Revision 1
 Procedure EN-AA-501-0001; Controlled Material Program Approval and Evaluation Process; Revision 2
 Work Order 01881564; Freezing Temperature Protection - Protected Area BLDGS Vent System and Tanks; 10/23/2016
 AR 04226946; NRC Identified - Damper Sticking Open; 03/06/2019
 AR 04226906; NRC Identified - Improperly Stored Ladder; 03/06/2019
 EC-EVAL 389723; Performance Based Evaluation of Selected Fire Protection Testing in Order to Extend the Surveillance Interval; Revision 0
 Work Order 04722242-01; LR - Inspection of Fire Doors; 04/16/2018
 Procedure 0BMSR 3.10.g.4; Fire Door Semi-Annual Inspection; Revision 25
 Work Order 04775063-01; LR - Inspection of Fire Doors; 10/02/2018
 AR 01375417; 0DSD629 Degraded; 06/07/2012
 AR 04056071; Security - D629 Will Not Secure; 09/26/2017
 AR 01563626; Fire Doors at the SX Cooling Towers are Degraded; 09/25/2013
 AR-00577295; Exelon/AmerGen B.5.B Phase 2/3 fleet response; 01/10/2007
 6E-0-3687C; Cable Pans Routing Auxiliary Building Plan EL. 463'-5" Columns L-Q, 10-1B; Revision AM
 6E-0-3691; Cable Pans Riser Routing Auxiliary Building Sections EL. 330'-0" – 463'-5"; Revision F
 6E-0-3773; Lighting Auxiliary Building Plan EL. 451'-0" Rows L-Q, Columns 23-26; Revision AC
 6E-0-3779B; Station Emergency Lighting Battery Operated Light Units; Revision L
 6E-0-3797P; Wiring Diagram Radio Communication System; Revision A
 6E-1-4030AF05; Schematic Diagram Auxiliary Feedwater Regulating Valves 1A, 1B, 1C & 1D 1AF005A, B,C & D; Revision N
 6E-1-4030AF07; Byron- Unit 1 SCH. Diag. Steam Gen. 1A Aux. FW. Isolation Valves 1AF013A from pump 1A and 1AF013E From Pump 1B; Revision Q
 6E-1-4087G; Internal- External Wiring Diagram Remote Shutdown Control PNL. 1PL04J Part- 8; Revision U
 6E-1-4661D; External Wiring Diagram 480V Auxiliary Building ESF MCC 131X1 Sect. D 1AP21E; Revision P
 6E-2-4030MS02; Schematic Diagram Main Steam Isolation Valve 2B (2MS001B); Revision N
 6E-2-4030CV10; Schematic Diagram Volume Control Tank Outlet Isolation Valves 2CV112B & 2CV112C; Revision K
 M-37; Diagram of Auxiliary Feedwater; Revision BF
 BAR0-39-A4; Alarm No: 0-39-A4; Revision 12
 BOP FR-1T7; Fire Zones 11.4C-0Radwaste/Remote Shutdown Control Rooms 1D-13; Revision 7
 BOP FR-1T35; Fire Zones 5.5-1& 5.5-2 Unit 1/Unit 2 Auxiliary Electrical Equipment Rooms 1D-69/2D-69; Revision 12
 BOP FR-1T39; Fire Zones 11.6-1, 11.6-2 Unit 1/Unit 2 Containment Electrical Penetration Area 1D-76, 2D-76; Revision 7
 BOP FR-1T40; Fire Zones 5.2-1& 5.2-2,5.1-1 & 5.1-2 Unit 1/Unit 2 ESF Switchgear Rooms 1D-77/1D-78/2D-77/2D-78; Revision 9
 OP AA-102-106; Attachment 1 Operator Response Time Validation Sheet Page 1 of 6; Revision 4
 04809703-01; Appendix "R" ELBP Inspection F-09(U2 Aux Bldg); 10/15/2018
 04843171-01; Appendix "R" ELBP Inspection F-09(U2 Aux Bldg); 1/09/2019

04657020-01; B.5.B. Pump Inspection, Maintenance, and Operation; 9/28/2017
EDMG-1; Extensive Damage Mitigation Guideline; Revision 10
EP-AA-112; Emergency Response Organization (ERO)/ Emergency Response Facility (ERF)
Activation and Operation; Revision 20
126-3084-UT-001; High Temperature Slide out Charger Assembly; Revision 0
EC-EVAL 339805; Fire Door Acceptance Criteria; Revision 0
Procedure OP-AA-201-009; Control of Transient Combustible Material; Revision 21
Work Order 01749182; Fire Protection System Fire Hydrants Flow Test; 07/14/2016
AR 04218134; NRC Identified - Enhancements to Byron B.5.b Strategy; 02/07/2019
Procedure BHP 4200-33; Installation of Appendix R Emergency Cable; Revision 10
AR 04221637; NRC Identified - Housekeeping at RADWASTE Panel; 02/19/2019
AR 04222304; NRC Identified - Emergency Lighting in Auxiliary Electrical Equipment Room
Was Found On; 02/21/2019
Procedure 0BMSR 3.10.g.7; TRM Fire Damper 18-Month Visual Inspection; Revision 21
Work Order 01881560-01; Perform Technical Specification Fire Damper Visual Inspection;
12/16/2016
Work Order 04628792-01; Perform Technical Specification Fire Damper Visual Inspection;
06/25/2018
Work Order 01791967-01; Fire Protection Pump Flow and Pressure Test; 06/10/2016
Work Order 01650449-01; Fire Protection Pump Flow and Pressure Test; 12/04/2014