UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

August 8, 2016

EA-16-111

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

SUBJECT: NINE MILE POINT NUCLEAR STATION - INTEGRATED INSPECTION REPORT 05000220/2016002 AND 05000410/2016002 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Hanson:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Nine Mile Point Nuclear Station, LLC (NMPNS), Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on July 13, 2016, with Mr. Peter Orphanos, Site Vice President, and other members of the NMPNS staff.

NRC inspectors examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The inspectors documented three findings of very low safety significance (Green) in this report. Two of these findings involved a violation of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy. In addition, one licensee-identified issue of low to moderate safety significance (White) was determined to be a violation of NRC requirements. The NRC determined this issue warranted enforcement discretion because it satisfied the criteria established in NRC Enforcement Policy Section 9.1, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)," and NRC Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," Section 11.05(b), "Treatment of Items Associated with Enforcement Discretion." The Regional Administrator, Region I, was consulted regarding enforcement discretion for this issue.

If you contest the NCVs in this report, 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 I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspectors at NMPNS. In addition, if you disagree with the cross-cutting aspect assigned to any finding, 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 Regional Administrator, Region I, and the NRC Resident Inspectors at NMPNS.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390 of the NRCs "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael Scott, Director
Division of Reactor Projects

Docket Nos. 50-220 and 50-410
License Nos. DPR-63 and NPF-69

Enclosure:
Inspection Report 05000220/2016002 and 05000410/2016002
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.	50-220 and 50-410
License Nos.	DPR-63 and NPF-69
Report Nos.	05000220/2016002 and 05000410/2016002
Licensee:	Exelon Generation Company, LLC (Exelon)
Facility:	Nine Mile Point Nuclear Station, LLC (NMPNS) Units 1 and 2
Location:	Oswego, New York
Dates:	April 1, 2016 through June 30, 2016
Inspectors:	K. Kolaczyk, Senior Resident Inspector E. Miller, Resident Inspector G. Stock, Resident Inspector N. Floyd, Reactor Inspector S. Galbreath, Reactor Inspector C. Graves, Health Physicist C. Roettgen, Resident Inspector A. Rosebrook, Senior Project Engineer
Approved by:	Michael Scott, Director Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report 05000220/2016002 and 05000410/2016002; 04/01/2016 – 06/30/2016; NMPNS, Units 1 and 2; Adverse Weather Protection, Operability Determinations and Functionality Assessments, and Radiological Hazard Assessment and Exposure Controls.

This report covered a 3-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified three Green findings. Two of these findings also involved violations of NRC requirements and are being treated as non-cited violations (NCVs). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of U.S. Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Initiating Events

- Green. The inspectors identified a Green finding (FIN) of PI-AA-125, "Corrective Action Program," Revision 3, when Exelon failed to implement adequate corrective actions in March 2003, to prevent water intrusion into the Unit 2 normal switchgear building area at elevation 237. Specifically, on May 4, 2016, the inspectors observed water leaking into the normal switchgear room through a wall on elevation 237. The leakage was through a section of the wall that contained electrical junction boxes that were not sealed. The water progressed under inverter 2BYS-SWG001B, which led to the potential for a reactor scram from an electrical fault associated with uninterruptible power supply battery breakers. Previously, a reactor scram had occurred at Unit 2 on March 4, 2014, when the inverter was lost because of an electrical fault, as such this was a known initiating event single point vulnerability . Corrective actions included entering the issue into the corrective action program (CAP) (IR 02664534), generating work order (WO) C93414574 to seal or repair the wall, and installing temporary barriers to redirect any water away from the switchboard. The WO is scheduled to be performed in October 2016 with an action to assess moving the work to the refueling outage if needed to remove the electrical junction boxes to apply coating to the wall.

  The finding is more than minor because it is associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, Exelon did not ensure the surface area behind the electrical junction boxes was coated to prevent water intrusion into the normal switchgear room at elevation 237. The water intrusion through this area of the wall had the potential to cause an electrical fault on 2BYS-SWG001B resulting in a reactor scram similar to the reactor scram in March 2014. The inspectors evaluated this finding using IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors determined that

this finding was of very low safety significance (Green) because it did not represent the potential for both a reactor scram and a loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency occurred greater than three years ago; therefore, it is not considered to be indicative of current plant performance. (Section 1R01)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Unit 2 Technical Specification (TS) 3.5.1, "Emergency Core Cooling (ECCS) Systems-Operating," and TS 3.5.3, "Reactor Core Isolation Cooling (RCIC) System," for failure to ensure all necessary attendant instrumentation required for the systems to perform their specified safety functions were capable of performing their related support function in all require modes of applicability. Specifically, the inspectors identified the Unit 2 wide range level indication to be inaccurate during Mode 2 and at 200 pounds per square inch gauge (psig) reactor pressure, a mode of applicability requiring both high-pressure core spray (HPCS) and RCIC to be operable. This resulted in a high level trip signal being locked preventing HPCS or RCIC from auto initiating, rendering the systems inoperable. Upon identification, Exelon generated issue report (IR) 02667837 to address the inspectors' concern regarding the wide range level indication. An action was created to evaluate the impact of the wide range level discrepancy with regard to its impact on safety-related functions to supply water in the TS Mode of Applicability. Exelon also plans to assess the need for a TS amendment.

  The performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Exelon failed to recognize that the wide range level indication did not provide accurate indication at low reactor pressures and temperatures, preventing automatic safety-related functions associated with high drywell pressure automatic initiation signals and manual start functions. This would require operators to manually open the HPCS and RCIC injection valves during these conditions should a loss of offsite power or loss-of-coolant accident occur. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green), because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Identification. Exelon personnel had many opportunities, including during the reactor startup in May of 2016, to question operability of the instrumentation that provides input for automatic initiation and isolation signals. As a result, Exelon personnel failed to identify that the wide range level indication did not support operability of the HPCS and RCIC systems during reactor startup on May 5, 2016. [P.1] (Section 1R15)

Cornerstone: Occupational Radiation Safety

- Green. A self-revealing NCV of TS 5.4.1 “Procedures” was identified when a worker performed a radiological work activity without notifying radiation protection personnel and, as a result, did not comply with procedure RP-AA-1008, “Unescorted Access to and Conduct in Radiologically Controlled Areas, Revision 5,” in being briefed on the necessary radiological work controls and conditions for performance of the Unit 2 reactor seal cleaning work activity. Specifically, on April 11, 2016, a worker entered the Unit 2 reactor cavity to perform inspection of the reactor seal that was highly contaminated. Although not previously discussed with radiation protection staff, the worker cleaned the highly contaminated reactor seal with rags and carried the highly contaminated rags (5 rem/hr) in his hand out of the reactor cavity, which resulted in unplanned radiation exposure to the worker’s hand. Exelon’s immediate corrective actions included reinforcing the need to properly communicate radiological work activities with radiation protection, and require workers to carry WOs with them to improve communications with radiation protection. Exelon entered the issue into the corrective action program (CAP) as IR 02654591.

  The failure of the worker to discuss the full scope of the radiological work activity with radiation protection staff, who were subsequently not effectively briefed on the expected radiological work conditions and requisite radiological controls needed for the work activity, is a performance deficiency that was reasonably within Exelon’s ability to foresee and correct. The finding was determined to be more than minor because it affected the human performance attribute of the Occupational Radiation Safety cornerstone objective. Using IMC 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” the finding was determined to be of very low safety significance (Green) because it did not involve: (1) as low as reasonably achievable (ALARA) occupational collective exposure planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. The finding is self-revealing because Exelon was made aware of the situation when an air monitor alarmed.

  The finding had a cross-cutting aspect of Human Performance, Team Work, since individuals and work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety was maintained. Specifically, the worker did not adequately communicate to radiation protection staff, the reactor seal cleaning activity to be performed. As a result, radiation protection personnel did not prescribe sufficient radiological controls for this high-contamination work activity, and led to an unintended exposure to the worker’s hand. [H.4] (Section2RS1)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. On May 13, 2016, operators reduced reactor power to 85 percent to restore reactor recirculation motor generator set (RRMG) 14 following planned maintenance. Operators restored power to 100 percent on May 14. On May 21, operators reduced reactor power to 85 percent to restore RRMG set 15 following planned maintenance and to perform a control rod pattern adjustment. Operators restored power to 100 percent the same day. On June 12, operators reduced reactor power to 85 percent to restore RRMG set 15 following maintenance and to perform turbine valve testing. Operators restored power to 100 percent the same day.

Unit 2 began the inspection period at 100 percent power. On April 10, 2016, operators began reducing power to remove Unit 2 from service in order to conduct a refueling and maintenance outage. Unit 2 was removed from the grid on April 11. On May 4, operators commenced a reactor startup. Unit 2 was synchronized to the grid on May 5, concluding the refuel and maintenance outage. Unit 2 reached 100 percent power on May 7. On May 28, operators reduced reactor power to 85 percent to perform turbine valve testing and to perform a rod pattern adjustment. Operators restored power to 100 percent the same day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 4 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Exelon's readiness for the onset of seasonal high temperatures. The review focused on the Unit 2 diesel generator rooms. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), TSs, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems and to ensure Exelon personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Exelon's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during hot weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors reviewed Unit 1 and Unit 2 plant features and procedures for the operation and continued availability of the offsite and alternate AC power systems to evaluate readiness of the systems prior to seasonal high grid loading during the week of May 4, 2016. The inspectors reviewed Exelon's procedures affecting these areas and the communications protocols between the transmission system operator and Exelon implemented since the previous sample in 2015. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether Exelon established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by reviewing IRs and walking down portions of the offsite and AC power systems including the 345 kilovolt (kV) and 115 kV switchyards.

b. Findings

No findings were identified.

.3 External Flooding (2 samples)

a. Inspection Scope

On April 29, 2016, the inspectors performed an inspection of the external flood protection measures for NMPNS. The inspectors reviewed TSs, procedures, design documents, and the UFSAR/USAR, which depicted the design flood levels and protection areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a general site walkdown of the site exterior flood berm during the week of April 25, 2016 and external water intrusion to Unit 2 normal switchgear room elevation 237 feet on May 3, 2016 to ensure that Exelon erected flood protection measures in accordance with design specifications. Where applicable the inspectors determined installed flood seal service life and verified that adequate procedures existed for inspecting the installed seals.

b. Findings

Introduction. The inspectors identified a Green finding (FIN) of PI-AA-125, "Corrective Action Program," Revision 3, when Exelon failed to implement adequate corrective actions in March 2003, to prevent water intrusion into normal switchgear building elevation 237. Specifically, on May 4, 2016, the inspectors observed water leaking into the Unit 2 normal switchgear room through a wall on elevation 237. The leakage was through a section of the wall that contained electrical junction boxes which were not sealed. The water progressed under inverter 2BYS-SWG001B, which led to the potential for a reactor scram from an electrical fault associated with UPS battery breakers. This was a known initiating event single point vulnerability, since a reactor scram had previously occurred at Unit 2 on March 4, 2014, when the inverter was lost because of an electrical fault.

Description. On May 3, 2016, Exelon generated IR 02664534, which identified water intrusion through a wall into the Unit 2 normal switchgear building at elevation 237. When the inspectors examined the area they noted inverter 2BYS-SWG001B was surrounded by water that had emanated through the north facing wall. Inverter 2BYS-SWG001B provides direct current (DC) power to uninterruptible power supplies that ensure a reliable power supply to critical plant loads. The inspectors also noted that 2VBB-UPS1D and 2VBB-UPS3B battery breakers were wetted at their lower surface from the water intrusion. Inverter 2BYS-SWG001B provides a DC source of power to a number of non-safety related UPSs. The UPSs utilize three sources of power: (1) a normal AC source, (2) a maintenance AC source, and (3) a DC source, to ensure a reliable source of power to its respective loads. Although battery switchgear 2BYS-SWG001B is non-safety related, it is a known initiating event single point vulnerability since an electrical fault on 2VBB-UPS3B can lead to a reactor scram. On March 4, 2014, an electrical fault on UPS3B occurred and resulted in loss of cooling to the reactor recirculation pumps and a subsequent manual reactor scram. This March 2014 scram was documented in IR 01700561.

Water intrusion into the 237 foot elevation of the normal switchgear building has been an ongoing concern that has not been adequately addressed. On March 9, 2000, NMPNS documented water intrusion into the area in IR 02091644 (DER 2-2000-0904) to evaluate and correct water intrusion near inverter 2BYS-SWG001B at normal switchgear building elevation 237. The evaluation that was performed under IR 02091644 determined that the appropriate corrective action would be to seal the entire wall with a coating. In March of 2003, WO 02-01974-00 was performed, which resulted in coating being applied to the wall.

The inspectors noted during their walkdown that a portion of the wall which contained electrical junction boxes was not sealed. Water was emanating from the unsealed area, and wetting the battery switchgear. Thus the original non-conforming condition was uncorrected. PI-AA-125, “Corrective Action Program,” Section 4.3.6.3 states “If CAPRs/FWAPs or CAs/FWACs are determined to be ineffective, then a CR shall be originated to document the deficiency and initiate resolution.” Contrary to this, the section behind the electrical junction boxes that was not painted continued to provide a path of water intrusion into the area allowing the possibility of an electrical fault and reactor scram.

The inspectors also identified that in April 2014, NMPNS documented in IR 02006312 that water was leaking through the wall in the same area. As of June 30, 2016, the WO that was created to address the concern, C92661196, had not been scheduled to be performed, two years after the issue was documented.

The May 2016 IR 02664534 was screened to be addressed through a new WO, C93414574, scheduled to be performed in October 2016, with an action to assess moving the work to the refueling outage if needed to remove the electrical junction boxes to apply coating to the wall.

Analysis. The inspectors determined that Exelon’s failure, in March 2003, to complete corrective actions necessary to prevent water intrusion into elevation 237 of the normal switchgear building, a non-conforming condition, in accordance with PI-AA-125, “Corrective Action Program,” was a performance deficiency that was reasonably within

Exelon's ability to foresee and correct and should have been prevented. This finding is more than minor because it is associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, Exelon did not complete corrective actions to ensure the surface area behind the electrical junction boxes was coated to prevent water intrusion into the 237 foot elevation of the normal switchgear building. This non-conforming condition still exists and has the potential to cause an electrical fault on 2BYS-SWG001B, a known single point vulnerability which may cause a plant transient such as the reactor scram in March 2014.

The inspectors evaluated this finding using IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012. The inspectors determined that this finding was of very low safety significance (Green) because it did not have the potential to result in both a reactor scram and a loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency occurred greater than three years ago; therefore, it is not considered to be indicative of current plant performance.

Enforcement. Enforcement action does not apply because this performance deficiency did not involve a violation of a regulatory requirement. Specifically, the structures, systems, and components (SSCs) in this event, the normal switchgear wall on elevation 237 and battery switchgear 2BYS-SWG001B, are not safety related. This issue was entered into Exelon's CAP as IR 02664534. Because this finding does not involve a violation and is of very low safety significance, it is identified as a finding.
(FIN 05000410/2016002-01, Ineffective Corrective Action Results in Water Intrusion to Battery Switchgear Room)

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 6 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2 'B' shutdown cooling system during operation to support cold shutdown on April 11, 2016
- Unit 2, Division II, emergency diesel generator (EDG) and switchgear during Division I switchgear maintenance window on April 20, 2016
- Unit 2, Division I, control building ventilation system during Division II control building chiller maintenance window on May 23, 2016
- Unit 2 standby gas treatment system on June 7, 2016
- Unit 1 liquid poison system on June 7, 2016
- Unit 2 standby liquid control system on June 20, 2016

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TSs, WOs, IRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Exelon staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On June 16, 2016, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 high pressure core spray diesel, to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment lineup check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs/IRs/ARs and WOs to ensure Exelon appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 7 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Exelon controlled combustible materials and ignition sources in accordance with

administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service (OOS), degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 2 liquid waste system general area, elevation 261 feet 0 inches fire area (FA) (FA 58) on April 7, 2016
- Unit 2 liquid waste system general area, elevation 279 feet 0 inches on (FA 58) April 7, 2016
- Unit 2 radwaste control room, elevation 279 feet 0 inches (FA 70) on April 7, 2016
- Unit 2 condensate storage tank building, elevation 265 feet 0 inches (FA 55) on April 7, 2016
- Unit 2 drywell (FA 50) on April 13, 2016
- Unit 2 steam tunnel (FA 50) on April 13, 2016
- Unit 2 feedwater heater bays (FA 50), elevation 277 feet 6 inches on April 20, 2016

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed the fire brigade during an actual fire event on May 2, 2016, that involved a fire at the Unit 2 radiation protection building. The inspectors evaluated the plant fire brigade response to the fire. The inspectors verified that Exelon personnel utilized proper procedures for firefighting, used proper communications, and conducted a proper assessment of the emergency action level matrix. The inspectors evaluated the following specific attributes of the event:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Use of proper procedures

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with Exelon's firefighting strategies.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, license renewal Safety Evaluation Report and plant procedures to identify internal flooding susceptibilities for the site. The inspectors review focused on the Unit 2 reactor building. The inspectors verified that watertight door seals, common drain lines and sumps, sump pumps, level alarms, and temporary or removable flood barriers were in place or available and able to perform their design functions. The inspectors assessed the adequacy of operation actions that Exelon had identified as necessary to cope with flooding in this area and also reviewed the CAP to determine if Exelon was identifying and correcting problems associated with both flood mitigation features and site procedures for responding to flooding.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the Unit 2 'A' residual heat removal (RHR) heat exchanger (HX) 2RHS*E1A to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified Exelon's commitments to NRC Generic Letter 89-13, "Service Water System Requirements Affecting Safety-Related Equipment." The inspectors performed a visual inspection of the HXs and reviewed the results of previous inspections of the 'A' RHR HX 2RHS*E1A. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that Exelon initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the HX did not exceed the maximum amount allowed in the design basis.

b. Findings

No findings were identified.

1R08 Inservice Inspection (71111.08 – 1 sample)

a. Inspection Scope

From April 18 to 22, 2016, the inspectors conducted an inspection and review of inservice inspection (ISI) activities in order to assess the effectiveness of Exelon's program for monitoring degradation of the reactor coolant system (RCS) boundary, risk-significant piping boundaries, and the containment system boundaries during the Unit 2 15th refueling outage.

Nondestructive Examination (NDE) and Welding Activities (IP Section 02.01)

The inspectors observed a sample of in-process NDE, reviewed completed documentation, and interviewed Exelon personnel to determine if the NDE activities performed as part of the third interval, third period, of the Unit 2 ISI program were conducted in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2004 Edition with no addenda. For augmented examinations, the inspectors verified that activities were performed in accordance with Exelon's augmented inspection program and procedures and with any applicable industry guidance documents. The inspectors verified that indications and defects, if present, were dispositioned in accordance with the ASME Code or an NRC-approved alternative and verified that relevant indications were compared to previous examinations to determine if any changes had occurred.

Activities included a review of ultrasonic testing (UT), radiographic testing (RT), and visual testing (VT). The inspectors reviewed certifications of the NDE technicians performing the examinations and verified that the inspections were performed in accordance with qualified NDE procedures and industry guidance. For UT activities, the inspectors also verified the calibration of equipment used to perform the examinations. The inspectors verified that the test results were reviewed and evaluated by certified Level III NDE personnel and that the parameters used in the test were in accordance with the limitations, precautions, and prerequisites specified in the test procedure.

ASME Code Required Examinations

- Direct observation of the manual UT of the RHR 'A' HX head-to-shell weld (2RHS*E1A HW100A).

- Direct observation of the manual UT of MOV40A valve-to-pipe weld (2RHS*66-19-FW004) in the RHR system.

- Documentation review of the automated phased array UT of the N6C nozzle safe end-to-safe end extension weld (2RPV-KC26) in the RHR system.

- Documentation review of the RT of two slip-on flange welds (FW-01 and FW-02 in 2-CPS-012-24-2), performed as part of a modification activity in the containment purge system.

- Documentation review of the VT of the containment (i.e., drywell and suppression pool) interior penetrations and surfaces. The inspectors independently examined the condition of the drywell and suppression pool liner surfaces at all accessible floor elevations and compared those documented exams to the inspector walkdowns.

Other Augmented, License Renewal or Industry Initiative Examinations

The inspectors conducted direct observation of the remote enhanced VT records of the reactor vessel internals during in-vessel visual inspection activities to determine if they were in accordance with BWRVIP-03. Specifically, the inspectors reviewed the core shroud welds and jet pump components including the main wedges and the wedge hold down system modification.

Review of Previous Indications

The inspectors did not review any previous indications because there were no relevant indications from the previous refueling outage that required evaluation for continued service at this time.

Welding on Pressure Boundary Systems

The inspectors reviewed the pressure boundary risk-significant welding activity, including the associated NDE, of two slip-on flange-to-pipe welds (FW-01 and FW-02 in 2-CPS-012-24-2) as part of a modification to the containment purge system. Specifically, the scope of the activity was to relocate two suppression chamber exhaust isolation valves, AOV-109 and AOV-111, which was part of the containment hardened vent modification. The inspectors performed a documentation review of the welding activities conducted before the outage to determine if the welding, RT/VT examinations, and final acceptance were performed in accordance with the ASME code requirements. The inspectors reviewed the weld procedure specification to ensure it contained the required essential and supplemental essential weld variables and that those variables were within the ranges demonstrated by the supporting qualification record. The modification was performed under WO C93017630.

Identification and Resolution of Problems (IP Section 02.05)

The inspectors reviewed a sample of Unit 2 corrective action reports, which identified NDE indications, deficiencies, and other non-conforming conditions since the previous refueling outage and during the current outage. The inspectors verified that non-conforming conditions were properly identified, characterized, evaluated, and that corrective actions were identified and entered into the corrective action program for resolution.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 4 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (2 samples)

a. Inspection Scope

The inspectors observed:

- Unit 1 licensed operator simulator training scenario, which involved a drifting control rod, a loss of a recirculation pump, fuel damage, and an emergency condenser tube leak on May 31, 2016
- Unit 2 licensed operator simulator training scenario, which involved a loss of a condensate booster pump, a tornado watch with high wind warning, a partial loss of offsite power, and a loss-of-coolant accident inside containment on June 7, 2016

The inspectors evaluated operator performance during the simulated event and verified completion of risk-significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classifications made by the shift manager and the TS action statements by the unit supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (2 samples)

a. Inspection Scope

The inspectors observed:

- Unit 1 main control room observation during elevated risk due to line 4 being OOS on May 5, 2016. Main control room observation during a period of increased activity which included turbine and liquid poison system testing on June 6, 2016
- Unit 2 shutdown and startup activities for refuel outage on April 11 and May 5, 2016

The inspectors reviewed HU-AA-101, "Human Performance Tools and Verification Practices," Revision 009, and verified that procedure use, crew communications, and coordination of plant activities among work groups similarly met established expectations and standards. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 4 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on SSC performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule basis documents to ensure that Exelon was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.65 and verified that the (a)(2) performance criteria established by Exelon staff were reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals

and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Exelon staff were identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Unit 2 cooling tower basin and support structure on April 20, 2016
- Unit 2 structural monitoring program walkdown of the reactor building roof on May 3, 2016
- Unit 1 structural monitoring program walkdown of the reactor building roof on June 9, 2016
- Unit 2 trending of inservice testing data on June 29, 2016

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Exelon performed the appropriate risk assessments prior to removing equipment from service. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Exelon personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Exelon performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unit 2 shutdown safety management plan during reduced inventory operations on April 14, 2016
- Unit 2 shutdown safety management plan during phase II core refueling activities on April 28, 2016
- Unit 2 shutdown safety assessment during cold shutdown conditions following reactor head re-tensioning on May 3, 2016
- Unit 1 system walkdown of offsite power line 1 while offsite power line 4 was OOS due to planned maintenance activities conducted by the electrical grid operator on offsite power line 3 at the James A. Fitzpatrick Nuclear Station on May 4, 2016
- Unit 2 electrical maintenance observation during main generator disconnect switch jumper installation on May 17, 2016
- Unit 2 electrical maintenance on MCC EJS 102 on June 22, 2016

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 12 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on risk significance of the associated components and systems:

- Unit 1 hydraulic control unit following discovery of foot valve leakage on April 8, 2016
- Unit 2 service water pipe through-wall leak on reactor building elevation 240 feet on April 21, 2016
- Unit 2 high pressure core spray operability during reactor startup on May 9, 2016
- Unit 2 directional control valve cap screw susceptibility to failure based General Electric-Hitachi Service Information Letter 678 on May 13, 2016
- Unit 1 EDG 102 and EDG 103 jacket water cooling tank couplings on May 13, 2016
- Unit 1 stack radiation monitor RAM-112-07A failed downscale on May 23, 2016
- Unit 2 RCIC tuning at 150 psig reactor pressure on June 7, 2016
- Unit 2 EDG 3 exhaust damper on June 7, 2016
- Unit 2 reactor pressure vessel (RPV) cold reference legs missed preventative maintenance on June 7, 2016
- Unit 2 main steam isolation valve 2MSS*AOV7D limit switch 33-5 failure on June 13, 2016
- Unit 1 door D109, control room envelope boundary and high energy line break barrier, found ajar on June 22, 2016
- Unit 1 diesel fuel storage tank particulate levels on June 23, 2016

The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to Exelon's evaluations to determine whether the components or systems were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, such as in the case of operator workarounds (OWAs), the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon. Based on the review of the selected OWAs listed above, the inspectors verified that Exelon identified OWAs at an appropriate threshold and addressed them in a manner that effectively managed OWA-related effects on operators and SSCs.

b. Findings

Introduction. The inspectors identified a Green NCV of Unit 2 TS 3.5.1, "ECCS Operating," and TS 3.5.3, "RCIC System," for failure to ensure all necessary attendant instrumentation required for the systems to perform their specified safety functions were capable of performing their related support function in all required modes of applicability. Specifically, inspectors identified the Unit 2 wide range level indication was inaccurate during Mode 2 with reactor vessel pressure at 200 psig, a mode of applicability requiring

both HPCS and RCIC to be operable. Due to the instrument inaccuracies at lower pressures and temperatures, a false high-high water level trip signal was generated preventing both HPCS and RCIC from being actuated automatically or manually; therefore, rendering them inoperable.

Description. The HPCS system is designed to provide and maintain adequate inventory inside the RPV to limit fuel cladding temperatures in the event of breaks in the reactor coolant pressure boundary. The system is automatically initiated on a high drywell pressure signal or low-low water level signal. It is designed to operate independently of all other systems over the entire range of pressure differences from greater than normal operating pressure to zero in modes 1, 2, and 3. The RCIC system designed to supply makeup water to the reactor vessel when the reactor is in a hot shutdown condition and is isolated from the main condenser with the reactor feedwater system not in operation.

On May 5, 2016, during a reactor startup from a refueling outage with reactor pressure at approximately 200 psig, the inspectors questioned why the high water level annunciator was still lit, along with the high water level seal-in white light bulb for the HPCS system. The inspectors noted that the reactor vessel water level was at its normal level, and no longer in a high water level condition as it was earlier for hydro testing. Operators provided procedure N2-OP-101A, “Reactor Startup,” Revision 02600, Step 2.44, which states, “prior to RPV pressure exceeding 600 psig, perform the following:

2.44.1 – Reset HPCS reactor high water level at Panel P601
2.44.2 – Observe HPCS reactor high level seal-in white light extinguishes”

Inspectors questioned why the alarm would be on until 600 psig given HPCS was required to be operable before entering Mode 3, “Hot Shutdown.”

The RPV water level signal for HPCS and RCIC comes from the wide range level indication. For HPCS, once water level reaches the high water level condition, the HPCS injection valve automatically shuts to prevent overfilling the reactor. The HPCS pump will continue to run until the operator takes action. If RPV water level reaches the low-low level condition, the injection valve will automatically reopen. The inspectors’ review of the wide range level calibration calculation CS-ISC*05, “Reactor Water Level – Off Normal Calibration Conditions,” Revision 1, showed that until reactor pressure reaches approximately 600 psig, the wide range level indication reads higher than actual water level. This difference is a linear function affected by the water temperature and pressure of the reactor vessel. By not having accurate level instrumentation to support HPCS and RCIC initiation during their respective TS Mode of Applicability, both systems should have been declared inoperable and a reactor startup should not have commenced.

Additionally, by the wide range level indication not being accurate at the low reactor pressure and temperature conditions, this would prevent the respective injection valves from automatically opening on a high drywell pressure signal, and also prevent operators from initiating each system using the manual push button. This would require operators to manually open the HPCS and RCIC injection valves during these conditions should a loss of offsite power or loss-of-coolant accident occur. Therefore, the safety function to inject high pressure water into the reactor vessel would have been delayed but not lost.

The impact of the wide range level indication not being accurate should have resulted in Unit 2 entering the following limiting condition for operation (LCO) action statements for inoperable equipment based on the reactor startup conditions specified. The LCOs include the following:

- LCO 3.3.5.1 “ECCS Instrumentation” Conditions A, B, and H
- LCO 3.3.5.2 “RCIC Instrumentation” Conditions A, B, and E
- LCO 3.3.3.1 “PAM Instrumentation” Condition A
- LCO 3.5.1 “ECCS – Operating” Conditions B and D
- LCO 3.5.3 “RCIC System” Conditions A and B

Since HPCS and RCIC support each other, it was required by TSs that operators exit the Mode of Applicability, i.e. shutdown. The Mode of Applicability for HPCS is Mode 1, 2 and 3. The Mode of Applicability for RCIC is Mode 1, 2, and 3 with reactor steam dome pressure greater than 150 psig. The inspectors did discover that prior to conversion to Improved Standard Technical Specifications (ISTS), Nine Mile Point Unit 2 Technical Specification Amendment 73 contained a note in TS 3.3.3,” ECCS Instrumentation,” that addressed the known hot calibration/cold operation instrument inaccuracy and did not require automatic or manual injection function to be operable when indicated level was great than level 8 coincident with reactor pressure less than 600 psig. However, this note was not carried forward during the conversion to the ISTS, and is not a part of the current operating license.

Exelon generated IR 02667837 to address the inspectors’ concern regarding the wide range level indication. An action has been created to evaluate the impact of the wide range level discrepancy with regard to its impact on safety related functions to supply water in their TS Mode of Applicability. Exelon also plans to assess the need for a TS amendment.

Analysis. Exelon’s failure to ensure operability of all necessary instrumentation used to support HPCS and RCIC in accordance with TS 3.5.1 and TS 3.5.3 is a performance deficiency that was reasonably within Exelon’s ability to foresee and prevent. This performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Exelon failed to recognize that the wide range level indication did not provide accurate indication at low reactor pressures and temperatures, preventing automatic safety-related functions associated with high drywell pressure automatic initiation signals and manual start functions rendering those systems inoperable in a mode were they are required.

In accordance with IMC 0609.04, “Initial Characterization of Findings,” and Exhibit 2 of IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” issued June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green), because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event.

The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Identification. Exelon had many opportunities, including during the reactor startup in May of 2016, to question operability of the instrumentation and supported safety systems that are provided input for automatic initiation and isolation signals. However, Exelon personnel failed to identify that the wide range level indication did not support operability of the HPCS and RCIC systems during reactor startup on May 5, 2016, based on Nine Mile Point's current operating license. [P.1]

Enforcement. TS 3.5.1, "ECCS – Operating" requires HPCS to be operable in Mode 1, 2, and 3. TS 3.5.3, "RCIC System" requires RCIC to be operable in Mode 1, 2 and 3 with reactor steam dome pressure greater than 150 psig. Contrary to the above, the HPCS and RCIC systems were not operable during their required Mode of Applicability. Specifically, on May 5, 2016, inspectors identified that the wide range level indication was not accurate until the reactor reached approximately 600 psig during startup, resulting in the HPCS system not being operable during Mode 2 and 3 prior to the reactor reaching approximately 600 psig, and RCIC not being operable during Mode 2 and 3 between reactor pressures 150 psig and 600 psig. Because the violation was of very low safety significance (Green) and was entered into Exelon's CAP as IR 02667837, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000410/2016002-02, Failure to Identify Wide Range Level Indication Impacts Operability of HPCS and RCIC)**

1R18 Plant Modifications (71111.18 – 5 samples)

.1 Temporary Modifications (1 sample)

a. Inspection Scope

The inspectors reviewed the Unit 2 Engineering Change Package (ECP) 15-000699, Evaluation of Smoke Detection Capability in the NMPNS 2 Relay Room, on March 30, 2016 to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results, and conducted field walkdowns of the modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

No findings were identified.

.2 Permanent Modifications (4 samples)

a. Inspection Scope

The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modifications listed below. In addition, the inspectors reviewed modification documents associated with the design changes.

- Unit 2, ECP 14-000837 – Engineering Equivalency to Replace Capacitor on 2FWS-PNL10A,B,C for Lockup Circuit on April 15, 2016
- Unit 2, ECP 15-000434 – Leakage Detection System Modification from Riley Temperature Switches to Yokogawa recorders on April 16, 2016
- Unit 2, ECP 16-000272 – Appendix J Local Leak Rate Test Scope Reduction on May 27, 2016
- Unit 2, ECP-15-000087 – Fukushima Hardened Vents: Install Wetwell Hardened Containment Vent System

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 8 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief and post-job critique where possible, confirmed that work site cleanliness was maintained, and witnessed the test or reviewed test data to verify quality control hold points were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- Unit 2 level control valve feedwater flow 'A' following modification on April 15, 2016
- Unit 2 main steam isolation valve 6D following valve rebuild on April 28, 2016
- Unit 2 ADS SRV operability test following replacement on April 28, 2016
- Unit 2 electrohydraulic control vertical pump post-modification test on April 29, 2016
- Unit 2 UPS 2VBB-UPS3A following UPS replacement on May 10, 2016
- Unit 2 2VBA*UPS2C operational checks and inspection following cleaning on May 19, 2016
- Unit 1 SOV-94-01/20U1 half load solenoid for instrument air compressor 11 on May 24, 2016
- Unit 1 control rod drive pump 11 following replacement on May 25, 2016

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the maintenance and refueling outage (N2RF14) which was conducted April 10 through

May 12, 2016. The inspectors reviewed Exelon's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Scaffold inspection
- Plant shutdown observation
- Fatigue management
- Tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block the emergency core cooling system suction strainers, and startup and ascension to full power operation
- Tagging application observation
- Core shuffle
- Suppression pool walkdown
- Containment closeout

1R22 Surveillance Testing (71111.22 – 11 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and Exelon procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- Unit 2, N2-OSP-MSS-CS001, Main Steam Isolation Valve Operability Test on April 11, 2016 (inservice testing)
- Unit 2, N2-ISP-MSS-R@003, Main Steam Isolation Valve Leak Rate Test (inboard static head of water) for MSIV 7B and 7C on April 12, 2016 (isolation valve)
- Unit 2, N2-ISP-MSS-R002, Main Steam Isolation Valve 6B Local Leak Rate Test on April 13, 2016 (isolation valve)
- Unit 2, N2-OSP-EGS-R004, Operating Cycle Diesel Generator Simulated Loss of Offsite Power with ECCS Division 1 and 2 on April 14, 2016
- Unit 1, N1-ST-Q8A, Liquid Poison Pump 11 and Check Valve Operability Test on April 18, 2016 (inservice testing)
- Unit 2, RPS Logic System Functional Test on April 22, 2016
- Unit 2, N2-OSP-ICS-R002, RCIC System Flow Test on May 5, 2016
- Unit 2, N2-ESP-ENS-Q731, RHR Pumps 'B' and 'C' LOOP/LOCA Auto Start Time Delay Quarterly Functional Test on June 10, 2016
- Unit 2, N2-OSP-SFC-Q001, Spent Fuel Pool Cooling Cleanup Pump and Valve Operability Test for 2SFC*P1B Spent Fuel Pool Cooling Pump on June 16, 2016

- Unit 2, N2-OSP-SLS-Q001, Standby Liquid Control Pump Operability Test following flow degradations in previous test on June 23, 2016
- Unit 1, N1-CSP-D100, Reactor Coolant Chemistry on June 24, 2016

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for Unit 2 licensed operators on June 3, 2016, which required emergency plan implementation by an operations crew. Exelon planned for this evolution to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note if there were any weaknesses and deficiencies in the crew's performance and ensure that Exelon evaluators noted the same issues and entered them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – 4 samples)

a. Inspection Scope

During April 18 to 22, 2016, the inspectors reviewed Exelon's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR Part 20, TSs, applicable regulatory guides (RGs), and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the performance indicators for the occupational radiation safety cornerstone, radiation protection program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazard Assessment (1 sample)

The inspectors conducted independent radiation measurements during walkdowns of the facility and reviewed the radiological survey program, air sampling and analysis, continuous air monitor use, recent plant radiation surveys for radiological work activities, and any changes to plant operations since the last inspection to determine survey adequacy of any new radiological hazards for onsite workers or members of the public.

Instructions to Workers (1 sample)

The inspectors reviewed high radiation area work permit controls and use, observed containers of radioactive materials, and assessed whether the containers were labeled and controlled in accordance with requirements.

The inspectors reviewed several occurrences where a worker's electronic personal dosimeter alarmed. The inspectors reviewed Exelon's evaluation of the incidents, documentation in the CAP, and whether compensatory dose evaluations were conducted when appropriate. The inspectors verified follow-up investigations of actual radiological conditions for unexpected radiological hazards were performed.

Contamination and Radioactive Material Control (1 sample)

The inspectors observed the monitoring of potentially contaminated material leaving the radiological controlled area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material. The inspectors selected several sealed sources from inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with requirements.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with radiation monitoring and exposure control (including operating experience) were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

Introduction. A Green self-revealing NCV of TS 5.4.1, "Procedures," was identified when a worker performed a significant radiological work activity without notifying radiation protection and, as a result, did not comply with procedure RP-AA-1008 "Unescorted Access to and Conduct in Radiologically Controlled Areas," Revision 5, in being briefed on the radiological work conditions and requisite radiological controls associated with performance of the Unit 2 reactor seal cleaning work activity.

Description. On April 11, 2016, a worker entered the Unit 2 reactor cavity to perform inspection of the Unit 2 reactor seal that was highly contaminated. Although not previously discussed with radiation protection staff, the worker cleaned the highly contaminated reactor seal with rags, and carried the highly contaminated rags (5 rem/hr) out of the reactor cavity in his hand and subsequently received an unplanned radiation

exposure to his hand. Step 6.5.1.1 of procedure N2-MPM-GEN-903, “Reactor Vessel Disassembly,” requires personnel to inspect and clean the reactor seal as necessary. However, the specifics regarding this seal cleaning work step was not communicated to radiation protection personnel and as a result the radiation protection technicians who were overseeing the reactor cavity area did not anticipate this work activity. As a result, the worker who performed the task was not briefed with respect to the radiological work to be performed or the appropriate radiological controls for performing Step 6.5.1.1 of procedure N2-MPM-GEN-903. Upon entering the reactor cavity, the worker proceeded to inspect and clean the seal with rags, and carried the highly contaminated rags in his hand out of the reactor cavity when the work was completed. Upon reaching the refueling floor, a continuous air monitor alarmed. Radiation protection staff responded to the alarm and took the rags from the worker. A follow-up survey of the rags indicated 5 rem/hr on contact which resulted in unintended, unnecessary exposure to the worker’s hand. Actions were taken to control the rags and surveys of the refuel floor were conducted to mitigate the situation.

Analysis. The failure of the worker to discuss the radiological work activity with radiation protection, and to be briefed by radiation protection on the radiological conditions and requisite radiological controls for the work activity is a performance deficiency that was reasonably within Exelon’s ability to foresee and correct. The finding was determined to be more than minor because it is associated with the human performance attribute of the Occupational Radiation Safety cornerstone and affects the associated cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, the worker did not inform radiation protection personnel of the scope of work to be completed, and as a result, appropriate radiological work condition briefings and radiological controls to protect the worker from unnecessary radiation exposure were not implemented. Using IMC 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” dated August 19, 2008, the finding was determined to be of very low safety significance (Green) because it did not involve: (1) ALARA occupational collective exposure planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

The cause of the finding is related to the cross-cutting aspect of Human Performance Team Work, in that individuals and work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, the worker did not communicate to radiation protection staff the scope of reactor seal cleaning activity that was to be performed which resulted in radiation protection not prescribing sufficient radiological controls for this high contamination work activity and resulted in the unintended exposure to the worker’s hand. [H.4].

Enforcement. TS 5.4.1 written procedures be established, implemented, and maintained for those activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Revision 2, Appendix A, February 1978 recommends, in part, procedures for access control to radiation areas including a radiation work permit system. Procedure RP-AA-1008 “Unescorted Access to and Conduct in Radiologically Controlled Areas,” implements these requirements. Steps 4.1.5 and 4.1.6 require, in part, that workers know their job scope and location and understand the radiological conditions for the work activity prior to entry.

Contrary to the above, on April 11, 2016, a worker conducting inspection of the reactor seal performed cleaning of the reactor seal that was not included in the radiological briefing and was not provided the necessary radiological work controls for this work activity. Exelon's immediate corrective actions included reinforcing the need to properly communicate radiological work activities with radiation protection, and require workers to carry work orders with them to improve communications with radiation protection. Because this finding was determined to be of low safety significance (Green) and was entered into Exelon's CAP (AR 02654591), this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 00050410/2016002-03, Failure to Understand Radiological Conditions Result in Unintended Exposure)**

2RS2 Occupational ALARA Planning and Controls (71124.02 – 2 samples)

a. Inspection Scope

During April 18 to 22, 2016, the inspectors assessed Exelon's performance with respect to maintaining occupational individual and collective radiation exposures ALARA. The inspectors used the requirements contained in 10 CFR 20, applicable RGs, TSs, and procedures required by TSs as criteria for determining compliance.

Radiological Work Planning

The inspectors selected the following radiological work activities based on exposure significance for review:

- Radiation Work Permit (RWP) 16-512, 513, 514 Control Rod Drive Activities
- RWP 16-542 Drywell Permanent Shielding Modification
- RWP 16-524 Nozzle and Vessel Inservice Inspection and Associated Support
- RWP 16-520 Drywell Snubber Testing and Inspections

For each of these activities, the inspectors reviewed ALARA work activity evaluations, exposure estimates, and exposure reduction requirements.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the current annual collective dose estimate, basis methodology, and measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors evaluated the adjustment of exposure estimates, or re-planning of work.

Radiation Worker Performance (1 sample)

The inspectors observed radiation worker and radiation protection technician performance during radiological work to evaluate worker ALARA performance according to specified work controls and procedures. Workers were interviewed to assess their knowledge and awareness of planned and/or implemented radiological and ALARA work controls.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with ALARA planning and controls were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 1 sample)

a. Inspection Scope

During April 18 to 22, 2016, the inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR Part 20, RG 8.15, RG 8.25, NUREG\CR-0041, TS, and procedures required by TS as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the UFSAR to identify ventilation and radiation monitoring systems associated with airborne radioactivity controls and respiratory protection equipment staged for emergency use. The inspectors also reviewed respiratory protection program procedures and current performance indicators for unintended internal exposure incidents.

Engineering Controls (1 sample)

The inspectors reviewed operability and use of both permanent and temporary ventilation systems, and the adequacy of airborne radioactivity radiation monitoring in the plant based on location, sensitivity, and alarm set-points.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Specific Activity and Reactor Coolant System Leak Rate (4 samples)

a. Inspection Scope

The inspectors reviewed Exelon's submittal for the RCS specific activity (BI01) performance indicators (PIs) for both Unit 1 and Unit 2 on June 24, 2016, and the RCS leak rate (BI02) PIs for both Unit 1 and Unit 2 on June 21, 2016. To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory

Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements of RCS leakage, and compared that information to the data reported by the PI. Additionally, the inspectors observed surveillance activities that determined the RCS identified leakage rate, and chemistry personnel taking and analyzing an RCS sample.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The inspectors reviewed licensee submittals for the occupational radiological occurrences PI for the first quarter 2015 through the fourth quarter 2015. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walkdowns of various locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

4OA2 Problem Identification and Resolution (71152 – 2 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Exelon entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for followup, the inspectors performed a daily screening of items entered into the CAP and periodically attended screening meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, Exelon performed an evaluation in accordance with 10 CFR Part 21, "Reporting of Defects and Noncompliance."

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semiannual review of site issues, as required by Inspection Procedure 71152, “Problem Identification and Resolution,” to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely related issues that may have been documented by Exelon personnel outside of the CAP, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Exelon’s CAP database for the first and second quarter of 2016 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC’s daily CR review (Section 4OA2.1). The inspectors reviewed Exelon’s quarterly trend report for the first quarter of 2016, conducted under PI-AA-125-1005, “Coding and Analysis Manual,” Revision 0, to verify that Exelon personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

The inspectors identified one trend concerning quality of documentation in Exelon’s CAP. This trend had previously been identified by the inspectors and was entered into Exelon’s CAP as IR 2620310. Since documentation of this trend the inspectors have identified additional issues that have not been documented or have not been documented in a timely manner per Exelon’s procedure PI-AA-120, Revision 6, “Issue Identification and Screening Process.” In both cases discussed below Exelon’s failure to document the issues was considered a minor procedural violation of Exelon’s procedure PI-AA-120:

- IR 02620306 was written on February 1, 2016 in response to the inspectors identifying eight issue reports that were either not entered into the CAP in a timely manner or were not coded appropriately as NRC-identified. Each issue was reviewed by the inspectors to determine if any non-compliance reached a more than minor threshold. No issues of more than minor threshold were identified. Exelon initiated a crew clock reset for Engineering, Operations, and Regulatory Affairs Departments. The IRs were properly updated or generated in response to the inspectors concerns.

- IR 2678327 was written after the inspectors questioned Exelon about the status of a post maintenance test (PMT) after replacement of the half load solenoid for the 11 instrument air compressor. The original PMT acceptance criteria as stated in the work order (C92984760) was no leakage. During conduct of the PMT leakage was noted. No CAP entry was made documenting the failed PMT. PI-AA-120, “Issue Identification and Screening Process,” Revision 6, Section 4.3 directs issue origination using guidance in Attachment 4. Attachment 4, Section 1.22 identified “Failed Post Maintenance test.” Contrary to this, the inspectors identified that the PMT was not met, and an issue report was not written in accordance with PI-AA-120.

The inspectors determined this issue was minor because the system engineer subsequently performed an evaluation to determine if the amount of leakage for the solenoid could still meet acceptance criteria in accordance with MA-AA-716-010-1103, "Fluid Sealing Technology Program," Revision 3 for the PMT and found the results to meet the criteria.

- IR 2682226 was written after the inspectors questioned Exelon about the completion of a step in the work order to perform a Residual Heat Removal (RHR) heat exchanger preventive maintenance (C91927861). The step required verification with the RHR system engineer that as-found performance monitoring data had been collected prior to cleaning beginning on the heat exchanger. When questioned by the inspector, Exelon staff including the RHR system engineer could not recollect the verification occurring, and were uncertain if the as-found data had been collected. PI-AA-120, "Issue Identification and Screening Process," Revision 6, Section 4.3 directs issue origination using guidance in Attachment 4. Attachment 4, Section 2.10 identifies "Procedures found to provide incorrect direction that would cause plant or personnel risk if followed." Contrary to this, the inspectors identified that the step was not accurate, and an issue report was not written in accordance with PI-AA-120. The inspectors determined the issue to be minor because a review of the heat exchanger history revealed the as-found performance monitoring data had been collected under a separate work order (C90716549), precluding impact on the plant and ensuring that heat transfer characteristics were captured prior to heat exchanger tube cleaning.

.3 Annual Sample: Failure of Unit 1 EDG 103 to Start on March 15, 2016

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's response and corrective actions associated with the Unit 1 EDG 103 failure to start during monthly surveillance testing on March 15, 2016. The inspectors reviewed the ACE performed by Exelon staff to determine whether Exelon staff appropriately identified, characterized, and corrected problems associated with the issue and whether the planned or completed corrective actions were appropriate. The inspectors also reviewed IRs, procedures, drawings, engineering change documents, completed WOs associated with troubleshooting, past work on the Woodward governor, and performed interviews of Exelon staff personnel.

b. Findings and Observations

No findings were identified.

Emergency AC power is supplied by two electromotive division (EMD) locomotive diesel generators, EDG 102 and EDG 103. Fuel oil input to each cylinder is controlled by a Woodward governor, model UG-8. In addition to the Unit 1 EDGs, the Unit 2 Division 3 EDG also employs the use of the Woodward governor, model UG-8. The UG-8 governor contains a shutdown solenoid which is energized to shutdown the EDG by repositioning the fuel rack to the no fuel position. On March 15, 2016, Exelon staff attempted to perform a monthly surveillance test of EDG 103. However, when the manual start signal was applied, the EDG failed start. Exelon troubleshooting determined the potential failure mechanism to be the shutdown solenoid. Exelon's

immediate corrective action for EDG 103 failing to start was to replace the Woodward governor top hat, and its shutdown solenoid.

Exelon performed an ACE of the Unit 1 EDG 103 failure to start on March 15, 2016, under IR 02640675. Exelon determined the cause to be mechanical binding in the shutdown solenoid. Exelon performed a failure of the analysis which determined some resistance to movement from a burr and some debris. Because the shutdown solenoid was stuck in the down position, the governor maintained the fuel rack to the EDG in a position to restrict fuel injection. Exelon also performed an extent of condition run of EDG 102, in accordance with TS, on March 15, 2016, to ensure a similar condition would not prevent it from running. EDG 102 performed its run successfully, ensuring it remained operable. Although an extent of condition run was not performed for the Unit 2 Division 3 EDG, which has the same model Woodward governor valve, the EDG was run successfully on February 24, 2016. Exelon plans future replacements for Unit 1 EDG 102 and Unit 2 Division 3 EDG governor shutdown solenoids, which are being tracked as corrective actions (CAs) in IR 02640675. Exelon also modified its preventive maintenance (PM) to be performed at an eight-year frequency as opposed to the previous frequency of 10 years.

Preventive Maintenance Strategy

The inspectors reviewed past PM practices associated with the UG-8 model Woodward governor at NMPNS. Prior to the license transfer of NMPNS from Constellation Energy to Exelon 2014, NMPNS did not implement a routine PM or replacement strategy for the governor. Although no PM was in place, based on operating experiences, NMPNS replaced its governors in 2005 with an energize to shutdown solenoid. Prior to 2005, the governors were energized to run, and were having repeat failures throughout the industry. Between 2005 and 2016 no additional PM or replacement occurred for the governor. The inspectors reviewed PM practices recommended by the vendor and industry and determined Exelon's current and past practices appeared to be in alignment with the vendor's recommendations.

Operating Experience

The inspectors also performed a review of applicable operating experience regarding Woodward governor UG-8 models and shutdown solenoids. The inspectors noted that Exelon identified a similar failure at the LaSalle County Station, as documented in IR 00828185 on October 8, 2008. The inspectors' review of the issue determined that no operating experience communication was received from LaSalle regarding this event. There was no requirement for such an event to be communicated to the sites. Without receiving information regarding the potential failure mechanism of the shutdown solenoid, Exelon staff were not able to enter the issue into their CAP at NMPNS to ensure potential corrective actions were put in place. The inspectors also performed a review of NRC internal operating experience and did not identify any events that would have been applicable to NMPNS regarding the potential for the shutdown solenoid to become stuck and prevent EDG operation. The inspectors determined that Exelon staff appropriately considered operating experience for applicability in accordance with PI-AA-115, "Operating Experience Program," Revision 1.

Past Operability and Reportability

The inspectors identified during review of the ACE that Exelon did not appropriately consider past operability. Exelon generated IR 02671608 to document the need for a formal past operability review. PI-AA-125, Corrective Action Program, Revision 4, Section 4.1.2 states, "if at any time (e.g., during an investigation, review of a CA closure, review of a previous CR) a SCAQ or CAQ or any question of either current or past operability/reportability arises, then initiate an Issue Report (IR) in accordance with PI-AA-120, 'Issue Identification and Screening Process,'" which was not performed during the apparent cause investigation. Exelon performed a human performance review board (HURB) and determined that although the apparent cause template does not require a past operability review, the section created for a past operability review was inadequate. Exelon generated an action item to re-assess past operability and reportability. Exelon developed a technical evaluation, documented in ECP-16-000443. Exelon determined through a review of design basis requirements, actual relay performance, worst case drift performance, and worst case EDG performance that although EDG 103 failed to start within 10 seconds, it would have started automatically and supported power to core spray to ensure full flow to the core within 60 seconds and meet the fuel peak clad centerline criteria of 2,200°F. Inspectors reviewed the relay start circuit for EDG 103 as well as the actual testing relay performance data. The inspectors' review determined that it was reasonable that on a second start of EDG 103, enough force would likely have caused the solenoid to become free and allow the fuel rack to reposition and support a second startup. Based on this conclusion, the inspectors determined that a reportable condition did not exist for EDG 103, because although the EDG failed to start on March 15, 2016, if called upon during a loss of offsite power EDG 103 would likely have started and provided power to core spray to inject in the core within the 60-second time limit to ensure the fuel peak cladding temperature did not exceed its limit.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 4 samples)

.1 Plant Events (1 sample)

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant event(s) to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Exelon made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Exelon's follow-up actions related to the events to assure that Exelon implemented appropriate corrective actions commensurate with their safety significance.

- Unit 2 intermittent loss of Division I position indication during remote shutdown panel testing on May 4, 2016

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000220/2014-002-00: Unanalyzed Condition Due to Unfused Motor-Operated Valve Control Circuit (1 sample)

On May 8, 2014, during a review of industry operating experience, Exelon identified that an unfused control circuit associated with the Unit 1 reactor water cleanup isolation valve 12 could short circuit due to a fire in the circuit cable routing. Exelon postulated that fire damage to an unprotected DC circuit could cause the cable to self-heat and cause secondary fires along the associated cable route and, as a consequence, adversely affect equipment necessary to achieve and maintain safe shutdown. Exelon determined the cause of the condition was an original design configuration that did not conform to the current fire protection standards. There was no actual safety consequence for this condition. Exelon entered this issue into their CAP as condition report (CR)-2014-004630, implemented compensatory measures for the affected fire areas, and subsequently corrected this condition by the addition of fuses to the affected control circuit.

The inspectors reviewed the LER, the risk evaluation, corrective actions, drawings, associated WO, and the ECP. The inspectors documented the enforcement aspects of the identified technical issue below. The inspectors did not identify any new issues during the review of this LER. This LER is closed.

Introduction. Exelon identified a violation of low to moderate safety significance (White) of Unit 1 Operating License Condition 2.D.(7) for failure to implement and maintain all aspects of the approved Fire Protection Plan (FPP). Specifically, Exelon did not ensure that one train of equipment to achieve and maintain post-fire safe shutdown would remain free of fire damage. This issue was evaluated by the inspectors and determined to warrant enforcement discretion.

Description. In 2014, Exelon was conducting reviews to support of their transition to National Fire Protection Association Standard 805, “Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants,” for Nine Mile Point Unit 1. On May 8, 2014, during a review of industry operating experience, Exelon identified that an unfused control circuit associated with the Unit 1 reactor water cleanup isolation valve 12 could short circuit due to a fire in the circuit cable routing. Exelon postulated that fire damage to an unprotected DC circuit could cause the cable to self-heat and cause secondary fires along the associated cable route and, as a consequence, adversely affect equipment necessary to achieve and maintain safe shutdown. This deficiency effected several fire areas. Exelon determined the cause of the condition was an original design configuration that did not conform to the current fire protection standards. There was no actual safety consequence for this condition. Exelon entered this issue into their CAP as condition report (CR)-2014-004630, implemented compensatory measures for the affected fire areas, reported the condition to the NRC in accordance with 10 CFR 50. 72 and 10 CFR 50.73, and subsequently corrected this condition by the addition of fuses to the affected control circuit.

Analysis. Exelon's failure to identify a non-conforming condition which could adversely impact multiple fire areas and challenge the plant's ability to achieve and maintain safe shutdown was a performance deficiency that was reasonably within Exelon's ability to foresee and correct. This performance deficiency was licensee identified during transition to National Fire Protection Association Standard 805 and 10 CFR 50.48(c). This performance deficiency was more than minor because it was associated with the Protection Against External Factors (e.g., fire) attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

Exelon evaluated this issue with NMPNS fire probabilistic risk assessment analysis and determined that the change in core damage frequency attributed to this issue was estimated to be 9.8E-6 per reactor year. A review of the dominant scenarios indicated that the risk from a large early release was bounded by the core damage assessment. A Region I senior reactor analyst reviewed Exelon's evaluation and concluded that the risk estimate was bounded by conservative assumptions and that this issue would be of no greater than low to moderate safety significance (White).

The inspectors did not assign a cross-cutting aspect to this finding because the performance deficiency occurred greater than three years ago; therefore, it is not considered to be indicative of current plant performance. This was an original plant design configuration issue that did not conform to current license fire protection standards.

Enforcement. Unit 1 License Condition 2.D.(7), in part, requires Exelon to implement and maintain in effect all fire protection features described in licensee submittals and as approved by the NRC. The FPP required Exelon to maintain one train of equipment necessary to achieve and maintain safe shutdown free of fire damage. Contrary to the above, from 1969 (original construction) until March 28, 2015, Exelon did not implement and maintain in effect all fire protection features described in licensee submittals and as approved by the NRC. Specifically, Exelon postulated that fire damage to an unprotected DC circuit could cause the cable to self-heat and cause secondary fires along the associated cable route and, as a consequence, would adversely affect equipment necessary to achieve and maintain safe shutdown. Exelon entered this issue into their CAP as CR-2014-004630, and subsequently corrected the condition.

Exelon was in transition to National Fire Protection Association Standard 805 and 10 CFR 50.48(c) in accordance with a current License Amendment Request, the issue was identified by the licensee as part of a voluntary initiative to adopt 10 CFR 50.48(c), the violation was corrected, routine efforts such as normal surveillances or quality assurance activities would not have likely identified the violation, and the violation was not willful. Therefore, the criteria established in NRC Enforcement Policy Section 9.1 and IMC 0305 Section 11.05 were met. Because all the criteria were satisfied, the NRC exercised enforcement discretion and did not issue a violation for this issue.

.3 (Closed) LER 05000410/2015-003-01: Primary Containment Isolation Function for Some Valves Not Maintained During Surveillance Testing (1 sample)

This LER was revised on March 31, 2016, to document the affect the subject issue had on the Safety System Functional Failure PI. On June 23, 2015, Exelon identified two separate instances where the Unit 2 primary containment isolation function was not maintained for Divisions I and II of the reactor vessel low water level, level 2, associated with reactor building closed loop cooling and reactor water cleanup primary containment isolation valves during the performance of surveillance procedure N2-ISP-ISC-Q005, "Quarterly Functional Test of Reactor Vessel Level 2 and Level 1 Instrument Channels," Revision 00600. N2-ISP-ISC-Q005 is used to test functionality of the Rosemount Analog Trip Systems for several isolation functions associated with reactor vessel water level 2 and reactor vessel water level 1 to satisfy TS 3.3.6.1.3-1.a. In preparation for these surveillance tests, Exelon inadvertently disabled the opposite division isolation function of the one being tested and when they performed the surveillances both primary containment isolation function divisions on reactor vessel low water level were lost. Exelon determined the cause to be a failure to adequately communicate and reinforce the use of technical human performance tools during work preparation activities in accordance with HU-AA-102, "Technical Human Performance Practices," Revision 007. These events were reportable under 10 CFR 50.73 (a)(2)(v)(C) as events or conditions that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

In the original LER, Exelon reported that the failure to maintain the low water level isolation function for the reactor building closed loop cooling and reactor water cleanup primary containment isolation valves did not constitute a Safety System Functional Failure (SSFF) in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. NEI 99-02 defines a SSFF as any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material. Exelon reached this conclusion based on the availability of the high drywell pressure isolation function which in the case of the design basis accident would generate an isolation signal in lieu of the low water level isolation function. Exelon failed to recognize other analyzed transients which would result in a low water level without generating high drywell pressure, therefore the loss of the low water level isolation function in those cases could have prevented primary containment isolation.

In the revised LER, Exelon recognized their inaccurate determination and correctly classified this event as a SSFF. Furthermore, Exelon has committed to update their PI data submission in the second quarter of 2016 to reflect the input to the SSFF PI. The enforcement aspects of this issue regarding the inaccurate PI data submission are discussed in NRC Integrated Inspection Report 05000410/2015003. The inspectors did not identify any new issues during review of this revised LER. This LER is closed.

.4 (Closed) LER 05000410/2016-001-00: Secondary Containment Inoperable Due to Simultaneous Opening of Airlock Doors (1 sample)

LER 05000410/2016-001-00 reported that on April 7, 2016, the Unit 2 reactor building was breached when workers opened both inner and outer airlock doors, SA-262-2 and SA-262-3, simultaneously. The door was subsequently shut within 5 seconds. The

event resulted in operators entering and exiting TS 3.6.4.1, Condition C. During the time the airlock doors were open simultaneously, vacuum remained above the TS required 0.25 inches of vacuum water gauge. Exelon concluded that the wait time of 5 seconds before traversing the airlock was not long enough to reduce the risk of an event. Corrective actions included revising advisory signs at the airlock doors to have individuals pause for 10 seconds instead of 5 seconds prior to entering the airlock. This action was put in place to ensure individuals had enough time to clear the airlock before opening of the doors simultaneously could occur.

The inspectors' review documented that since 2014, there have been 10 events at NMPNS associated with simultaneous airlock doors being opened. These events include the following:

- Unit 2 on April 2, 2014 as documented in LER 05000410/2014-007-00
- Unit 2 on April 2, 2014 as documented in LER 05000410/2014-007-01
- Unit 1 on August 13, 2014 as documented in LER 05000220/2014-004-00
- Unit 1 on October 16, 2014 as documented in LER 05000220/2014-005-00
- Unit 1 on October 20, 2014 as documented in LER 05000220/2014-006-00
- Unit 1 on February 11, 2015 as documented in LER 05000220/2015-001-00
- Unit 1 on March 3, 2015 as documented in LER 05000220/2015-002-00
- Unit 1 on August 5, 2015 as documented in LER 05000220/2015-003-00
- Unit 1 on September 4, 2015 as documented in LER 05000220/2015-004-00
- Unit 2 on April 7, 2016 as documented in LER 05000410/2016-001-00

The inspectors noted that corrective actions in the past included installation of cameras, installation of signs at the access doors to advise waiting before opening of the doors to ensure personnel have cleared the airlock, and the repair of magnetic interlocks. This event did not lead to the loss of secondary containment vacuum. As part of corrective actions for the events associated with the secondary containment airlock doors, Exelon has also submitted License Amendment Request (LAR) for Unit 1 and Unit 2 (MF6974 and MF6975) to allow momentary simultaneous opening during entry and exit and not require entry into TS 3.4.3 for Unit 1 and TS 3.6.4.1 for Unit 2. The LAR is currently under review by the NRC staff.

The inspectors reviewed the LER for accuracy, the adequacy of proposed and completed corrective actions, and the appropriateness of the extent-of-condition review. No findings or violations of NRC requirements were identified. This LER is closed.

4OA6 Meetings, Including Exit

On May 11, 2016, the inspectors presented a debrief of the inspection results related to LER 05000220/2014-002 documented in Section 4OA3 to Mr. Brandon Varga, Regulatory Assurance.

On July 13, 2016, the inspectors presented the inspection results to Mr. Peter Orphanos, Site Vice President, and other members of the NMPNS staff. The inspectors verified that no propriety information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

P. Orphanos, Site Vice President
R. Kreider, Plant Manager
M. Busch, Director Site Operations
J. Gerber, Manager Site Chemistry, Environment and Radwaste
S. Homoki, Senior Engineer
P. Kehoe, Engineering Analyst
M. Khan, Senior Manager Engineering
B. Knowlton, Site Engineer
R. Kreider, Plant Manager
K. Kristensen, Regulatory Principle Engineer
M. Kunzwiler, Manager Site Security
D. Moore, Manager Regulatory Assurance
B. Scaglione, Manager Engineering
A. Sterio, Director, Site Engineering
D. Tulowiecki, Manager Site Radiation Protection
B. Varga, Regulatory Assurance

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed		
05000410/2016002-01	FIN	Ineffective Corrective Action Results in Water Intrusion to Battery Switchgear Room (Section 1R01)
05000410/2016002-02	NCV	Failure to Identify Wide Range Level Indication Impacts Operability of HPCS and RCIC (Section 1R15)
05000410/2016002-03	NCV	Failure to Understand Radiological Conditions Results in Unintended Exposure (Section 2RS1)
Closed		
05000220/2014-002-00	LER	Unanalyzed Condition Due to Unfused Motor Operated Valve Control Circuit (Section 4OA3)
05000410/2015-003-01	LER	Primary Containment Isolation Function for Some Valves Not Maintained During Surveillance Testing (Section 4OA3)
05000410/2016-001-00	LER	Secondary Containment Inoperable Due to Simultaneous Opening of Airlock Doors on June 21, 2016 (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
LS-AA-129, NERC Reliability Standard Compliance Program, Revision 5
N2-MPM-GEN-AO16
N2-MPM-GEN-AO16 PROCEDURE TO WO# C93043729
N2-OP-70, Station Electric Feed and 115kv Switchyard, Revision 01800
OP-AA-108-117, Protected Equipment Program, Revision 4
OP-NM-108-1-7-1002, Offsite Power Operations and Interface Revision 002
PI-AA-120, Issue Identification and Screening Process, Revision 6
PI-AA-125, Corrective Action Program, Revision 3
SOP-33.A,3 115kv Grid Disturbances, Revision 00200
SOP-70, Major Grid Disturbance, Revision 0300
WC-AA-107, Seasonal Readiness, Revision 16

Drawings
12177-EC-16B-9 Sheet 2, C.W. Discharge Lines Encasement Plan & Details, Revision 9
12177-EC-58CA-3, Foundation Plan El237'-0", 249'-0" & 250'-0" Normal Switchgear Building, Revision 3
EP-001B, Power Piping Drawing Circulating Water Piping, Revision 14

Issue Reports
02006312 02091644 02664534 02668574

Work Orders
C93043729
02-01974-00

Miscellaneous
Site Certification Letter for Summer Readiness dated May 12, 2016
Unit 2 USAR, Revision 21
Design Change 2S11239

Section 1R04: Equipment Alignment

Procedures
N1-OP-12 Liquid Poison System, Revision 02900
N2-OP-31, Residual Heat Removal System, Revision 03100
N2-OP-61B, Standby Gas Treatment System, Revision 01400
N2-OP-72, Standby and Emergency AC Distribution System, Revision 01401
N2-OP-100A, Standby Diesel Generators, Revision 01700
N2-OP-100B, HPCS Diesel Generator, Revision 01700

Issue Reports
02640675

Drawings
12177-EJ-ECCS-A-0, Emergency Core Cooling Systems Flow Diagram, Revision 0
PID-36A, Piping & Instrumentation Diagram Standby Liquid Control, Revision 25
PID-53A, Piping & Instrumentation Diagram Control Building Ventilation and Air Conditioning, Revision 25
PID-53B, Piping & Instrumentation Diagram Control Building Ventilation and Air Conditioning, Revision 17
PID-53D, Piping & Instrumentation Diagram Control Building Ventilation and Air Conditioning, Revision 14
PID-53E, Piping & Instrumentation Diagram Control Building Ventilation and Air Conditioning, Revision 17
PID-104, Piping & Instrumentation Drawing Standby Diesel Generator System, Revision 23
PID-104A, Piping & Instrumentation Diagram Standby Diesel Gen System, Revision 23

Section 1R05: Fire Protection

Procedures
EP-CE-111, Emergency Classification and Protective Action Recommendations, Revision 001
EPIP-EPP-02-EAL, Emergency Action Level Matrix Unit 2, Revision 22
N2-FPI-PFP-0201, Unit 2 Pre-Plans, Revision 3
N2-FPI-PFP-0201, Unit 2 Pre-Fire Plans, Revision 4.01
OP-NM-201-005, Firefighting, Revision 00200

Miscellaneous
Unit 2 UFSAR, Section 9.5

Unit 2 UFSAR, Revision 3
Unit 2 UFSAR, Revision 21

Section 1R06: Flood Protection Measures

Drawings
PID-66F, Piping & Instrumentation Diagram Miscellaneous Drains, Revision 10

Issue Reports
02670324

Miscellaneous
Unit 2 UFSAR
NUREG-1900 Vol. 2, Safety Evaluation Report Related to the License Renewal of Nine Mile Point Nuclear Station, Units 1 and 2

Section 1R07: Heat Sink Performance

Procedures
GAP-HSC-02, System Aging Inspection and Cleanness Controls, Revision 02000
N2-MPM-RHS-410, Residual Heat Removal Heat Exchanger P.M., Revision 00402
S-TDP-REL-0102, Service Water Heat Exchanger and Component Inspection Guide, Revision 03

Issue Reports
02657679
02658530

Work Orders
C91927861

Section 1R08: Inservice Inspection

Procedures
ER-AA-335-018, Visual Examination of ASME IWE Class MC and Metallic Liners of IWL Class CC Components, Revision 11
GEH-PDI-UT-1, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds, Revision 9
GEH-VT-205, Procedure for Invessel Visual Inspection (IVVI) of BWR 5 RPV Internals, Revision 13
TOPAZ 03, Procedure for Encoded Phased Array Ultrasonic Examination of Dissimilar Metal Welds, Revision B

Drawings
ISI-66-19, ISI Weld and Pipe Support Identification Drawing, Revision 5
IWE-GEN-001, Sheet 1, Containment ISI IWE Inspection Drawing Liner General Arrangement, Revision 1
IWE-GEN-002, Containment ISI IWE Inspection Drawing Liner Rollout, Revision 3

Issue Reports

01987033	02038077	02655157	02657131
02006130	02654772	02657052	

Miscellaneous

BOP-MT-16-009, Magnetic Particle Testing Data Report for FW-01 and FW-01 in 2-CPS-012-24-2, dated February 22, 2016
CNG-NMP2-ISI-003, Nine Mile Point Unit 2 Third Ten-Year Interval ISI Plan, Revision 03
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N1-MPM-044-658, Hydraulic Control Unit Preventative Maintenance, Revision 01200
N1-OP-5, Control Rod Drive System, Revision 05400
N1-OP-50B, Process Radiation Monitoring System, Revision 01300

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N2-ISP-MSS-R@003, Main Steam Isolation Valve Leak Rate Test (Inboard Static Head of Water), Revision 00202
N2-MFT-315, Uninterruptible Power Supply 2VBB-UPS3A, Revision 00100
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LIST OF ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
AC	alternating current
ALARA	as low as reasonably achievable
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CR	condition report
DC	direct current
ECCS	emergency core cooling system
ECP	engineering change package
EDG	emergency diesel generator
EMD	electromotive division
FA	fire area
GL	generic letter
HPCS	high-pressure core spray
HURB	human performance review board
HX	heat exchanger
IMC	Inspection Manual Chapter
ISI	inservice inspection
kV	kilovolt
LAR	license amendment request
LCO	limiting condition for operation
NCV	non-cited violation
NDE	non-destructive examination
NEI	Nuclear Energy Institute
NMPNS	Nine Mile Point Nuclear Station, LLC
NRC	Nuclear Regulatory Commission, U.S.
OOS	out of service
OWA	operator workaround
P&ID	piping and instrument drawing
psig	per square inch gauge
PI	performance indicator
PMT	post maintenance test
RCS	reactor coolant system
RCIC	reactor core isolation cooling
RHR	residual heat removal
RPV	reactor pressure vessel
RRMG	reactor recirculation motor generator
RT	radiographic testing
SSC	structure, system, and component
SSFF	safety system functional failure
TS	technical specification
UFSAR	updated final safety analysis report
UPS	uninterruptible power supply
UT	ultrasonic testing
VT	visual testing
WO	work order