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

February 6, 2017

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: R.E. GINNA NUCLEAR POWER PLANT, LLC - INTEGRATED INSPECTION REPORT 05000244/2016004

Dear Mr. Hanson:

On December 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at R.E. Ginna Nuclear Power Plant, LLC (Ginna). On January 13, 2017, the NRC inspectors discussed the results of this inspection with Mr. Joseph Pacher, Site Vice President, and other members of the Ginna staff. The results of this inspection are documented in the enclosed report.

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

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

Sincerely,

/RA/

Anthony Dimitriadis, Chief
Reactor Projects Branch 1
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000244/2016004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

DISTRIBUTION:
DDorman RA **(R1ORAMAIL RESOURCE)**
DLew, DRA **(R1ORAMAIL RESOURCE)**
MScott, DRP **(R1DRPMAIL RESOURCE)**
DPelton, DRP **(R1DRPMAIL RESOURCE)**
RLorson, DRS **(R1DRSMAIL RESOURCE)**
JYerokun, DRS **(R1DRSMAIL)**
ADimitriadis, DRP
ARosebrook, DRP
ASiwy, DRP
NPerry, DRP, SRI
JBowen, RI OEDO
RidsNrrPMREGinna Resource
RidsNrrDorlLpl1-1 Resource
ROPReports Resource

DOCUMENT NAME: \\G:\DRP\BRANCH1\Ginna\Reports\2016-004\Ginna 2016-004 FINAL.docx
ADAMS Accession No. ML17038A212

☑ SUNSI Review		☑ Non-Sensitive ☐ Sensitive		☑ Publicly Available ☐ Non-Publicly Available	
OFFICE	RI/DRP	RI/DRP	RI/DRP		
NAME	NPerry/AD per tele	ARosebrook	ADimitriadis		
DATE	2/3/17	2/2/17	2/6/17		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.	50-244
License No.	DPR-18
Report No.	05000244/2016004
Licensee:	Exelon Generation Company, LLC (Exelon)
Facility:	R.E. Ginna Nuclear Power Plant, LLC (Ginna)
Location:	Ontario, New York
Dates:	October 1, 2016, through December 31, 2016
Inspectors:	N. Perry, Senior Resident Inspector J. Petch, Resident Inspector H. Anagnostopoulos, Health Physicist M. Modes, Senior Reactor Inspector A. Rosebrook, Senior Project Engineer T. Fish, Senior Operations Engineer J. DeBoer, Emergency Preparedness Inspector
Approved by:	Anthony Dimitriadis, Chief Reactor Projects Branch 1 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY

Inspection Report 05000244/2016004; 10/01/2016 – 12/31/2016; Ginna; Routine Integrated Inspection Report.

This report covered a 3-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. No findings were identified. The U.S. Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

REPORT DETAILS

Summary of Plant Status

Ginna began the inspection period operating at 100 percent power and remained at or near 100 percent power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On November 10, 2016, the inspectors reviewed Exelon's readiness for the onset of seasonal cold temperatures. The review focused on the auxiliary boiler heating system and the emergency diesel generators. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications (TSs), control room logs, and the corrective action program (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 cold weather conditions. Documents reviewed for each section in this report are listed in the Attachment.

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

On October 13, 2016, the inspectors performed an inspection of the external flood protection measures for Ginna. The inspectors reviewed TSs, procedures, design documents, and the UFSAR, Chapter 2.4.2, 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 all external areas of the plant, including the turbine building, auxiliary building, and berm to ensure that Exelon erected flood protection measures in accordance with design specifications. Where applicable, the inspectors determined installed turbine building pressure wall seals were installed and adequate. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to confirm

that, overall, Exelon had established adequate measures to protect against external flooding events.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04Q – 2 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'A' residual heat removal (RHR) system on October 28, 2016 and
- 'C' standby auxiliary feedwater (AFW) system on December 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, work orders (WOs), action requests (ARs), 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 its 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.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 3 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.

- 'B' battery room on October 14, 2016
- HEMYC® fire wrap areas in the control, intermediate, and auxiliary buildings on November 29, 2016
- Relay Room on December 9, 2016

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07A – 2 samples)

a. Inspection Scope

The inspectors reviewed the following heat exchangers' (HXs) readiness and availability to perform their safety functions. The inspectors reviewed the design basis for the components and verified Exelon's commitments to NRC Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," dated July 18, 1989. The inspectors observed actual performance tests for the HXs and/or reviewed the results of previous inspections. The inspectors discussed the results of the most recent inspections 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 HXs did not exceed the maximum amount allowed in system design calculations.

- 'B' emergency diesel generator (EDG) HX on November 17, 2016
- 'A' spent fuel pool (SFP) HX on December 13, 2016

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

On November 29, 2016, the inspectors observed licensed operator simulator training, which included a loss of coolant accident (LOCA) outside containment. 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 unit supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the TS action statements entered 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

a. Inspection Scope

On December 19, 2016, the inspectors observed and reviewed a power reduction, and turbine-driven AFW surveillance test. The inspectors observed the control room briefings to verify the briefings were in accordance with Exelon's administrative procedure HU-AA-1211, "Pre-Job Briefings," Revision 011. Additionally, the inspectors verified that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

.3 Biennial Review (71111.11B) – 1 sample)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 10, and Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program and Licensed Operator Performance."

Examination Results

Facility staff had not completed administration of the annual operating tests and biennial written exams by the end of this inspection period and therefore Pass/Fail results were not inspected.

Written Examination Quality

The inspectors reviewed a sample of reactor operator and senior reactor operator biennial written exams.

Operating Test Quality

The inspectors reviewed the operating tests (scenarios and Job Performance Measures (JPMs)) associated with the on-site examination week.

Licensee Administration of Operating Tests

The inspectors observed facility training staff administer dynamic simulator exams and JPMs during the week of December 12, 2016. These observations included facility evaluations of crew and individual operator performance during the simulator exams and individual performance of JPMs.

Exam Security

The inspectors assessed whether facility staff properly safeguarded exam material, and whether test item repetition was excessive.

Conformance with License Conditions

License reactivation and license proficiency records were reviewed to ensure that Title 10 of the *Code of Federal* Regulations (10 CFR) 55.53 license conditions and applicable program requirements were met. The inspectors also reviewed a sample of records for requalification training attendance, and a sample of medical examinations for compliance with license conditions and NRC regulations.

Simulator Performance

Simulator performance and fidelity were reviewed for conformance to the reference plant control room. A sample of simulator deficiency reports was also reviewed to ensure facility staff addressed identified modeling problems.

Problem Identification and Resolution

The inspectors reviewed recent operating history documentation found in inspection reports, licensee event reports, the licensee's CAP, NRC End of Cycle reports, and the most recent NRC plant issues matrix. The resident staff was also consulted for insights regarding licensed operators' performance. The inspectors focused on events associated with operator errors that may have occurred due to possible training deficiencies.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 1 sample)

a. Inspection Scope

The inspectors reviewed the sample listed below to assess the effectiveness of maintenance activities on structure, system, and component performance and reliability. The inspectors reviewed CAP documents, maintenance WOs, and system design records to ensure that Exelon was identifying and properly evaluating performance problems within the scope of the quality assurance program. For the sample selected, the inspectors reviewed multiple work packages to verify that quality control verifications were properly specified in accordance with the quality assurance program and were implemented as specified.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 4 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk 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.

The inspectors reviewed the maintenance and emergent work activities listed below:

- Planned maintenance on 'B' EDG on November 1, 2016
- Planned maintenance on 'C' standby AFW on November 14, 2016
- Planned maintenance on 'B' EDG and 'B' SFP cooling on November 30, 2016
- Planned maintenance on radiation monitor 14A on December 22, 2016

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 samples)

a. Inspection Scope

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

- Water leakage into 'B' battery room on October 12, 2016,
- 'D' service water pump high differential pressure on November 8, 2016,
- Nuclear instrument N-41 dirty potentiometer on December 2, 2016, and
- Review of Operator Work Arounds (OWAs) on December, 30, 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. Where compensatory measures were required to maintain operability, such as in the case of OWAs, the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 4 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, that the test results were properly reviewed and accepted, and that problems were appropriately documented. The inspectors also walked down the affected job site, 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.

- 'A' RHR planned maintenance on October 19, 2016
- Alternate injection flex pump after installation on October 28, 2016
- 'B' EDG planned maintenance on November 3, 2016
- Diesel Fire Pump planned maintenance on December 15, 2016

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 3 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems, and components (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:

- STP-O-16QB, Auxiliary Feedwater Pump 'B' – Quarterly on November 28, 2016 (inservice test),
- STP-O-2.8Q, Component Cooling Water Pump – Quarterly on December 9. 2016, and
- STP-O-2.8-COMP-A, Component Cooling Water Pump A Comprehensive Test on December 18, 2016.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)

a. Inspection Scope

Exelon implemented various changes to the Ginna Emergency Action Levels (EALs), Emergency Plan, and Implementing Procedures. Exelon had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, Emergency Plan, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 50.47(b) and the requirements of 10 CFR Part 50, Appendix E.

The inspectors performed an in-office review of all EAL and Emergency Plan changes submitted by Exelon as required by 10 CFR 50.54(q)(5), including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential reductions in effectiveness of the Emergency Plan. This review by the inspectors was not documented in an NRC Safety Evaluation Report and does not constitute formal

NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

Training Observations

a. Inspection Scope

On November 30, 2016, the inspectors observed a simulator training evolution for Exelon licensed operators 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 any weaknesses and deficiencies in the crew's performance and ensure that Exelon evaluators noted the same issues and entered them in 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 – 7 samples)

a. Inspection Scope

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, "Standards for Protection Against Radiation;" TSs; Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," Revision 1; and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the PIs for the occupational exposure 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 verify 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.

Radiological Hazards Control and Work Coverage (1 sample)

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walkdowns and observation of radiological work activities. The inspectors assessed whether posted surveys; radiation work permits; worker radiological briefings and radiation protection job coverage; the use of continuous air monitoring, air sampling, and engineering controls; and dosimetry monitoring were consistent with the present conditions. The inspectors examined the control of highly activated or contaminated materials stored within the SFPs and the posting and physical controls for selected high radiation areas, locked high radiation areas, and very high radiation areas to verify conformance with the occupation PI.

Risk-Significant High Radiation Areas and Very High Radiation Areas Controls (1 sample)

The inspectors reviewed the procedures and controls for high radiation areas, very high radiation areas, and radiological transient areas in the plant.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 sample)

The inspectors evaluated radiation worker performance with respect to radiation protection work requirements. The inspectors evaluated radiation protection technicians in performance of radiation surveys and in providing radiological job coverage.

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

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 2 samples)

.1 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors reviewed Exelon's submittals for the occupational radiological occurrences (OR01) PI for the third quarter 2015 through the third quarter 2016. The inspectors used PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," 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 radiation area and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

.2 Radiological Effluent Technical Specification (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed Exelon's submittals for the RETS/ODCM radiological effluent occurrences (PR01) PI for the third quarter 2015 through the third quarter 2016. The inspectors used PI definitions and guidance contained in NEI 99-02, Revision 7, to determine if the PI data were reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data were accurately calculated and reported.

The inspectors reviewed the CAP database to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent summary data and the results of associated dose calculations to determine if indicator results were accurately reported.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 4 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 its 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 follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended AR 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 semi-annual review of site issues to identify trends that might indicate the existence of more significant safety concerns. As part of this review, the inspectors included repetitive or closely related issues documented by Exelon in trend reports, major equipment problem lists, operator work-around and challenge lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Exelon's CAP database for the third and fourth quarters of 2016 to assess ARs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily AR review (Section 4OA2.1). The inspectors reviewed Exelon's quarterly trend reports for the third and fourth quarters of 2016, 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 evaluated a sample of issues and events that occurred over the course of the third and fourth quarters of 2016 to determine whether issues were appropriately considered as emerging or adverse trends. The inspectors verified that these issues were addressed within the scope of the CAP or through department review.

The evaluation did not reveal any new trends that could indicate a more significant safety issue. The inspectors determined that Exelon personnel were identifying trend issues at a low threshold, entered them into the CAP for resolution and had appropriately prioritized investigation reviews. The inspectors noted minor adverse trends identified by Exelon staff in the areas of procedure use and adherence, unit heaters not working, temperature switches out of tolerance, EP communication equipment failures, equipment protection discrepancies, roof leaks, and nuclear instrumentation calibration measurement issues.

There were no adverse safety consequences as a result of these low-level trend issues. Based on the overall results of the semi-annual trend review, the inspectors determined that Exelon had properly identified adverse trends at Ginna before they became more significant safety problems. The inspectors independently evaluated the deficiencies noted above for significance in accordance with the guidance in IMC 0612, Appendix B, "Issue Screening," and Appendix E, "Examples of Minor Issues." The inspectors determined these conditions were deficiencies of minor significance and, therefore, are not subject to enforcement action in accordance with the NRC's Enforcement Policy.

.3 Annual Sample: Review of the Evaluations and Effectiveness of Corrective Actions for Emergency Preparedness (EP) Violations at Ginna.

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's evaluations and corrective actions associated with a number of Emergency Preparedness Cornerstone violations and non-cited violations (NCVs). The inspectors assessed Exelon's CAP evaluations and effectiveness of corrective actions for EP issues documented in NRC Inspection Reports between 2008 and 2015. The inspectors evaluated these issues to determine if there were any common root, apparent or contributing causes that have not been adequately addressed, and if the corrective actions developed for each issue were effective. The inspectors reviewed Exelon procedures, root and apparent cause evaluations, selected CRs and WOs, and reviewed audits and self-assessments associated with the EP program. The inspectors also conducted interviews with various Exelon staff knowledgeable with the evaluation of and corrective actions developed for these issues.

The sample focused on the evaluation and long term corrective actions associated with the following EP findings since 2014. These findings include a White Notice of Violation (NOV) for a Non Conservative EAL Criteria (NRC Inspection Reports (IR) 05000244/2016002, 05000244/2016009, and 05000244/2016010); a Green NCV for an overly conservative protective action recommendation (PAR) (IR 05000244/2015001); a Green NCV for an inadequate EP Drill Critique (IR 05000244/2014002); an Exercise of Enforcement discretion for a White/SLIII finding associated with inadequate PARs over Lake Ontario (IR 05000244/2015002) and a Green licensee identified violation related to a calculation error for an EAL threshold value (IR 05000244/2016001). Additionally in 2008, a Severity Level III NOV (IR 05000244/2008502) was issued to Ginna for changes to its emergency plan which decreased its effectiveness without first obtaining NRC approval. The long term effectiveness of corrective actions to preclude repetition for this violation was also evaluated.

b. Findings and Observations

No new findings were identified.

The inspectors determined that although there have been a relatively large number of findings in this area, the corrective actions developed were generally effective and likely would not have precluded subsequent issues. In many cases, the performance deficiency which resulted in a finding or violation occurred several months prior to the issue being identified and documented. As such, corrective actions to preclude repetition would not have reasonably prevented these performance deficiencies.

However, the inspectors did identify that several of these issues had common contributing causes. Specifically, on several occasions, the Plant Operations Review Committee (PORC) did not perform an adequate review of changes to an emergency action threshold. On several occasions, PORC was asked to review and approve very large programmatic changes, where changes of a technical nature were not clearly

distinguished from format or administrative changes, and was not effective in identifying issues which adversely impacted the EAL. Exelon captured the inspector's observations in the CAP and corrective actions included more clearly identifying technical changes and breaking significant changes into more manageable segments to ensure PORC is able to apply the right level of rigor in its review.

The inspectors also identified that failure to ensure cross disciplinary reviews of emergency plan changes were performed during review and approval of emergency plan changes was a contributing cause for two recent EAL violations, (the 2016 White NOV, and the 2016 Green LIV). Extent of cause and condition reviews for the Green licensee identified violation in the first quarter 2016 were not effective in identifying the White NOV which was identified in the second quarter 2016. This was captured in Exelon's Root Cause Analysis Report for the White NOV and discussed in IR 2016010 as a missed opportunity to identify the issue.

The above issues were not determined to be violations of NRC requirements.

.4 Annual Sample: Review of Vibrations of Turbine Driven Auxiliary Feed Water Pump Outboard Bearing Housing

a. Inspection Scope

The inspectors reviewed the actions taken in response to the discovery of elevated vibrations subsequent to maintenance, and during performance of STP-O-16QT, at the Turbine Driven AFW pump outboard bearing housing.

The inspectors reviewed the actions taken to evaluate and correct the condition and restore full operability of the Turbine Driven AFW pump which included designing and installing an additional qualified support intended to minimize movement of the turbine casing at the outboard bearing housing. Specifically, the inspectors assessed Exelon's problem identification threshold, cause analyses, extent-of-condition reviews, and the prioritization and timeliness of Exelon's corrective actions to determine whether Exelon was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Exelon's CAP and 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

The inspectors determined that upon termination of the pump test the vibration results were recorded in AR 02588214 and AR 02594391 in a complete, accurate, and timely fashion. Exelon personnel evaluated the operability of the pump and considered reportability issues.

The inspectors reviewed the actions taken to determine if the actions to install an additional qualified support, intended to minimize movement of the turbine casing at the

outboard bearing housing, resulted in the correction of the identified problem. In the case of this condition adverse to quality, the inspectors determined it will preclude repetition as evidenced by the vibration testing results subsequent to the modification. The inspectors reviewed operating experience and determined it was adequately evaluated for applicability, and that lessons learned were communicated to appropriate organizations and implemented.

.5 Annual Sample: Review of the Corrosion in Line Spec 125-11

a. Inspection Scope

The inspectors reviewed the actions taken in response to the discovery of significant corrosion on a 10" fire pipe in the west loop header (Line Spec 125-11), located in the screen house. The corrosion was located in the pipe at the point where the pipe exits the screen house in the circulation water bay south wall. The corrosion was discovered during the NRC license renewal walk-down.

The inspectors assessed Exelon's problem identification threshold, cause analyses, extent-of-condition reviews, and the prioritization and timeliness of Exelon's corrective actions to determine whether Exelon was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Exelon's CAP and 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

The observed corrosion condition was entered into Exelon's corrective action program (AR01919187) on 10/27/2011, the same day it was discovered. The inspectors determined the documentation of the condition was complete, accurate, and timely. The condition was evaluated by ultrasonic thickness testing after the walk-down, and found to be above minimum wall, in a timely fashion. The inspectors reviewed the previously established WO to replace the penetration material and test the pipe for wall thickness. The conditions were considered for operability and reportability issues in a timely fashion.

The extent of condition was evaluated by testing the second 10" pipe in a similar configuration at the time the originally noted condition was tested.

The inspectors reviewed the actions taken to determine if the actions resulted in the correction of the identified problem. In the case of this condition adverse to quality, the inspectors determined the corrective action taken would reasonably preclude repetition. The inspectors reviewed operating experience to determine if it was adequately evaluated for applicability, and applicable lessons learned were communicated to appropriate organizations and implemented.

4OA5 Other Activities

(Closed) NRC Temporary Instruction (TI) 2515/192 – Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems

a. Inspection Scope

The objective of this performance based TI was to verify implementation of interim compensatory measures associated with an open phase condition design vulnerability in electric power systems for operating reactors. The inspectors conducted an inspection to determine if Exelon had implemented the following interim compensatory measures. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for open phase condition design vulnerability. The inspectors verified the following:

- Exelon identified and discussed with applicable plant staff the lessons learned from the open phase condition events at U.S. operating plants including the Byron station open phase condition event and its consequences. Exelon conducted operator training for promptly diagnosing, recognizing consequences, and responding to an open phase condition event.

- Exelon updated applicable plant operating procedures to help operators promptly diagnose and respond to open phase condition events on off-site power sources credited for safe shutdown of the plant.

- Exelon established and continued to implement periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible open phase condition.

- Exelon ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, Exelon assessed and managed plant risk in accordance with 10 CFR 50.65(a)(4) requirements.

b. Findings and Observations

No findings were identified.

This completes the inspection requirements of TI 2515/192.

4OA6 Meetings, Including Exit

On January 13, 2017, the inspectors presented the inspection results to Mr. Joseph Pacher, Site Vice President, and other members of the Ginna 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
J. Pacher, Site Vice President
W. Carsky, Plant Manager
D. Blankenship, Director, Site Operations
J. Brown, Manager, Operations Training
T. Edwards, Manager, Site Chemistry, Environmental, & Radwaste
R. Everett, Director, Site Engineering
K. Garnish, Senior Manager, Operations Support and Services
K. Gould, Manager, Radiation Protection
T. Harding, Manager, Site Regulatory Assurance
J. Jackson, Manager, Emergency Preparedness
A. Smith, Director, Ginna Training
P. Swift, Director, Site Work Management
S. Wihlen, Director, Site Maintenance

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Closed

05000244/2515/192	TI	Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
ER-SC.1, Adverse Weather Plan, Revision 024
ER-SC.2, High Water (Flood) Plan, Revision 014
O-22, Cold Weather Walkdown Procedure, Revision 019

Action Requests

02731433	03943091	03949060	03954182
02737630	03943096	03949062	03954276
02737720	03943099	03949064	03956567
02740454	03945917	03953776	
03943087	03945920	03953946	

Miscellaneous
DA-CE-93-081, Turbine Building Pressure Wall Seals, Revision 1

Section 1R04: Equipment Alignment

Procedures
STP-O-30.2, RHR System Valve and Breaker Position Verification, Revision 00003
STP-O-30.5, Standby Auxiliary Feedwater Pumps and Valves and Breakers, Revision 00400

Drawings
33013-1238, Standby Auxiliary Feedwater, Revision 40
33013-1247, Auxiliary Coolant Residual Heat Removal, Revision 47

Section 1R05: Fire Protection

Procedures
A-54.7, Fire Protection Tour, Revision 037
FRP-18.0, Battery Room 'B', Revision 007
FRP-19.0, Relay Room / Multiplexer Room / Annex Room, Revision 011

Drawings
33013-2545, Fire Response Plan Cnmt. Struct. & Intermediate Bldg. Plan – Intermediate Floor El. 253'3", Revision 9
33013-2546, Fire Response Plan Auxiliary Building Plan – Intermediate Flr. El 253'0", Revision 4
33013-2559, Fire Response Plan Control Building, Revision 14

Action Requests
02437275
03947034

Section 1R07: Heat Sink Performance

Procedures
ER-AA-335-038, Examination of Non-Magnetic Heat Exchanger Tubing, Revision 3
STP-I-60.8, A SFP Heat Exchanger Thermal Performance Test, Revision 00100

Action Requests
02735697

Miscellaneous
DA-ME-11-014, Spent Fuel Pool Heat Exchanger A Thermal Performance Testing Data Reduction, Fouling, and Uncertainty Analysis, Revision 000

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Procedures
2017 LOR Annual Operating Exam Sample Plan
ECA1112-05, LOCA Outside Containment, Revision 03
HU-AA-1211, Pre-Job Briefings, Revision 011
OP-AA-101-113-1006, 4.0 Crew Critique Guidelines, Revision 007
OP-AA-105-101, Administrative Process for NRC License and Medical Requirements
OP-AA-105-102, NRC Active License Maintenance
STP-O-16QT, Auxiliary Feedwater Turbine Pump – Quarterly, Revision 01100
TQ-AA-150, Operator Training Programs

Job Performance Measures
LORT-2016-6 LORT-2016-7 JCO35.008 JCO76.006
2016-ADMIN-6-US 2016-ADMIN-SM-6

Simulator Scenarios
E2ECA21 FRH1 ES3123

Biennial Written Exams
Week 3 RO Week 6 RO
Week 3 SRO Week 6 SRO

Simulator Testing
Steady State testing for 100%, 68% and 26% power levels
Transients testing
Plant Event Simulator test
Core Performance
Modifications testing
Scenario Based Testing for 2016 August EP Drill and 2016 LOR Exam scenarios 16-1, 16-2, 16-3, 16-4, and 16-5

Condition Reports
2505739
2574211
2630625
2635546

Section 1R12: Maintenance Effectiveness

Procedures
MA-CE-716-010, Maintenance Planning, Revision 2
NO-AA-300-1001, Nuclear Oversight Independent Inspection Plan, Revision 9

Work Orders

C92159457	C92816865	C93150574
C92816863	C92895819	C93157878
C92816864	C92903927	C93400757

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
A-601-16, On-Line Fire Risk Management, Revision 003
OPG-PROTECTED-EQUIPMENT, Revision 017
OP-A-108-117, Protected Equipment Program, Revision 004
WC-AA-104, Integrated Risk Management, Revision 024

Action Requests
02721208

Section 1R15: Operability Determinations and Functionality Assessments

Action Requests
02737421
03945953
03946031

Miscellaneous
DA-ME-97-045, Service Water System Hydraulic Model, Revision 001
Engineering Change Package (ECP)-16-000669, Technical Evaluation, Revision 0000
GIN-1-2016-0617, N-41 Selector Switch Issue
OPEVAL-16-008, 'D' Service Water Pump High Differential Pressure, Revision 000 and 001

Section 1R19: Post-Maintenance Testing

Procedures
FSG-1, Long Term RCS Inventory Control, Revision 001
STP-O-2.2QA, Residual Heat Removal Pump A Inservice Test, Revision 012
STP-O-12.2, Emergency Diesel Generator 'B', Revision 018
STP-O-13, Fire Pump Operation and System Alignment, Revision 003
STP-O-40.9, Alternate RCS Injection System Standby Alignment, Revision 00000
STP-O-40.10, Alternate RCS Injection System Flow Test (PCH02), Revision 001

Work Orders
C92906947

Section 1R22: Surveillance Testing

Procedures
STP-O-2.8-COMP-A, Component Cooling Water Pump A Comprehensive Test, Revision 00200
STP-O-2.8Q, Component Cooling Water Pump Quarterly Test, Revision 010
STP-O-16QB, Auxiliary Feedwater Pump 'B' – Quarterly, Revision 007

Action Requests
03946482
03946484

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Emergency Plan
EP-AA-112-100-F-58, CR Operations Communicator Checklist (CNG), Revision C
EP-AA-112-200-F-67, TSC Operations Communicator Checklist (CNG), Revision B
EP-AA-112-300-F-57, OSC Operations Communicator Checklist (CNG), Revision C
EP-AA-112-700 SERIES, Alternative Facility Operation

Section 1EP6: Drill Evaluation

Miscellaneous
ECA00-04, Loss of All AC, Revision 04

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures
RP-AA-210, Dosimetry Issue, Usage, and Control, Revision 026
RP-AA-300, Radiological Survey Program, Revision 014
RP-AA-300-1001, Discrete Radioactive Particle Controls, Revision 005
RP-AA-300-1005, Removing Items from the Spent Fuel Pool, Reactor Cavity, and Equipment Pit, Revision 001
RP-AA-301, Radiological Air Sampling Program, Revision 009
RP-AA-302, Determination of Alpha Levels and Monitoring, Revision 007
RP-AA-376, Radiological Postings, Labeling, and Markings, Revision 009
RP-AA-376-1001, Radiological Posting, Labeling, and Marking Standard, Revision 014
RP-AA-401, Operational ALARA Planning and Controls, Revision 021
RP-AA-503, Unconditional Release Survey Method, Revision 014
RP-AA-503-F-01, Unconditional Release Instructions Using the Small Articles Monitor for Personal Items Used in the Radiologically Controlled Area and in a Containment Area, Revision 004
RP-INS-O-METERS, Operation of Portable Survey Meters, Revision 01200
RP-JC-DAILY-SRC-CHKS, Daily Instrument Source Checks, Revision 02900

Action Requests

02471751	02503783	02542758	02551150
02555033	02558553	02559559	02561707
02561777	02575353	02583732	02611663
02613070	02621874	02641285	02645098
02645362	02679491	02684976	02689229
02693034	02694273	02694470	02694975
02697112	02705992	02714830	

Air Sample Documents

31485	32913	33389	33390
33494	33495		

Radiological Survey

Map 101 dated August 31, 2016
Map 340 dated July 17 and October 11, 2016
Map 353 dated July 19 and October 8, 2016
Map 370 dated July 10, 2016
Map 420 dated July 5 and October 10, 2016

Miscellaneous

Condition Report 2014-001626
Mid-Cycle Assessment Report, April 25 to 29, 2016
NOSA-COMP-15-06, 2015 Radiation Protection Comparative Audit Report dated September 15, 2015
NOSA-GIN-15-15, Northeast Radwaste Audit dated December 17, 2015
NOSA-GIN-16-04, Chemistry, Radwaste, Effluent and Environmental Monitoring Audit Report dated July 27, 2016
NOSCA-GIN-15-11, Radiation Protection Report dated October 1, 2015
NSTS Reconciliation Notification dated January 21, 2016
Radioactive Sealed Source Inventory Report dated September 3, 2016
Radiological Controlled Area Exit Transactions Report (greater than 100 mrem), January 1, 2015 to September 30, 2016
Radiological Survey Schedules (weekly, quarterly, semi-annual, and annual)
RP-AA-800, Revision 007, Attachment 2, Source Leak Test Record dated July 21, 2016
RP-AA-1010, Revision 001, GIN-16-001, Containment Continuous Air Monitor Placement, Revision 0, dated January 21, 2016
RP-AA-1010, Revision 001, GIN-16-003, Evaluation of Auxiliary Building Air Flow and Continuous Air Monitor Placement, Revision 0, dated May 10, 2016

Section 4OA1: Performance Indicator Verification

Procedure

LS-AA-2150, Monthly Data Elements for RETS/ODCM Radiological Effluent Occurrences, Revision 005

Miscellaneous

Gas Status Summary Report dated October 20, 2016
Liquid Status Summary Report dated October 20, 2016
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 7

Section 4OA2: Problem Identification and Resolution

Procedures
CENG-EP-1.01-1013 R0000, Emergency Classification and PAR
EP-AA-110-203, GNP Dose Assessment, Revision 003
EP-AA-1002 Addendum 3, Revisions 1-3, R.E. Ginna Nuclear Power Plant Emergency Action Levels
EP-AA-120-1004, Revision-002, Emergency Preparedness Advisory Committee
EPG-EPAC, Revision-000, EPAC Subcommittee
EPIP-1-0, Revision 48 and 49, Ginna Station Event Evaluation and Classification
OP-AA-102-103, Operator Work-Around Program, Revision 4
PI-AA-125, Revision 0, Corrective Action Program (CAP) Procedure
PI-AA-125-1001, Revision 002, Root Cause Analysis Manual
PI-AA-125-1004, Revision-001 Effectiveness Review Manual
PI-AA-127, Passport Action Tracking Management Procedure, Revision 2

Drawings
33013-61-H, 10" Cast Iron Fire Service Piping Detail, 1/24/69
33013-73-G, Screen House Piping Details, 8/9/69

Action Requests

01902660	01960650	02515980	02713354
01919187	01961209	02609057	02715246
01935410	02449963	02614271	02741463
01940938	02476668	02647356	
01945318	02502359	02659732	
01960543	02515393	02696733	

Miscellaneous
ECP-15-000678-103-1001-01 Rev. No.: 0000, "Verification of Completion of Activities Required Prior to Declaring DCP Operable."
ECP-15-000678 Rev. No.: 0000, "ATTACHMENT H Engineering Change Material List"
ECP-15-000678 Rev. No.: 0000, "ATTACHMENT C Work Planning Instructions
Operator Work-Around Board Minutes for 2016
Supplemental Report BOP-UT-17-049, 9/28/2016
Ultrasonic Thickness Examination Report BOP-UT-17-017, 3/29/2016

Section 4OA5: Other Activities

Procedures
AP-ELEC.2, Safeguard Busses Low Voltage or System Low Frequency, Revision 00603
AP-ELEC.2, Safeguard Busses Low Voltage or System Abnormal Frequency, Revision 01503
AR-L-28, 12B XFMR or 12B Bus Trouble, Revision 01400
AR-L-20, 12A XFMR or 12A Bus Trouble, Revision 01400
AR-L-15, Bus 17 Under Voltage Safeguards, Revision 01101
AR-L-7, Bus 16 Under Voltage Safeguards, Revision 01101
AR-L-23, Bus 18 Under Voltage Safeguards, Revision 01102
O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A / 12B, Revision 023
Reptask P201591, Ginna Station 13 weekly electrical equipment inspection / minor maintenance, Revision 37
Reptask P201574, Ginna Station 13A weekly electrical equipment inspection / minor maintenance, Revision 54

Action Requests
01948068

Work Orders
C93105298
C93451156

Miscellaneous
Document Control Desk, Response to Request for Additional Information Regarding Response to NRC Bulletin 2012-01, “Design Vulnerability in Electric Power System,” dated January 30, 2014.
Operations Night Orders dated February 10, 2012.

LIST OF ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
AFW	auxiliary feedwater
AR	action request
CAP	corrective action program
EAL	Emergency Action Level
EDG	emergency diesel generator
ELAP	extended loss of all ac power
EP	emergency preparedness
GL	Generic Letter
HX	heat exchanger
IMC	Inspection Manual Chapter
IR	inspection report
JPM	job performance measures
LOCA	loss of coolant accident
NCV	non-cited violation
NEI	Nuclear Energy Institute
NOV	notice of violation
NRC	Nuclear Regulatory Commission, U.S.
ODCM	Offsite Dose Calculation Manual
OOS	out of service
OWA	operator work around
PAR	protective action recommendation
PORC	plant operations review committee
P&ID	piping and instrumentation drawing
PI	performance indicator
RETS	radiological effluent technical specification
RHR	residual heat removal
SFP	spent fuel pool
SSC	structure, system, and component
TI	temporary instruction
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
WO	work order