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

February 3, 2015

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

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 – NRC INTEGRATED INSPECTION REPORT 5000289/2014005

Dear Mr. Hanson:

On December 31, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Three Mile Island, Unit 1 (TMI) facility. The enclosed inspection report documents the inspection results, which were discussed on January 30, 2015 with Mr. Rick Libra, Site Vice President, and other members of your staff.

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

Based on the results of this inspection, no findings were identified.

In accordance with 10 CFR 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 Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Silas R. Kennedy, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos.: 50-289
License Nos.: DPR-50

Enclosure: Inspection Report 05000289/2014005
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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President and Chief Nuclear Officer (CNO), Exelon Nuclear
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-289
License No:	DPR-50
Report No:	05000289/2014005
Licensee:	Exelon Generation Company
Facility:	Three Mile Island Station, Unit 1
Location:	Middletown, PA 17057
Dates:	October 1 through December 31, 2014
Inspectors:	D. Werkheiser, Senior Resident Inspector, Division of Reactor Projects (DRP) J. Heinly, Resident Inspector, DRP J. Petch, Resident Inspector (Acting), DRP C. Roettgen, Resident Inspector (Acting), DRP E. Burket, Emergency Preparedness Inspector, Division of Reactor Safety (DRS) R. Rolph, Reactor Inspector, DRS
Approved by:	S. Kennedy, Chief Projects Branch 6 Division of Reactor Projects (DRP)

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SUMMARY

IR 05000289/2014005, 10/01/2014-12/31/2014; Three Mile Island, Unit 1, Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

No findings were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. On November 26, 2014, operators reduced power to 75 percent based on indications of high vibrations on the 'D' reactor coolant pump motor. This indication was subsequently confirmed to be faulty and operators returned the unit to 100 percent power the same day. On November 29, 2014, operators performed a planned power reduction to 89 percent to conduct main turbine valve testing and returned the unit to 100 percent power on November 30, 2014. The unit remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Exelon's readiness for the onset of seasonal low temperatures. The review focused on the important to safety portions of the intermediate building ventilation system, emergency diesel generators, intake pump and screen house, and station activities to prepare for sustained cold weather. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), Technical Specifications (TSs), control room logs, and the corrective action program 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 areas and affected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04Q – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- ‘B’ 4160 volts alternating current system during ‘A’ emergency diesel generator surveillance testing followed by emergent switchyard maintenance on November 3, 2014
- ‘C’ nuclear closed cycle cooling water system during ‘A’ emergency diesel generator monthly surveillance on December 2, 2014
- ‘A’ intermediate cooling (IC) pump stand-by line up during ‘B’ IC pump in-service re-alignment on December 22, 2014

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), issue reports (IRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system 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 corrective action program for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 5 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, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Turbine building electrical equipment room, 322’ elevation (TB-FA-1(3)), on November 14, 2014
- Turbine building ‘B’ auxiliary transformer, 305’ elevation (TB-FA-1(12)) on December 3, 2014
- Intake screen pump house, elevation 308’ (ISPH-FA-2) on December 4, 2014
- Turbine building main feed pump turbine oil conditioner area, elevation 305’ (TB-FA-1(7)) on December 18, 2014
- Control building except control room, elevation 355’ (CB-FA-4A) on December 29, 2014

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Annual Review of Cables Located in Underground Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground manholes subject to flooding that contain cables whose failure could affect risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including review of records for manhole E-16 and E-17 containing safety-related cables, to verify that the cables were not submerged in water, that cables and/or splices appeared intact, and to note the condition of cable support structures. When applicable, the inspectors verified proper sump pump operation and verified level alarm circuits were set in accordance with station procedures and calculations to ensure that the cables will not be submerged. The inspectors also ensured that drainage was provided and functioning properly in areas where dewatering devices were not installed.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (711111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the station blackout (SBO) diesel generator cooling heat exchanger 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 were being maintained. The inspectors observed actual performance tests for the heat exchangers and/or reviewed the results of previous inspections of the heat exchanger reviewed. 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 heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on November 25, 2014, which included a failed open turbine bypass valve and a small-break reactor coolant system leak, concurrent with the failure of the main turbine to trip when required from the control room. The inspectors evaluated operator performance during the simulated events 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 classification made by the shift manager and the TS action statements entered by the shift technical advisor. 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

The inspectors observed crew 'B' control room operations on the morning of December 19, 2014. Main activities observed were in-core thermocouple output test and radiation monitor instrumentation and control maintenance. The inspectors observed licensed operators performance to verify that procedure use, crew communications, and coordination of activities between work groups met the criteria specified in Exelon's OP-AA-1, "Conduct of Operations," Revision 0. In addition, the inspectors verified that licensee supervision and management were adequately engaged in plant operations oversight and appropriately assessed control room operator performance and similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, or component (SSC) performance and reliability. The inspectors reviewed system health reports, corrective action program 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 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Exelon staff was 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 was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Screenwash pump (SW-P-1A) breaker issues documented in IRs 1672093, 2387410, and 2393321 on October 1, 2014
- Air intake tunnel unavailability hours accumulated throughout year documented in IR 2397273 on October 16, 2014
- Emergency safety light issues documented in IR 2395285 and (a)(1) determination on November 17, 2014

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 for the maintenance and emergent work activities listed below to verify that Exelon performed the appropriate risk assessments prior to removing equipment for work. 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.

- Planned Yellow station risk during SBO diesel generator system maintenance and 'B' train nuclear river pump maintenance on October 21, 2014
- Planned Orange station risk during 'A' low pressure injection system maintenance on October 28-29, 2014
- Planned Yellow station risk during re-pressurization of charging gas for off-site power switchyard breaker (1092-02) on October 30, 2014
- Emergent Yellow station risk for added maintenance scope to re-pressurize charging gas for switchyard breaker (1051-02) on November 3, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- High valve friction for emergency feedwater injection valve (EF-V-30C) documented in IR 2396267 on October 15, 2014
- 1B station battery pilot cell cracks documented in IRs 2400315 and 2400645 on October 23, 2014
- Heat sink protection system channel 3 'A' steam generator LO-LO bistable out of tolerance documented in IR 2405786 on November 3, 2014
- Defect in nuclear fuel thermal conductivity model reported by AREVA and documented in IRs 2398374 and 2417256 on November 25, 2014
- Engineered safeguards actuation system (ESAS) Eaton Cutler-Hammer plunger red-flag issue identified on model D26 relays and documented in IR 2421839 on December 8, 2014

The inspectors selected these issues based on the risk significance of the associated components and systems. 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, the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

a. Inspection Scope

The inspectors evaluated a modification to the concentrated waste storage tanks implemented by engineering change request (ECR) 14-00245, "CWST Bypass Modification." The inspectors verified that the design bases, licensing bases, and performance capability of affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the ECR, including observing the in-field physical changes as conditions allowed. The inspectors also reviewed revisions to operating procedures.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- SBO diesel generator maintenance system outage on October 27 – 30, 2014
- Reactor building spray pump 'A' (BS-P-1A) after system maintenance outage on November 4, 2014
- Heat sink protection system bistable (MS-PSLL-1182) replacement on November 4, 2014
- 'B' make-up pump after system maintenance outage on November 12, 2014
- ESAS Eaton Cutler-Hammer relay (63X-1/RB-3A) replacement per WO C2032471 and ECR 13-00059 on November 3, 2014
- HSPS channel 2 (RB-PT-1187) bi-stable card replacement on November 14, 2014

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 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:

- 1300-6N, Control Building Chiller Water Leakage Exam for IST on October 21, 2014 (in-service test)
- 1300-3EB, IST of 'B' Spent Fuel Pump and Valves on October 27, 2014
- OP-TM-214-201, IST of BS-P-1A and Valves on November 5, 2014
- 1303-5.2A, 'A' Emergency Loading Sequence and HPI Logic Channel/Component Test on December 16, 2014
- On-time main control DC lighting test, per A2369010, on December 18, 2014

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 TMI 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 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)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated a site full scale drill of crew ‘D’ Emergency Response Organization section leads and ‘C’ operations crew in the simulator on December 16, 2014, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the drill critique to compare inspector observations with those identified by Exelon staff in order to evaluate Exelon’s critique and to verify whether the Exelon staff was properly identifying weaknesses and entering them into the corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

During the period November 3-7, 2014, the inspectors reviewed Exelon's performance in treatment, monitoring and control of effluent releases including adequacy of public dose calculations and projections. The inspectors used the requirements in 10 CFR 20; 10 CFR 50, Appendix I; TSs; Offsite Dose Calculation Manual (ODCM); applicable industry standards; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspector conducted in-office preparation and review of Exelon submitted effluent and environmental program documents and reviewed associated UFSAR and the ODCM.

Event Report and Effluent Report Reviews

The inspectors reviewed the following:

- Annual radiological effluent and environmental reports for 2012 and 2013 including unexpected trends or abnormal releases
- Reported effluent monitor operability issues

ODCM and UFSAR Reviews

The inspectors reviewed the following:

- UFSAR changes associated with effluent monitoring and control
- Changes to ODCM including technical justifications
- Identification of any contaminated non-radioactive system and associated 10 CFR 50.59 evaluations

Ground Water Protection Initiative (GPI)

The inspectors reviewed the following:

- Reported groundwater monitoring results and changes to the written program for identifying and controlling contaminated spills/leaks to groundwater
- Changes to the program since last inspection to identify changes

Procedures, Special Reports, and Other Documents

The inspectors reviewed the following:
- Licensee Event Reports, and special reports related to the effluent program
- Effluent program implementing procedures, including those associated with effluent sampling, effluent monitor set-point determinations, and dose calculations
- Evaluation reports of the effluent monitoring program since the last inspection

Walkdowns and Observations

The inspectors reviewed the following:
- Walked down selected components of the gaseous monitoring systems
- Potential unmonitored release points, building alterations which could impact airborne, or liquid, and effluent controls, and ventilation system leakage
- Material condition surveillance records
- Changes to effluent release paths
- Routine processing and discharge of liquid waste
- 10 CFR 50.59 reviews for changes to effluent release points

Sampling and Analyses

The inspectors reviewed the following:
- Effluent sampling activities to ensure representative samples were obtained
- Effluent discharges made with inoperable effluent radiation monitors
- Use of compensatory effluent sampling
- Results of the inter-laboratory and intra-laboratory comparison program, including hard-to-detect isotopes, to verify the quality of the radioactive effluent sample analyses

Dose Calculations

The inspectors reviewed the following:
- Significant changes in reported dose values compared to the previous radioactive effluent release reports
- Liquid and gaseous waste discharge permits
- Methods used to determine the isotopes included in the source term to ensure hard-to-detect radionuclides were included in the effluent releases
- Changes in the methodology for offsite dose calculations since the last inspection
- Meteorological dispersion and deposition factors
- Latest Land Use Census to verify that changes in the local land use had been factored into public dose projections and environmental sampling/analysis program, as applicable
- Dose calculations (monthly, quarterly, annual)
- Records of any abnormal gaseous or liquid discharges
- Discharges made with inoperable effluent radiation monitors, or unmonitored leakage were reviewed to ensure that an evaluation was made of the discharge to account for the effluent release and were included in the calculated doses to the public

GPI Implementation

The inspectors reviewed the following:

- Monitoring results of the GPI including reporting
- Changes made to the GPI program
- Anomalous results or missed samples
- Leakage or spill events and entries made into the decommissioning files (10 CFR50.75(g))
- On-site contamination events involving contamination of groundwater
- Discharges from onsite surface water bodies, as applicable, that contain or potentially contain radioactivity
- Update to ODCM to include the dose calculation method for any the new release point

Problem Identification and Resolution

The inspectors evaluated whether problems associated with the effluent monitoring and control program were being identified at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 1 sample)

Radiological Effluent TS/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences

a. Inspection Scope

During November 3 – 7, 2014, the inspector reviewed licensee submittals for the radiological effluent TS/ODCM radiological effluent occurrences PI for the period from the third quarter 2013 through the third quarter 2014. The inspector used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, to determine if the PI data was reported properly during this period. The inspector reviewed Entergy's corrective action report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspector reviewed gaseous and liquid effluent summary data and the results of associated offsite dose calculations between the third quarter 2013 and the third quarter 2014, to determine if indicator results were accurately reported. The inspector also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 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 corrective action program 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 corrective action program and periodically attended IR screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, 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 outside of the corrective action program, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or corrective action program backlogs. The inspectors also reviewed Exelon's corrective action program database for the third and fourth quarters of 2014 to assess issue/action reports written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily condition report review (Section 4OA2.1).

b. Findings and Observations

No findings were identified.

The station has identified adverse trends in corrective action program engagement, self-assessment quality, and configuration control. The inspectors reviewed the IR trends and determined that challenges regarding configuration control performance have actually improved in the fourth quarter. There were also noted negative trends in electrical vault water intrusion (IR 2431218) and material being staged on the reactor building seismic gap seals (IR 2411768). Also, noted was an increase in UFSAR update related issues in 2014 and which has been documented in IR 1689454. A review of

these issues by the inspectors determined additional controls have been put in place by regulatory affairs staff to provide additional checks.

The inspectors discussed these issues with various station personnel, including station management. Station management acknowledged the issues, verified they were captured in the corrective action program and continues to re-emphasize and enforce TMI staff performance fundamentals. The inspectors determined these corrective actions were appropriate.

.3 Annual Sample: Review of the Operator Workaround Program

a. Inspection Scope

The inspectors reviewed the cumulative effects of the existing operator workarounds, operator burdens, existing operator aids and disabled alarms, and open main control room deficiencies to identify any effect on emergency operating procedure operator actions, and any impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel had identified, assessed, and reviewed operator workarounds as specified in TMI's procedure OP-AA-102-103, Operator Work-Around Program, Revision 3.

The inspectors reviewed Exelon's process to identify, prioritize and resolve main control room distractions to minimize operator burdens. The inspectors reviewed the system used to track these operator workarounds and recent Exelon self-assessments of the program. The inspectors also toured the control room and discussed the current operator workarounds with the operators to ensure the items were being addressed on a schedule consistent with their relative safety significance.

b. Findings and Observations

No findings were identified.

The inspectors determined that the issues reviewed did not adversely affect the capability of the operators to implement abnormal or emergency operating procedures. The inspectors also verified that Exelon entered operator workarounds and burdens into the corrective action program at an appropriate threshold and planned or implemented corrective actions commensurate with their safety significance.

.4 Annual Sample: Nuclear River Dual-Pump Testing Challenges

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's troubleshooting, analysis and actions associated with in-service testing of the safety-related nuclear river water pumps as documented in IRs 1573038, 1568077, and 1558288. Specifically, challenges with maintaining acceptable flow for nuclear river pump 1C (NR-P-1C) during multi-pump flow test conditions resulting in apparent inconsistent in-service flow test data which may indicate pump degradation and challenges in the pump performing its intended safety function.

The inspectors assessed Exelon's problem identification threshold, cause analyses, extent of condition reviews, compensatory actions, 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 or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Exelon's corrective action program and 10 CFR 50, Appendix B. In addition, the inspectors performed field walkdowns during testing to assess the effectiveness of the implemented corrective actions.

b. Findings and Observations

No findings were identified.

Exelon adheres to the American Society of Mechanical Engineers (ASME) Operation and Maintenance code (ISTB-5121(b)) for this group A centrifugal pump test but uses an approved alternate method to establish a fixed pump head for the test. This test method has the potential for significant data scatter when testing under reference pump conditions. Challenges are exacerbated due to varying times of the year for the test and the resulting changes in Susquehanna River temperature conditions.

Exelon verified, and inspectors reviewed, satisfactory instrumentation operation. The inspectors also reviewed the individual pump performance and surveillance tests and identified no challenges to operability and did not note any actual degradation trend on the individual pumps. Based on Exelon's data from troubleshooting by varying multi-pump combinations and setting of different test conditions, Exelon determined that the issue's apparent cause is establishing an appropriate test setup for the existing plant and river condition at the time of test. The ultimate correction to the test setup was to throttle the pump output not being tested to establish the correct condition for the pump under test, while in a multi-pump test line-up.

Exelon conducted a thorough technical review of the testing issue and adhered to acceptable ASME code testing requirements. Exelon modified the multi-pump test procedures and validated the resulting data with previous test and reference conditions.

The inspectors observed a sample of the actual tests and reviewed resulting data with no significant issues noted. The inspectors determined Exelon's overall response to the issue was commensurate with the safety significance, was timely, and included appropriate compensatory actions.

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

Plant Events (2 samples)

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 events to appropriate regional personnel, and compared the event details with criteria contained in Inspection Manual Chapter 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.

- 'D' reactor coolant pump high vibration indication and power reduction to 75 percent on November 26, 2014
- Emergency siren failure documented in IR 2420690 on December 5, 2014

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Radiological Effluent TS/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences

On November 7, 2014, the inspectors presented the inspection results to Mr. Tom Haaf, Exelon TMI site plant manager and other members of the TMI staff. The inspectors verified that no proprietary information was retained by the inspector or would be documented in this report.

Quarterly Inspection Report Exit

On January 30, 2015, the inspectors presented the inspection results to Mr. Rick Libra, Site Vice President, and other members of the TMI staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Libra	Site Vice President
T. Haaf	Plant Manager
M. Adams	Control Room Supervisor
T. Alvey	Manager, Chemistry
D. Atherholt	Manager, Regulatory Assurance
J. Bomgardner	Chemistry Technician
J. Boudah	I & C Supervisor
R. Campbell	Manager, Site Security
D. Divittore	Manager, Radiological Engineering
N. Favorito	Shift Manager
T. Fitting	Chemistry Technician
M. Fitzwater	Senior Regulatory Assurance Engineer
D. Herr	Engineer
B. Hreha	Nuclear Services Closed Cooling Water System Engineer
G. McCarty	Radiological Protection Manager, Acting
R. Myers	Fire Marshall
J. Piazza	Senior Manager, Design Engineering
B. Shumaker	Manager, Emergency Preparedness
G. Smith	Director, Maintenance
S. Taylor	Engineer
J. Troiano	Supervisor Environmental
L. Weber	Chemistry

Other Personnel

D. Dyckman	Nuclear Safety Specialist Pennsylvania Department of Environmental Protection Bureau of Radiation Protection

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
WC-AA-107, Seasonal Readiness, Revision 14
MA-TM-135-001, Fire System Anti-Freeze Loop Maintenance, Revision 0
OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 10
OP-TM-108-111-1001, TMI Severe Weather and Site Inaccessibility, Revision 7
OP-TM-AOP-004, Tornado/High Winds, Revision 4

Miscellaneous
Lessons Learned: 2013/2014 Winter Readiness Critique (IR 1639288)
TMI 2014 Not-in-Summer Readiness AR Lists, dated September 29 - October 21, 2014
TMI 2014 Winter Readiness Report dated October 16, 2014

ARs	A2314797	A2332873	A2333706	A2234911		
IRs	1511250	1606087	1639288	1607171	16932287	1693429
	1693430	1693441	1693463	1693562	1696236	2414011
WOs	R2213640	R2209799	R2210265	R2209522	R2187784	

Section 1R04: Equipment Alignment

Procedures
OP-TM-541-000, Primary Component Cooling, Revision 21
OP-TM-541-438, Remove IC-P-1A From Service, Revision 1
OP-TM-541-439, Place IC-P-1B In Service, Revision 0

Drawings
302-610, Nuclear Services Closed Cycle Cooling Water, Revision 82
302-620, Intermediate Cooling Flow Diagram Revision 51

Miscellaneous

IRs	02418105	02414810	02405663	01689411

Section 1R05: Fire Protection

Procedures
1038, Administrative Controls-Fire Protection Program, Revision 76
1104-45D, Fire Service Deluge System, Revision 23
FPE-T1-41882-001, Fire Hazards analysis Input and Status, Revision 0
NES-MS-5.1, Exelon Combustible Loading Standard, Revision 3
OP-MA-201-007, Fire Protection System Impairment Control, Revision 6

Drawings
1-FHA-003, Fire Area Layout Turbine Building Elevation 305', Revision 9
1-FHA-005, Turbine Building, Revision 7
1-FHA-036, Fire Area Layout Control Tower, Revision 17

Miscellaneous
CC-AA-309-101, Engineering Technical Evaluations, Revision 11
Fire Hazards Analysis Report, TMI-1, Revision 26
TMI Unit #1Fire Pre-Plan, CB-FA-4A
TMI Unit #1Fire Pre-Plan & Strategies, ISPH-FA-2, Revision 3
TMI Unit #1Fire Pre-Plan & Strategies, TB-FA-1 (3), Revision 1
TMI Unit #1Fire Pre-Plan & Strategies, TB-FA-1 (7), Revision 1
TMI Unit #1Fire Pre-Plan & Strategies, TB-FA-1 (12), Revision 1

IRs	01344312	2430837
WO	C2031534	

Section 1R06: Flood Protection Measures

Procedures
MA-TM-153-001, Inspection and Maintenance of TMI-1 Electrical and Telephone Manholes, Revision 3

Miscellaneous
IRs 1698237 1662091 1439999 1439345
WOs R2219073 R2224759

Section 1R07: Heat Sink Performance

Procedure
M-164, Station Blackout (SBO) Diesel Generator Major Inspection (Mechanical), Revision 20

Miscellaneous
WO C2031394-16

Section 1R11: Licensed Operator Requalification Program

Procedures
HU-AA-104-101, "Procedure Use and Adherence," Revision 5
OP-AA-1, "Conduct of Operations," Revision 0
OP-AA-1, "Conduct of Operations," Revision 1
OP-TM-EOP-002, "Loss of 25˚ F Subcooling Margin," Revision 9
OP-TM-101-101-1001, "TMI Operations Philosophy Handbook," Revision 4

Miscellaneous
Appendix H of attachment 71111.11

Section 1R12: Maintenance Effectiveness

Procedures
1107-4.1, 480V Breaker Overcurrent Tripping Device Setpoints, Revision 019
E-5.1, Westinghouse 480V DB-25 Circuit Breaker Maintenance and Testing, Revision 007
ER-AA-310, Implementation of the Maintenance Rule, Revision 9
ER-AA-310-1005, Maintenance Rule – Dispositioning between (a)(1) and (a)(2), Revision 7
ER-TM-310-1001, TMI Guidance for Maintenance Rule Unavailability Monitoring, Revision 5

Drawings
302-203, Reactor Building Emergency Spray and Core Flooding Flow Diagram, Revision 000

Miscellaneous
Maintenance Rule Expert Panel Meeting Minutes, dated November 17, 2014
IRs 1315755 1521798 2395285 2421724 2387410 2397273*
2425155 2421773 2415528
WO 2232209

*IR written based on NRC inspection

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
1082.1, TMI Risk Management Program, Revision 8
WC-AA-101, On-Line Work Control Process, Revision 18

Miscellaneous
Operations Protected Equipment checklists and verifications dated October 21 - 29, 2014
Work Week 1443, 1444, 1445 Hybrid Schedules by System, Revision 0
IRs 2403907 2402554 2402490 2402409 2402673 2402531 2405931

Section 1R15: Operability Evaluations

Procedures
1301-4.6.2, Station Battery 1B Weekly, Revision 014
OP-AA-108-115, Operability Determinations, Revision 10
OP-AA-108-115-1002, Supplemental Consideration for On-Shift Immediate Operability Determinations, Revision 2

Miscellaneous
Engineering Technical Evaluation A2022114-01, High Friction EF-V-30C
ESAS Relay Walkdown Report, IR 242315, dated December 8, 2014
LOCA Analyses for B&W Plants – TACO3 and TCD, AREVA Inc. presentation to USNRC, dated December 18, 2014
Operability Evaluation OPE-14-001, ESAS Eaton Cutler Hammer D26 Relay, IR 2421839
NRC Event Notification 50636, dated November 25, 2014
TMI Core Operating Limits Report Figure 4, Full Incore System Error Adjusted 4 pump Imbalance Limits (0 EFPD to 450 EFPD) – Imbalance Administrative Limit adjustments, dated October 22, 2014
IRs 1363411 2421839 2420153 2420114 2420315 2406633
WOs R2123247 R2247102 R2243488 R2214129 R2214125

Section 1R18: Plant Modifications

Procedures
OP-TM-AOP-016, Loss of Vital Bus ‘B’, Revision 007
OP-TM-232-000, Liquid Waste Disposal System, Revision 15
OP-TM-271, Liquid Waste Disposal Operating Mode Line-up Verification, Revision 009
1450-020, 1A Auxiliary Transformer Protective Relay Circuit Trip Testing, Revision 022
CC-AA-102, Design Input and Configuration Change Impact Screening, Revision 20
CC-AA-103, Configuration Change Control, Revision 21
CY-TM-551-807, Chemistry Primary Sample, Revision 001

Drawings
ECR 14-00245, CWST Bypass Modification

Miscellaneous
IRs 1615253 1679218 1677789 2415212 2429392 2430850 2392390

Section 1R19: Post-Maintenance Testing

Procedures
1107-9, SBO Diesel Generator, Revision 74B
1303-11.36, HSPS-Reactor Building Pressure Channel Test, Revision 22
MA-AA-716-012, Post Maintenance Testing, Revision 19
OP-TM-211-206, IST of MU-P-1B, Revision 010

Calculation
C-1101-644-E270-014, HSPS Normal-Bypass Switch Resistance, Revision 0
C-1101-741-5430-001, Use of the TMI-2 Diesel Generator for TMI-1, Revision 20

Miscellaneous
ECR 13-00060 Rev. 3
TMI TS 3.5.1.1, Operational Safety Instrumental, Amendment 281
TMI TS 3.5.3.1, Engineered Safeguards Protection System Actuation Set Points, Amendment 281

WOs	C2032471	C2032621	C2032464	C2032450		
IRs	2400031	2424030	2412134	2412700	2412705	2403124
	2397722	2397527	2397438	2396325	2396892	2395933
	2395660	2395625	2395582	2395241	2395220	2395088

Section 1R22: Surveillance Testing

Procedures
1300-3EB, IST of 'B' Spent Fuel Pump and Valve, Revision 007
1300-6N, Control Building Chiller Water Leakage Exam for IST, Revision 8
1303-5.2A, 'A' Emergency Loading Sequence and HPI Logic Channel/Component Test, Revision 11
ER-AA-335-015-2004, VT-2 Visual Examination in Accordance with ASME 2004 Edition, Revision 0
OP-TM-214-201, IST of BS-P-1A and Valves, Revision 013
WC-TM-430, Surveillance Testing Program, Revision 0
WC-TM-430-1001, Surveillance Testing Program Database Interface and Maintenance, Revision 1

Drawings
1D-ISI-FD-011, ISI Boundary Sketch-Control Building-Chilled Water System, Revision 11
302-847, Control Building Chilled Water, Revision 22

Miscellaneous
ASME Section XI, IWC-5220

IRs	2400066*	2427422*	1644663	2401352
WO	R2196575-01	A2369010		

*IR written based on NRC inspection

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures
EP-AA-114, Notifications, Revision 13

Section 1EP6: Drill Evaluation

Procedures
TQ-TM-201-1001, Simulator Exam Security Check List, Revision 17

Miscellaneous
Exelon Nuclear TMI site full scale drill, Revision 0
EP Drill Simulator Exercise Guide, Revision 0
IR 2426198

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures
CY-TM-170-2020, “Radiological Abnormal Release of Discharge,” Revision 2
CY-TM-170-201, “Condenser Vacuum Pump Release Sampling, Normal Configuration,” Revision 3
CY-TM-170-206, “Liquid Continuous Release Composite – Turbine Building,” Revision 2
CY-TM-170-2001, “Releasing Radioactive Liquid Waste," Revision 0
CY-TM-170-2007, “Non-Routine Effluent Releases,” Revision 2
CY-TM-551-807, “Chemistry Primary Sampling,” Revision 1
CY-TM-170-203, “Unit Vent (RM-A-8 and RM-A-9) Sampling,” Revision 5
EN-AA-408-4000, “Radiological Groundwater Protection Program Implementation,” Revision 4
EN-AA-408, “Radiological Groundwater Protection Program,” Revision 0
EN-TM-408-4260, “RGPP Reference Material for Three Mile Island,” Revision 2

Audits and Self-Assessments
NOSA-TMI-14-04 (AR1655892), “Chemistry, Radwaste, Effluent and Environmental Monitoring Audit Report,” June 9, 2014 to June 19, 2014

Gaseous and Liquid Release Packages

Non-routine Liquid:
L-2014 01601 L-2014 0901-101C

Liquid:
L-2014 0606-057-B L-2014 0608-058-B L-2014 0714-077-B

Gas:
G-2014 0610-039-B G-2014 0729-054-B G-2014 0813-057-B G-2014 0824-061-B

Miscellaneous
IRs 01333188 01394915 01440958 01485663 01521104 01576310
01608473 01619023 01637774 01639002 02380921 02407176

Section 4OA1: Performance Indicator Verification

References documented in Section 2RS6

Section 4OA2: Problem Identification and Resolution

Procedures
OP-TM-541-000, Primary Component Cooling, Revision 021
OP-TM-541-233, IST of NR-P-1C and Valves – Multiple Pump Operation, Revision 010
OP-TM-541-236, IST of NR-O-1C and NRSW Valves During Single Pump Operations, Revision 005
OP-TM-541-461, IC and NS Temperature Control, Revision 008

OP-TM-999-098, Troubleshooting NR-P-1C Parallel Pump Testing, Revision 0A

Drawings
302-202, Nuclear Services – River Water System, Revision 81

Miscellaneous
Apparent Cause Evaluation, 1679764-03, UFSAR Revision from ECR 02-00199 Not in Latest UFSAR
TMI Safety Culture Monitoring Panel 3Q 2014 Meeting Minutes
TMI Safety Culture Monitoring Panel 4Q 2014 Meeting Minutes
TS 3.3.1.4, Nuclear Cooling Systems

IRs	2431218	2411768	2431259	2422714	2395935	1685368
	1689454	1679764	1685220	2424616	2400154	2405969
	2410654	1568077	1573038	1558288		
WOs	R2222442					

Section 4OA3: Followup of Events and Notices of Enforcement Discretion

Procedures
1102-4, Power Operation, Revision 128
OP-TM-226-000, Reactor Coolant Pumps, Revision 009
OP-TM-226-104, Start RC-P-1D, Revision 007
OP-TM-226-154, Shutdown RC-P-1D, Revision 001

Miscellaneous
Equipment Deficiency Tag #4996
Plant Computer plots for RCP-D parameters, dated November 26, 2014

IRs	2417570	2420690

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
EAL	Emergency Action Level
ECR	Engineering Change Request
ESAS	Engineered Safeguards Actuation System
GPI	Groundwater Protection Initiative
IC	Intermediate Cooling
IR	Issue Report
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
pCi/g	Picocuries per Gram
PARS	Publicly Available Records
SBO	Station Blackout
SSC	Structure, System, or Component
TMI	Three Mile Island Unit 1
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
WO	Work Order