UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

April 29, 2013

Mr. Michael J. Pacilio
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 5000289/2013002

Dear Mr. Pacilio:

On March 31, 2013, 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 April 26, 2013 with 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.

This report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance, and because it was entered into your corrective action program, the NRC is treating this finding as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Three Mile Island. In addition, if you disagree with the cross-cutting aspect assigned to the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Three Mile Island.

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/

Gordon K. Hunegs, Chief
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000289/2013002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-289
License No:	DPR-50
Report No:	05000289/2013002
Licensee:	Exelon Generation Company
Facility:	Three Mile Island Station, Unit 1
Location:	Middletown, PA 17057
Dates:	January 01, 2013 – March 31, 2013
Inspectors:	D. Werkheiser, Senior Resident Inspector J. Heinly, Resident Inspector J. D'Antonio, Senior Operations Engineer J. Laughlin, Emergency Preparedness Inspector, NSIR T. Moslak, Senior Health Physicist M. Patel, Operations Engineer
Approved by:	G. Hunegs, Chief Projects Branch 6 Division of Reactor Projects (DRP)

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SUMMARY

IR 05000289/2013002, 01/01/13 – 03/31/2013; Exelon Generation Company, LLC (Exelon); Three Mile Island, Unit 1, Fire Protection.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one finding of very low safety significance (Green), which was an NCV. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green non-cited violation (NCV) of license condition DPR-50 section 2.C.(4), Fire Protection, for Exelon's failure to maintain transient combustible loading within fire loading limits near the 'B' condensate storage tank (CST). Specifically, on January 9, the inspectors identified a Portable On-Demand storage (POD) container staged within 50 feet of the 'B' CST. The POD and its contents contained transient combustible materials in excess of the allowed fire loading in accordance with the fire hazards analysis report (FHAR). Exelon promptly removed the POD container and restored transient combustible loading within allowable limits. Exelon entered this issue into their corrective action program under issue report (IR) 1461029. Corrective actions included additional postings around the safety-related above-ground tanks, site-wide notifications and the performance of a root cause evaluation to address recent station fire protection issues.

  This performance deficiency is more than minor because it is associated with the Protection Against External Factors (Fire) attribute and adversely affected the Mitigating Systems cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, it was determined to be more than minor since it is similar to more than minor example 4.k of IMC 0612, "Power Reactor Inspection Reports," Appendix E because the fire loading was not within the FHAR limits. In accordance with IMC 0609.04, "Phase 1 – Initial Screen and Characterization of Findings," the inspectors determined the finding affected the administrative controls for transient combustible materials. Therefore, the inspectors conducted a phase 1 SDP screening using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," and the inspectors determined that the finding affected the category of Fire Prevention and Administrative Controls in that combustible material was not being properly controlled, the finding had a "low" degradation rating, and the finding was of very low safety significance (Green). This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon failed to thoroughly evaluate and take appropriate corrective actions for similar transient combustible loading issues such that the cause and extent of condition were fully addressed. [P.1(c)] (Section 1R05)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. On March 9, 2013 operators reduced power to approximately 90 percent to conduct planned turbine valve testing. Operators returned the unit to 100 percent on March 11, 2013. 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 Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed Exelon's preparations for the onset of winter weather conditions on March 6, 2013. The inspectors reviewed the implementation of adverse weather preparation procedures before the onset of and during this adverse weather condition. The inspectors walked down auxiliary transformers and the intake screen pump house to ensure system availability. The inspectors reviewed the planned work schedule to ensure the site appropriately managed station activities to effectively manage station risk during the adverse weather. The inspectors verified that operator actions defined in Exelon's adverse weather procedure for Three Mile Island maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'A' emergency diesel generator and 4kV system during elevated (Orange) risk planned activities on January 8, 2013
- Instrument air systems during 'A' instrument air compressor [IA-P-1A] outage on January 10, 2013
- 'A' and 'B' condensate storage tanks and interconnecting piping during 'B' condensate storage tank piping system inspections on January 27, 2013 through February 1, 2013
- 'A' motor-driven emergency feedwater pump [EF-P-2A] during 'B' emergency feedwater planned maintenance on March, 7, 2013

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 updated final safety analysis report (UFSAR), technical specifications, work orders, condition reports, 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.

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

a. Inspection Scope

On March 27 and 28, 2013, the inspectors performed a complete system walkdown of accessible portions of the emergency feedwater system to verify the existing equipment lineup was correct after a maintenance outage. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related issue reports and work orders to ensure Exelon appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 4 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.

- Yard, on January 9-10, 2013
- Air intake tunnel, AIT-FZ-1/1A, on January 30, 2013
- New Fuel Storage 329' and 331' general area, FH-FZ-3, February 4, 2013
- Auxiliary building shielded wall area, AB-FZ-4, on February 26-27, 2013

b. Findings

Introduction. The inspectors identified a Green non-cited violation (NCV) of license condition DPR-50 section 2.C.(4), Fire Protection, for Exelon's failure to maintain transient combustible loading within fire loading limits near the 'B' condensate storage tank (CST). Specifically, on January 9, the inspectors identified a Portable On-Demand storage (POD) container staged within 50 feet of the 'B' CST which contained transient combustible materials in excess of the allowed fire loading in accordance with the FHAR).

Description. In January 2013, Exelon planned to install a temporary POD container in the yard area of TMI to allow for convenient storage of snow removal equipment during the winter snow storm season. Prior to the installation, Exelon had reviewed the acceptability of a steel POD container and its placement in the yard area in accordance with Nuclear Electric Insurance Limited requirements, however, did not review placement acceptability against the station's fire protection program requirements.

On January 9, 2013, the inspectors identified the POD container in the yard area had been installed within 50 feet of the 'B' CST. Upon further inspection, the POD container was determined to be constructed of combustible material (plastic and wood) and housed snow removal equipment that contained gasoline in the fuel tanks. Exelon's FHAR and procedure OP-AA-201-009 "Control of Transient Combustible Material", Rev. 11, require that a minimum of 50 feet of separation be provided between outdoor tanks and combustible material where feasible. The 'B' CST is a safety-related above-ground water tank that is subject to this requirement. The inspectors immediately notified Exelon and the POD container was promptly relocated and the 50 feet of separation was restored. Exelon entered this issue into their corrective action program under IR 1461029. Corrective actions included additional postings around the safety-related above-ground tanks, site-wide notifications and the performance of a root cause evaluation to address recent station fire protection issues.

Analysis. The inspectors determined that Exelon's failure to maintain transient combustible loading within fire loading limits near the 'B' CST was a performance deficiency that was within Exelon's ability to foresee and correct. This performance deficiency is more than minor because it is associated with the Protection Against External Factors (Fire) attribute and adversely affected the Mitigating Systems cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

In addition, it was determined to be more than minor since it is similar to more than minor example 4.k of IMC 0612 , "Power Reactor Inspection Reports," Appendix E because the fire loading was not within the FHAR limits. In accordance with Inspection IMC 0609.04, "Phase 1 – Initial Screen and Characterization of Findings," the inspectors determined the finding affected the administrative controls for transient combustible

materials. Therefore, the inspectors conducted a phase 1 SDP screening using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," and the inspectors determined that the finding affected the category of Fire Prevention and Administrative Controls in that combustible material was not being properly controlled, the finding had a "low" degradation rating, and the finding was of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon failed to thoroughly evaluate and take appropriate corrective actions for similar transient combustible loading issues such that the cause and extent of condition are fully addressed. [P.1(c)]

Enforcement. License condition 2.C.(4), "Fire Protection," requires that Exelon implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR. The UFSAR identifies the FHAR as the licensing basis requirements for the fire protection program. Section F.15 of the FHAR states there is to be a minimum of 50 feet of separation between the CST and combustible materials. Contrary to the above, on January 9, 2013, inspectors identified a combustible POD container and its contents staged within 50 feet of the 'B' CST. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program under IR 1461029, this violation is being treated as an NCV, consistent with the Enforcement Policy. (**NCV 05000289/2013002-01, Failure to Maintain Combustible Loading near the 'B' CST within FHAR Limits**).

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site internal flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the corrective action program to determine if Exelon identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on the auxiliary building sump to verify the adequacy of equipment condition, operation during liquid ingress, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the 'A' control building ventilation (AH-C-6A) heat exchanger to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified that the appropriate preventive maintenance and performance monitoring was sufficient to ensure availability and reliability of the system. The inspectors observed actual performance of the

inspection/cleaning of the heat exchanger coils as well as reviewed previous inspection/cleaning results. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed the as-found and as-left conditions. The inspectors verified that Exelon initiated appropriate corrective actions for identified deficiencies.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed crew 'E' licensed operator simulator training on February 5, 2013, which included fuel failure from a loose part in the reactor coolant system coincident with a loss of coolant accident. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the technical specification 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 (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed control room operations in support of routine plant operations conducted on January 10, 2013. The inspectors observed crew 'E' licensed-operator 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." 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.

.3 Licensed Operator Requalification (71111.11B)

a. Inspection Scope

The following inspection activities were performed March 11-14, 2013 using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and Inspection Procedure Attachment 71111.11, “Licensed Operator Requalification Program and Licensed Operator Performance.”

Examination Results

Requalification exam results for year 2013 were reviewed to determine if pass/fail rates were consistent with the guidance of IMC 0609, Appendix I, “Operator Requalification Human Performance Significance Determination Process (SDP).”

The review verified the following:

- Individual pass rate on the dynamic simulator scenarios was greater than 80 percent. (Pass rate was 100 percent.)
- Individual pass rate on the job performance measures (JPMs) of the operating exam was greater than 80 percent. (Pass rate was 100 percent.)
- Individual pass rate on the written examination was greater than 80 percent. (Pass rate was 98 percent.)
- More than 80 percent of the individuals passed all portions of the requalification exam. (Pass rate was 98 percent.)
- Crew pass rate was greater than 80 percent. (Pass rate was 100 percent.)

Written Examination Quality

The inspectors reviewed a two week sample of comprehensive written exams that facility staff administered to the operators in March 2013.

Operating Test Quality

The inspectors reviewed operating tests associated with four examination weeks for the 2013 examinations.

Licensee Administration of Operating Tests

The inspectors observed facility training staff administer dynamic simulator exams and JPMs during the week of March 11, 2013. These observations included facility evaluations of crew and individual operator performance during the simulator exams and individual performance of JPMs. In addition, on April 4, 2013, final results of the completed requalification exams were reviewed.

Exam Security

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

Remedial Training and Re-examinations

The inspectors reviewed two remedial training packages and the associated re-exams for individuals who failed the scenario portion of the 2012 operating test, and one package for an individual who failed the "off-year" comprehensive written examination.

Conformance with License Conditions

License reactivation and license proficiency records for two years were reviewed to ensure that 10 CFR 55.53 license conditions and applicable program requirements were met. The inspectors also reviewed two years of records for requalification training attendance, and a seven licensed operator medical examination records 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 corrective action program 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 – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on systems, structures, and components (SSC) performance and reliability. The inspectors reviewed system health reports, issue reports, maintenance work orders, 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.

- 'B' nuclear service closed cooling pump [NS-P-1B], IR 1480220 on March 12, 2013
- 'B' decay heat pump [DH-P-1B], IR 1490019 on March 20, 2013

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 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 technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Planned work week 1302 maintenance including 'B' low pressure injection and 'B' emergency diesel generator on January 7-8, 2013
- Planned maintenance outage of the 'B' low pressure injection pump on January 8-9, 2013
- Planned maintenance outage of the 'B' reactor building spray pump on January 15-16, 2013
- Planned work week 1309 maintenance and elevated (Yellow) risk including 'C' make-up pump outage, doble testing in switchyard on February 26, 2013
- Planned work week 1312 maintenance and engineered-safeguards actuation system (ESAS) relay replacement on March 19-20, 2013

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:

- Emergency diesel generator trip latch issue documented in IRs 1442074 and 1442515, on January 8, 2013
- 'B' condensate storage tank piping inspection under C2028895, on January 16-25, 2013
- ESAS relay intermittent drop-out documented in IR 1469414, on January 31, 2013

- Make-up flow transmitter [MU-FT-1128] issue documented in IR 1472860, on February 2, 2013
- Local intense precipitation concerns documented in IR 1471211, on February 4-11, 2013

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 technical specification 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 technical specifications 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 – 2 samples)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated the following permanent modifications:

- 'B' condensate storage tank surge and de-ice piping inspection and repairs, including installation of cathodic protection leads under work order C2028895
- ESAS relay replacement under ECR 12-00534

The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change, including a review of contingency piping and coating system replacement and repairs. The inspectors also reviewed revisions to the relay testing procedures and interviewed engineering and operations personnel to ensure the procedure could be reasonably performed.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 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.

- Reactor building isolation ESAS relay (63-2B/R-B2A) replacement on January 11, 2013
- 'B' low pressure safety injection outage post-maintenance tests on January 9, 2013
- 'B' reactor building spray outage post-maintenance tests on January 16, 2013
- Reactor building containment cooling valve [RR-V-6] after overhaul on January 18, 2013
- Reactor building equipment hatch wire connection installation under C2028681 on February 27 through March 1, 2013
- ST 1303-11.39A, HSPS-EFW Auto Initiation following emergency feedwater valve actuator maintenance on March 15, 2013
- ST 1303-5.2B, 'B' emergency loading sequence and HPI logic channel / component test following relay (63Z1B/RC2B) replacement on March 20, 2013

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 technical specifications, 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:

- 1303-4.16, 'A' EDG Monthly/Quarterly Surveillance Test on January 9-10, 2013
- WO R221079601, Inspect Fuel Transfer Tube Area on January 28, 2013
- OP-TM-214-201, IST of 'A' Reactor Building Pump [BS-P-1A] and Valve testing on February 4-5, 2013 (in-service test)
- ST 1302-5.15A.4, Core Flood Level Channel [CF2-LT2] Calibration on February 27-28, 2013
- IC-214, Seismic Monitoring System Test, on March 7, 2013

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

NRC staff from the Office of Nuclear Security and Incident Response (NSIR) performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS accession numbers ML123260651 and ML130180297 as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine Exelon emergency drill on February 20, 2013 to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator, and 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 station 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: Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

During the period January 14 – 18, 2013, the inspector evaluated Exelon's performance in assessing the radiological hazards and the effectiveness of radiological controls implemented in the workplace.

The inspector used the requirements 10 CFR Part 20 and guidance in Regulatory Guide (RG) 8.38 Control of Access to High and Very High Radiation Areas for Nuclear Plants, Technical Specifications, and the Exelon procedures as criteria for determining compliance.

The inspector reviewed the 2012 Three Mile Island performance indicators for the occupational exposure cornerstone, the results of RP program performance assessments, and relevant issue reports (IR), related to occupational radiation safety, initiated since the last inspection, to identify performance trends and repetitive problem areas.

Radiological Hazard Assessment

The inspector determined if there have been changes to plant operations since the last inspection that resulted in a new radiological hazard for onsite workers. Changes reviewed included a resin blockage in the piping from the spent resin storage tank to the miscellaneous waste storage tank and a leak from the concentrated waste storage tank (CWST). The inspector evaluated Exelon's assessment of the potential impact of these changes, and actions for mitigating the radiological hazards.

The inspector selected the following risk-significant work activities that involved exposure to radiation to evaluate procedure implementation and coordination of activities.

- Resin Line Flush to Spent Resin Tank & Miscellaneous Waste Tank
- Reactor Building entry to perform routine maintenance
- Isolate Auxiliary Steam supply valve (AS-V-79) to the CWST
- CWST Room Drain Unclog

For these work activities, the inspector determined that the pre-work surveys performed were appropriate to identify and quantify radiological hazards and establish adequate protective measures. The inspector evaluated the comprehensiveness of the radiological survey program to determine if radiological hazards were properly identified.

The inspector observed work in potential airborne radioactivity areas and evaluated the air samples taken from various locations, including the CWST cubicle, and Reactor Building, to determine that the samples were representative of the breathing air zone and were properly evaluated. The inspector determined that continuous air monitors were located in areas with low background radiation to minimize false alarms and were representative of work area airborne concentrations.

In preparation for removing the resin blockage, on January 14, 2013, the inspector attended the pre-job briefing for workers assigned to remove the line blockage by manipulating valves to back-flush the resin from the piping.

After completing the pipe flush, the inspector reviewed the pre and post flushing radiological surveys for the Decant Slurry Pump Room, Waste Transfer Valve Room, Waste Gas Decay Tank Room, and Miscellaneous Waste Storage Tank Hall. The inspector determined that the surveys were thorough and the back flush reduced the radiological hazard.

Regarding the CWST leakage, the inspector evaluated the associated hazards including recent radiological surveys, airborne sample results, and plans to mitigate the leakage. On January 16, 2013, the inspector attended the pre-job briefing for isolating auxiliary (heating) steam to the CWST and, on January 17, 2013, the inspector attended the pre-job briefing for unclogging the floor drain in the CWST cubicle to assess the radiological controls that were planned.

The inspector conducted walk-downs in the radiological controlled area (RCA) and performed independent radiation measurements in the Auxiliary and Fuel Handling Buildings (FHB), including radioactive waste storage and handling areas, to evaluate material and radiological conditions.

The inspector evaluated the Exelon program for monitoring and controlling levels of loose surface contamination in areas of the plant with the potential for the contamination to become airborne.

Instructions to Workers

The inspector reviewed the following radiation work permits (RWP) used to access high radiation areas (HRA) and locked HRAs (LHRA), attended the pre-job briefings, and determined that specified work control instructions and control barriers were consistent with TS and procedural requirements for entry into LHRAs.

- TM-1-13-17, Aux/FHB HRA & LHRA Entries, Perform Approved Work & Inspections
- TM-1-13-03, Perform Minor Maintenance at Power in Reactor Building
- TM-1-13-04, Perform Inspections/Supervision at Power in Reactor Building

For these RWPs, the inspector determined that allowable stay times and permissible dose for radiologically significant work under each RWP were clearly identified. The inspector determined that electronic personnel dosimeter (EPD) alarm set-points were in conformance with survey indications and plant procedural requirements.

The inspector reviewed three recent occurrences where a worker's EPD noticeably malfunctioned or alarmed. The inspector determined that workers responded appropriately to the off-normal condition and that the occurrence was included in the corrective action program.

For work activities that could suddenly and severely increase radiological conditions, the inspector assessed the procedures to inform workers of these changes that could significantly impact their occupational dose.

Contamination and Radioactive Material Control

The inspector observed two locations, the primary chemistry laboratory and main control point, where Exelon monitors potentially contaminated material leaving the radiological control area and inspected the methods used for control, survey, and release of materials from these areas. The inspector observed the performance of personnel

surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures. The inspector assessed whether the radiation monitoring instrumentation used for equipment release and personnel contamination surveys had appropriate sensitivity for the types of radiation present.

The inspector reviewed Exelon‘s criteria for the survey and release of potentially contaminated material. The inspector evaluated whether there was guidance on how to respond to an alarm that indicates the presence of licensed radioactive material.

The inspector reviewed Exelon’s procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspector selected seven sealed check sources from the Exelon inventory records to determine if the sources were accounted for and were tested for loose surface contamination.

Radiological Hazards Control and Work Coverage

The inspector evaluated ambient radiological conditions and performed independent radiation measurements during walk-downs of the facility. The inspector determined that the conditions were consistent with applicable posted surveys, RWPs, and associated worker briefings.

The inspector evaluated the adequacy of radiological controls, such as required surveys, key control, radiation protection job coverage, and contamination controls. The inspector evaluated Exelon‘s use of EPDs in high noise areas that were also HRAs or LHRA.

The inspector determined that radiation monitoring devices were placed on the individual’s body consistent with Exelon procedures. The inspector determined that the dosimeter was placed in the location of highest expected dose.

The inspector reviewed the following RWPs for work within airborne radioactivity areas with the potential for individual worker internal exposures.

- TM-1-13-17, Aux/FHB HRA & LHRA Entries, Perform Approved Work & Inspections
- TM-1-13-03, Perform Minor Maintenance at Power in Reactor Building
- TM-1-13-04, Perform Inspections/Supervision at Power in Reactor Building

For these RWPs, the inspector evaluated airborne radioactive controls and monitoring, including potential for significant airborne levels. The inspector assessed contamination barrier integrity and the operation of a temporary high-efficiency particulate air (HEPA) ventilation system to control airborne contamination in the CWST cubicle.

The inspector examined Exelon’s physical and programmatic controls for highly activated or contaminated materials stored within the spent fuel pool. The inspector reviewed the spent fuel pool material inventory, observed material that was stored in the pool, and determined that appropriate controls were in place to preclude inadvertent removal of these materials from the pool.

The inspector examined the posting and physical controls for selected HRAs, LHRAs and very high radiation areas (VHRA) to verify conformance with the regulatory requirements.

Risk-Significant HRA and VHRA Controls

The inspector discussed with the RPM the controls and procedures for high-risk HRAs and VHRAs. The inspector assessed whether any changes to relevant Exelon procedures substantially reduced the effectiveness and level of worker protection.

The inspector discussed with first-line health physics supervisors the controls in place for special areas that have the potential to become LHRAs or VHRAs, during certain plant operations. The inspector determined that these plant operations require communication beforehand with the radiation protection department, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including supervisory authorization for permitting access.

The inspector evaluated Exelon key controls for VHRAs and areas with the potential to become a VHRA to ensure that an individual was not able to gain unauthorized access to these VHRAs.

Radiation Worker Performance

The inspector observed the performance of radiation workers with respect to stated RWP requirements. The inspector determined that workers were aware of the radiological conditions in their workplace and the RWP controls/limits in place, and whether their behavior reflected the level of radiological hazards present.

The inspector reviewed radiological problem reports generated since the last inspection that attributed the cause of the event to human performance errors. The inspector evaluated whether there was an observable pattern traceable to a similar cause. The inspector assessed whether this perspective matched the corrective action approach taken by Exelon to resolve the reported problems.

RP Technician Proficiency

The inspector observed the performance of the RP technicians with respect to controlling radiation work. The inspector determined that technicians were aware of the radiological conditions in their workplace and the RWP controls/limits, and that their behavior was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspector reviewed radiological issue reports generated since the last inspection. The inspector evaluated whether there was an observable pattern traceable to a similar cause. The inspector assessed whether this perspective matched the corrective action approach taken by Exelon to resolve the reported problems.

Problem Identification and Resolution

The inspector evaluated whether problems associated with radiation monitoring and exposure control were being identified by Exelon at an appropriate threshold and were properly addressed for resolution in the licensee's corrective action program. The inspector assessed the appropriateness of the corrective actions for a selected sample of problems documented by Exelon that involve radiation monitoring and exposure controls. The inspector assessed Exelon's practices for applying radiation protection operating experience to their plant.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

During the period January 14 – 18, 2013, the inspector assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspector used the requirements in 10 CFR Part 20, RG 8.8 - Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Plants will be As Low As Is Reasonably Achievable, RG 8.10 - Operating Philosophy for Maintaining Occupational Radiation Exposure As Low as Is Reasonably Achievable, technical specifications, and Exelon procedures as criteria for determining compliance.

The inspector reviewed pertinent information regarding Exelon collective dose history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspector reviewed the plant's three year rolling average collective exposure. The inspector reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities.

Radiological Work Planning

The inspector selected the following work activities that had the highest exposure during the past six months. These maintenance and repair activities were performed during a forced outage (1FO7) occurring during the fall of 2012

- Pressurizer heater replacement, RWP TM-1-12-033, ALARA Plan 12-011
- Emergent maintenance and support activities in the Reactor Building, various RWPs under ALARA Plan 12-008

The inspector reviewed the ALARA work activity evaluations, exposure estimates, and exposure reduction requirements. Additionally, the inspector reviewed the post-job ALARA reviews that assessed the effectiveness in limiting exposure for the outage tasks

The inspector evaluated the use of specified dose reduction techniques; Exelon's use of alternate dose reduction features; and estimated dose goals. The inspector evaluated Exelon‘s ALARA assessments to account for decreased worker efficiency when using respiratory protection. The inspector evaluated Exelon's work planning in the use of remote technologies: i.e. robots, as a means to reduce dose and used dose reduction insights from industry operating experience. The inspector assessed the integration of ALARA requirements into work procedure and RWP documents.

The inspector compared the results achieved (dose rate reductions, actual dose) with the forecasted dose established in Exelon ALARA planning for these work activities. The inspector compared the person-hour estimates provided by maintenance planning and other groups to the RP group actual person-hours for the work activity, and evaluated the accuracy of these time estimates. The inspector assessed the reasons for any inconsistencies between estimated and actual work activity doses.

The inspector evaluated post-job reviews use in identifying lessons learned and their use were entered into Exelon's corrective action program.

Verification of Dose Estimates and Exposure Tracking Systems

The inspector reviewed the assumptions and basis for the current annual collective dose estimate for accuracy. The inspector reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and for department and station collective dose goals.

The inspector evaluated Exelon's procedures to track, trend, and if necessary, to reduce occupational doses for ongoing work activities. The inspector reviewed the dose threshold criteria established to prompt additional reviews and for implementing additional ALARA planning and controls.

The inspector evaluated the licensee's method of adjusting exposure estimates for re-work, for unexpected changes in scope, or when emergent work was encountered. The inspector assessed whether adjustments to exposure estimates were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to properly plan/control the work.

Radiation Worker Performance

The inspector observed radiation worker and RP technician performance during work activities being performed in radiation areas, airborne radioactivity areas, and HRAs. The inspector assessed radiation worker performance with respect to ALARA principles.

Problem Identification and Resolution

The inspector reviewed problems associated with ALARA planning and controls with respect to adequacy of identification at appropriate thresholds and that they were properly addressed for resolution in the licensee's corrective action program. The inspector also assessed Exelon's process for applying ALARA operating experience issues to their plant practices and procedures.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 3 samples)

a. Inspection Scope

The inspectors reviewed Exelon's submittals for the following Initiating Events Cornerstone performance indicators for TMI for the period of January 1, 2012 through December 31, 2012.

- Unplanned Scrams
- Unplanned Power Changes
- Unplanned Scrams with Complications

To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed Exelon's operator narrative logs, maintenance planning schedules, condition reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.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 issue report screening meetings.

b. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

Plant Events

a. Inspection Scope

For the plant event 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 IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. 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.

- Inadvertent trip of pressurizer heater bank #5 during non-routine maintenance on heater bank #3 switchgear on February 7, 2013

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On April 26, 2013, the resident inspectors presented the inspection results to 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
M. Newcomer	TMI Plant Manager
T. Alvey	Manager, Site Chemistry, Environmental, and Radwaste
D. Atherholt	Manager, Regulatory Assurance
J. Blair	Manager, Operations Training
R. Campbell	Manager, Site Security
D. Divittore	Manager, Site Radiological Engineering
M. Fitzwater	Senior Regulatory Assurance Engineer
R. Green	Senior Engineer, Plant Engineering
J. Grove	Regulatory Engineer
T. Haaf	Director, Site Operations
C. Hendrickson	Project Manager
D. Lewis	Operations Liaison, Project Management
R. Libra	TMI Site Vice President
G. McCarty	Manager, RP Technical Support
R. McLaughlin	Manager, Site Nuclear Oversight
E. Parido	Senior Radiation Protection Technician
J. Piazza	Senior Manager, Design Engineering
B. Price	Manager, Shift Operations
T. Roberts	Manager, Radiological Engineering
B. Shumaker	Manager, Emergency Preparedness
G. Smith	Director, Maintenance
W. Stanley	Senior Reactor Engineer
D. Trostle	Nuclear Oversight Assessor
S. Wilkerson	Manager, Plant Engineering

Other Personnel

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

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000289/2013002-01	NCV	Failure to Maintain Combustible Loading near the 'B' CST within FHAR Limits (Section 1R05)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Rev. 5

Section 1R04: Equipment Alignment

Procedures
OP-TM-424-000, Emergency Feedwater System, Rev. 11

Drawings
302-011, Main Steam Flow Diagram, Rev. 73
302-032, Main Steam and Feedwater Instrumentation Flow Diagram, Rev. 17
302-081, Feedwater Flow Diagram, Rev. 55
302-082, Emergency Feedwater Flow Diagram, Rev. 24
302-101, Condensate Flow Diagram, Rev. 64

Miscellaneous
EST 2013-088
IR 1492975 1492824 1492646 1492639 1483965 1481472

Section 1R05: Fire Protection

Procedures
1038, Administrative Controls-Fire Protection Program, Rev. 76
OP-MA-201-007, Fire Protection System Impairment Control, Rev. 6
OP-AA-201-009, Control of Transient Combustible Material, Rev. 11

Miscellaneous
CC-AA-309-101, Engineering Technical Evaluations, Rev. 11
IRs 1461029 1388097 1411335 1449500 1460567 146144
1471079 1435130 1468966 1469550
AR A2028002

Section 1R06: Flood Protection Measures

IRs 1457521 1459950
WOs R2068164 R1153269 R1837407

Section 1R07: Heat Sink Performance

Procedures
U-25, Ventilation Cooling Coil Maintenance, Rev. 6

Miscellaneous
IR 1293694
WO R2171439

Section 1R11: Licensed Operator Requalification Program

Procedures
HR-AA-07-101, NRC Licensed Operator Medical Examination, Rev. 11
LS-AA-115, Operating Experience Program, Rev. 18
TQ-AA-150, Operator Training Program, Rev. 8
TQ-AA-155, Conduct of Simulator Training and Evaluation, Rev. 1
TQ-AA-306, Simulator Management, Rev. 5

TQ-AA-150 Operator Training Programs Rev. 8
LS-AA-126-1005 TMI Pre NRC 71111.11 Inspection Self-Assessment

Miscellaneous
2013 Annual Operating Exams weeks 1, 2, 3, 4
2013 Biennial Comprehensive Written Examinations crew "E" and "B"
2012 "Off -Year" Comprehensive Written Examinations weeks 1, 2, 3, 4, 5, 6
Core Performance Testing, dated 3/17/12
Simulator Accuracy Test, dated 11/5/12
TQ-AA-306 section 4.7.4 ANSI Transient Tests for 2012
TQ-AA-306 section 4.7.8 Plant Transient Review OES 31, Reactor Trip on August 22, 2012
TQ-AA-306 section 4.7.8 Plant Transient Review OES 32, Reactor Trip on September 20, 2012
TQ-AA-306 section 4.7.5 Scenario Based Testing (2013 Annual Operating Exams)
USNRC IP 71111.11 Appendix H, Control Room/In-Plant Observation Checklist

Section 1R12: Maintenance Effectiveness

Procedures
ER-AA-310, Implementation of the Maintenance Rule, Rev. 8

IRs
1484434 1480220 1413037 1480748 1480019

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
1082.1, TMI Risk Management Program, Rev. 8
ER-AA-600-1042, On-Line Risk Management, Rev. 7
OP-TM-999-097, Manual Actuation of 'B' ES Components during Relay Replacement, Rev. 0
WC-AA-101, On-Line Work Control Process, Rev. 19

IRs
1464852 1458222 1463198

Miscellaneous
A2321780, Technical Evaluation of Component Availability during Relay Replacement, dated March 12, 2013
'B' Reactor Building Spray Pump Outage Protected Equipment Checklist, dated January 15, 2013
'B' Low Pressure Injection System Outage Protected Equipment Checklist, dated January 8, 2013
'B' Low Pressure Injection System Outage WW1302 Schedule, dated January 7, 2013
TMI-MISC-020, One-Time Unique Configuration Risk Assessment for ESAS Relay Replacement, Rev. 0, dated March 14, 2013
TMI1 electronic control room logs (eSoms), dated April 9-10, 2013

Section 1R15: Operability Evaluations

Procedures
1302-5.18, HPI/LPI Flow Channel Calibration, Rev. 34, 38
1302-5.18C, Calibration of 'B' Loop HPI Flow Transmitter, Rev. 0

OP-AA-108-115, Operability Determinations, Rev. 10
OP-AA-108-115-1002, Supplemental Consideration for On-Shift Immediate Operability Determinations, Rev. 2

Drawings
209-482, Engineered Safeguards Electrical Diagram, Rev. 13
209-490, Engineered Safeguards Electrical Diagram, Rev. 6

Miscellaneous

IRs	1469756	1469782	1470652	721416	974111	1019760
	1367249	1367151	717674	721417	622549	
ARs	A2221265	A2186218	A2166887	A2166885	A2322371	

Section 1R18: Plant Modifications

Procedures
1303-5.2B, 'B' Emergency Loading Sequence and HPI Logic Channel / Component Test, Rev. 9
OP-TM-999-097, Manual Actuation of 'B' ES Components during Relay Replacement, Rev. 0
SDBD-T1-211, System Design Basis Document for Makeup and Purification System, Rev. 4
SDBD-T1-212, System Design Basis Document for Decay Heat Removal System, Rev. 5

Calculations
AR2215025, Pipe Stress Technical Evaluation of CO-T-1B Surge Pipe, dated December 6, 2012
C-1101-900-5320-025, SQUG USI A-46 Seismic Evaluation of Relays for TMI Unit 1, Rev. 2

Drawings
D42-421115, 4200 Controller Compartment 4A Wiring Diagram, Sheets 1 & 2
D42-421121, 4200 Controller Compartment 5B Wiring Diagram, Sheets 1 & 2
E-303-123, TMI Station Overall Yard Plan, Rev. 16
GUL Test #7119 & #7120, Guided-Wave Results Isometric of TMI1 CST B 12" Condensate & 4" De-Ice Line, dated July 30, 2012
GUL Test #1452, Guided-Wave Results Isometric of TMI1 CST B 12" Condensate Surge, dated January 22, 2013

IRs

1454462	1463309	1465089	1465803	1466578	1469887
1470133	1483303	1489881	1489892	1489899	1490242
1491049					

WOs
BOP-UT-2013-008 (C2028895-11), UT Erosion/Corrosion Examination Report for 12" Surge Line Excavated Digs Location #3 & #4, dated January 30, 2013
C2028895, Repair CO-T-1B 12" Surge Line, including all sub WOs, dated January 18, 2013

Miscellaneous
A2321780, Technical Evaluation of Component Availability during Relay Replacement, dated March 12, 2013
AM3415-462631, Technical Report of Long Range Guided Wave Ultrasonic Pipe Screening Results of TMI1 CST B 12" Surge Line, dated December 13, 2012
ECR 12-00471, ESAS Relay Replacement Project, Rev. 2

ECR 12-00534, ESAS Actuation Cabinet 4A and 5B Relay Replacement, Rev. 1
CC-AA-102, Design Input and Configuration Change Impact Screening, Rev. 20
CC-AA-103, Configuration Change Control, Rev. 21
DPM-1393.01-00002, Duke Power Company Report, Qualification for Cutler-Hammer D26 Series Type M Relays and Accessories
TMI-1, CST-B, Buried Piping Inspection and Mitigation Project Milestone Plan, dated January 15, 2013
TMI-1, CST-B, Surge Line Wall-Thinning Assessment from Guided-Wave Data, dated January 15, 2013

Section 1R19: Post-Maintenance Testing

Procedures
1303-5.1A, 'A' RB Emergency Cooling and Isolation System Logic Channel/Component Test, Rev. 7
1303-5.2B, 'B' Emergency Loading Sequence and HPI Logic Channel / Component Test, Rev. 9
1303-11.20, RB Access Hatch Interlocks, Rev. 17
OP-TM-212-202, IST of DH-P-1B and Valves from ES Standby Mode, Rev. 11
OP-TM-214-201, IST of BS-P-1B and Valves, Rev. 14
OP-TM-533-202, IST of DR-P-1B and Valves, Rev. 13
OP-TM-534-210, IST of RR-V-5 and RR-V-6, Rev. 0
OP-TM-543-202, IST of DC-P-1B, Rev. 2
OP-TM-MAP-C0308, Decay Heat Closed Surge Tank Level Hi/Lo, Rev. 0

Drawings
302-712, Reactor Building Spray Flow, Rev. 49

IRs	1442092	1461252	1464122	1463866	1464197	1459942
	1460196	1460197	1460097	1460014	1459882	1460209
	1463276	1463062	1462949	1462616	1462601	1481719
WOs	R2163157	C2029216	R2078030	R2210461	R2087230	R2116545
	R2055525	R2063569	R2136351	R2175625	R2175593	R2136348
	R2209550	R2209755	C2028837			

Miscellaneous
'B' Low Pressure Injection System Outage WW1302 Schedule, dated January 7, 2013

Section 1R22: Surveillance Testing

Procedures
1302-5.15A.4 CF2-LT2 Level Channel Calibration Rev. 1
MA-MA-716-010-1010, Section 10.3C, Recreating Lost Documentation
OP-TM-213-000, Core Flood System, Rev. 8
Surveillance Frequency Control Program, Section 1.2, Table 4.1-1, item 25
WC-TM-430, Surveillance Testing Program, Rev. 0
WC-TM-430-1001, Surveillance Testing Program Database Interface and Maintenance, Rev. 1
1105-17, Earthquake Monitoring System, Rev. 8

IRs
1463821 1480394 1481038 1482227 1485990 1496985
1497005

Miscellaneous
TMI Shift Operations Logs, dated February 28, 2013

Section 1EP4: Emergency Action Level and Emergency Plan Changes

EP-AA-1000, "Standardized Radiological Emergency Plan," Rev 22 and 23
EP-AA-1009, "Radiological Emergency Plan Annex for Three Mile Island Station," Rev 19 and 20

Section 2RS1 & 2RS2: Radiological Hazard Assessment/ALARA Planning & Controls

Procedures:

RP-AA-19	High Radiation Area Program Description
RP-AA-203-1001	Personnel Exposure Investigations
RP-AA-210	Dosimetry Issue, Usage, and Control
RP-AA-401	Operational ALARA Planning and Controls
RP-AA-403	Administration of the Radiation Work Permit Program
RP-AA-403-1001	Radiation Work Permit Processing
RP-AA-460	Controls for High and Locked High Radiation Areas
RP-TM-460-1008	Locked High Radiation Area Key Controls
RP-AA-800	Control, Inventory, and Leak Testing of Radioactive Sources
RP-TM-800-1001	Addition Source Controls at Three Mile Island
NO-AA-220	Nuclear Oversight Performance Assessment Procedure
NF-AA-330	Special Nuclear Material Physical Inventories
OY-AA-390	Spent Fuel Pool Material Control

Radiation Work Permits:
TM-1-13-17, Aux/FHB HRA & LHRA Entries, Perform Approved Work & Inspections
TM-1-13-03, Perform Minor Maintenance at Power in Reactor Building
TM-1-13-04, Inspection/Supervision in Reactor Building at Power

RWP/Micro-ALARA Plans (AP):
TM-1-13-17/ AP 13-004, Resin Line Flush

1FO7 Forced Outage ALARA Post Job Reviews:
AP 12-011, Pressurizer Heater Replacement
AP 12-008, 1FO7 Maintenance Activities

Issue Reports (related to IP 71124.01/02)
01463335, 01463041, 01462925, 01461251, 01455215, 01453562, 01456376, 01456023, 01408053, 01409087, 01407951, 01407346, 01372457, 01377129,

Nuclear Oversight Assessments & Objective Evidence Reports:
Three Mile Island Radiation Protection Performance Reports 2012-09, 2012-19
NOS Objective Evidence Reports: 1402527-19, 1402527-20, 1402527-21

Miscellaneous Reports:
Dose and Dose Rate Alarm Report for period 10/24/2011 through 01/06/2012
Personnel Exposure Investigation Reports
2012 Routine Operating Dose Report by Department
TMI Dose Excellence Plan 2012-2016
Station ALARA Committee Meeting Minutes Nos. 13-01, 12-12a, 12-12, 12-11, 12-11a, 12-10, 12-10a, and 12-09
Performance Improvement Plan - Benchmarking Report to Identify Industry Best Practices for Dose Reduction for:
- Reactor Disassembly/Re-assembly
- Fuel Movement & Inspections
- Once Through Steam Generator Maintenance & Inspections
- Control Rod Drive Mechanism Replacement
- Outage Installation & Removal

TMI Unit 1 Spent Fuel Pool Material Log

Section 4OA2: Problem Identification and Resolution

TMI Shift Operations Logs
TMI Corrective Action Program Issue Reports

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

Procedures
OP-TM-AOP-043, Loss of Pressurizer, Rev. 3
OP-TM-220-000, Reactor Coolant System, Rev. 016

IRs
1472529 1472658 1472721

WOs
R2098059

Miscellaneous
R*Time Single Point Trend of pressurizer on February 7th, 2013

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CST	Condensate Storage Tank
CWST	Concentrated Waste Storage Tank
DRP	Division of Reactor Projects (NRC)
EPD	Electronic Personnel Dosimeter
EPIP	Emergency Plan Implementing Procedures
ESAS	Engineered-Safeguards Actuation System
FHAR	Fire Hazards Analysis Report
FHB	Fuel Handling Building
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IR	Issue Report
LHRA	Locked High Radiation Area
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NSIR	Office of Nuclear Security and Incident Response (NRC)
PARS	Publicly Available Records
POD	Portable On Demand
RP	Radiation Protection
RWP	Radiation Work Permit
SDP	Significance Determination Process
SSC	Structure, System, or Component
TMI	Three Mile Island Unit 1
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VHRA	Very High Radiation Area
WO	Work Orders