



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

October 25, 2017

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

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 – INTEGRATED INSPECTION REPORT
5000289/2017003

Dear Mr. Hanson:

On September 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Three Mile Island, Unit 1 (TMI). On October 17, 2017, the NRC inspectors discussed the results of this inspection with Mr. Ed Callan, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented a licensee identified violation which was determined to be of very low safety significance in this report. Because of the very low safety significance and because it has been entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Three Mile Island.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> the NRC's Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

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

Docket No. 50-289
License No. DPR-50

B. Hanson

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5000289/2017003 DATED OCTOBER 25, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-289

License No: DPR-50

Report No: 05000289/2017003

Licensee: Exelon Generation Company

Facility: Three Mile Island Station, Unit 1

Location: Middletown, PA 17057

Dates: July 01 through September 30, 2017

Inspectors: Z. Hollcraft, Senior Resident Inspector
C. Roettgen, Senior Resident Inspector (Acting)
B. Lin, Resident Inspector
E. Burket, Reactor Inspector
M. Modes, Senior Reactor Inspector
R. Rolph, Health Physicist
S. Obadina, Project Engineer

Approved by: S. Kennedy, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

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SUMMARY

IR 05000289/2017003, 06/01/2017-09/30/2017; Three Mile Island, Unit 1, Licensee-Identified Violation.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual chapter (IMC) 0609, "Significance Determination Process", dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated August 1, 2016. All violations of Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

NRC-Identified and Self-Revealing Findings

No findings were identified.

Other Findings

A violation of very low safety significance that was identified by Exelon was reviewed by the inspectors. Corrective actions taken or planned by Exelon have been entered into Exelon's corrective action program. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. On September 18, 2017, operators' shutdown the plant for a planned refueling outage. The unit remained shutdown 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)

.1 External Flooding

a. Inspection Scope

On September 19, 2017, the inspectors performed an inspection of the external flood protection measures for Three Mile Island (TMI). The inspectors reviewed technical specifications; procedures; design documents; and the Updated Final Safety Analysis Report (UFSAR), Chapter 2.4.2.4, which depicted the design flood levels and protection areas containing safety-related equipment, to identify areas that may be affected by internal flooding. The inspectors conducted a general site walkdown of all external areas of the plant, including the turbine building, auxiliary building, and berm to ensure that Exelon erected flood protection measures in accordance with design specifications. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to determine if Exelon planned or established adequate measures to protect against external flooding events. Documents reviewed for each section of this inspection report are listed in the Attachment.

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:

- Spent fuel cooling system during fuel receipt on August 14, 2017
- Intermediate cooling system on August 15, 2017
- Fuel handling building essential service fan ventilation system on August 28, 2017
- 'A' train of the decay heat system on September 19, 2017

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, technical specifications, work orders, issue 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.

1R05 Fire Protection

.1 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.

- Control building 355' elevation, CB-FA-2A on July 10, 2017
- Control building 355' elevation, CB-FA-4B on July 19, 2017
- Fuel handling building 305' elevation, FH-FZ-2 on July 25, 2017
- Fuel handling building 348' elevation, FH-FZ-4 on July 25, 2017
- Substation relay house, TMI-BLG-19 on August 9, 2017

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on August 11, 2017, that involved a fire in a temporary trailer near the outage support building, South of Unit 1's turbine building. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that Exelon personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.2 Annual Review of Cables Located in Underground Bunkers/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 on August 30, 2017, of risk-significant areas, including manhole E-17 North and South, containing safety related cabling from the intake pump screen house, to verify that the cables were not submerged in water, that cables and/or splices appeared intact, and to observe the condition of cable support structures. 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.

1R08 In-service Inspection (71111.08P - 1 sample)

a. Inspection Scope

From September 25 – 28, 2017, the inspectors conducted an inspection and review of in-service inspection program activities to assess the effectiveness of the utility program for monitoring degradation of the reactor coolant system boundary and risk-significant piping system boundaries.

Non-destructive Examination and Welding Activities (IMC 02.01)

The inspectors reviewed the nondestructive evaluation of risk-significant weld MS0002 by direct observation. The inspectors reviewed the nondestructive evaluation of risk-significant weld MU0311WELD by record review. The inspectors verified the risk-significant welds were chosen, by the utility, based on Electric Power Research Institute (EPRI) TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure,"

Revision B-A (ADAMS No. ML 0134701020) with Code Case N-578-1, or Code Case N-716-1. The inspectors observed the ultrasonic interrogation of reactor pressure vessel head studs removed from the reactor vessel. For each evaluation the inspectors verified that nondestructive evaluation activities were performed in accordance with the 2004 Edition (without addenda) of the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code requirements.

The inspectors verified the nondestructive test met the requirements contained in ASME, Boiler and Pressure Vessel Code, Section XI, Mandatory Appendix VIII, Article VIII-2000, and the examination personnel were qualified in accordance with ASME, Boiler and Pressure Vessel Code, Section XI, Mandatory Appendix VII. The inspectors verified indications and defects, if present, were dispositioned in accordance with the ASME, Boiler and Pressure Vessel Code and verified that relevant indications were compared to previous examinations to determine if any changes had occurred.

Welding on Pressure Boundary Systems

The inspectors reviewed the pressure boundary welding activity, including associated nondestructive evaluation, of two welds required to replace valve EF-V-12A. The inspector verified that the welding, nondestructive evaluation, and acceptance were performed in accordance with the requirements of the 1965 Edition of the ASME Boiler and Pressure Vessel Code with the addenda through the summer of 1967. The inspectors verified the following features of the welding evolution:

1. The Welding Procedure Specification 1-1-GTAM-PWHT contained the essential, and where applicable, the supplemental essential variables, in conformance with ASME Section IX, QW-200.
2. The Welding Procedure Specification essential and supplemental essential weld variables were within the range qualified by the supporting Procedure Qualification Record as required by ASME Code Section IX, QW-250.
3. Reviewed weld records to determine if they were performed with the base and weld filler materials listed in the Welding Procedure Specification.

The inspectors reviewed the records of final acceptance for liquid penetrant examination to determine if the original construction Code, was applied. The inspectors reviewed the planned radiography to determine if the original construction Code was being applied.

Vessel Upper Head Penetration Inspection Activities (IMC 02.02)

No vessel head penetration inspections were performed during this outage.

Boric Acid Corrosion Control Inspection Activities (IMC 02.03)

The inspectors reviewed engineering evaluations performed for boric acid found on reactor coolant piping and components: leakage in a valve on the reactor heat decay removal system, and leakage in check valves 50 and 51 in the spent fuel cooling system.

The inspectors determined if the utility properly applied applicable corrosion rates to the affected components and properly assessed the effects of corrosion induced wastage on structural or pressure boundary integrity.

The inspectors reviewed corrective actions issue reports 2537134 and 03973529 performed for evidence of boric acid leaks identified. The inspectors confirmed these corrective actions were consistent with requirements of the ASME Code and Title 10 *Code of Federal Regulations* (CFR) 50, Appendix B, Criterion XVI.

Steam Generator Tube Inspection Activities (IMC 02.04)

Degradation Management

The inspectors compared the number of tubes affected by wear, and limiting flaw sizes, with that predicted by the previous outage operational assessment to evaluate the utility's relative accuracy in predicting degradation. The inspectors reviewed the results of the current examinations to determine how well the utility was able to predict future tube performance by comparing the current results with the values predicted in the previous outage operational assessment. The inspectors then evaluated the scope of eddy current testing to determine if areas of potential degradation were inspected, noting if areas known to represent eddy current challenges were included. Lastly the inspectors compared the steam generator tube eddy current examination scope and expansion criteria with technical specification requirements to determine if the utility was in compliance with these requirements.

Eddy Current Technique Qualification

The inspectors reviewed a sample of the licensee's vendor and Electric Power Research Institute "PWR Steam Generator Examination Guidelines" Appendices H and I, Examination Technique Specification Sheets (ETSS) to determine if the eddy current probes and equipment are qualified for detection or sizing of the expected types of tube degradation. The inspectors reviewed ETSS 96043.1, Revision 2, a bobbin coil technique for sizing tapered and flat broached tube sheet wear and ETSS 27901.1 Revision 32, a cross point probe technique for drilled support wear at the periphery of the fifteenth support. The inspectors discussed, with the cognizant site representative, the off-site use of full automated signal interpretation by AREVA MIRA and AIDA systems, after data acquisition.

The review focused on the site-specific factors potentially effecting the qualification of the techniques (e.g., equipment, data quality/noise issues, degradation mode). The inspectors reviewed the equipment and probes used for the examination(s). The inspectors verified that the appropriate eddy current probe (e.g., bobbin, pancake, or multi-coil type) was used to detect the type of flaw referenced in the eddy current technique qualification sheet. The inspectors verified that the equipment has been calibrated in accordance with the eddy current procedure(s) and ASME Code. The inspectors observed the interpretation of indications on tubes 12, 16 and 18, 9 in Steam Generator B, noting the ETSS used.

Secondary Side Degradation

At the time of this inspection no secondary side inspection was planned and was contingent on the discovery of secondary side foreign objects by eddy current.

Identification and Resolution of Problems. (IMC 02.05)

The inspectors verified the utility is identifying problems in inservice inspection at an appropriate threshold and entering them in the corrective action program. The inspectors selected corrective actions AR02587881 and AR02624039 which represented problems associated with inservice inspection program and verified the licensee documented, and implemented, appropriate corrective actions. The inspectors used the guidance in NRC inspection procedure 71152, "Identification and Resolution of Problems," to evaluate the corrective actions. The inspectors also determined if the utility was assessing the applicability of operating experience to their plant.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on September 12, 2017, which included just in time training for operations crews conducting shutdown and cooldown operations for the upcoming outage. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions. 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 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

a. Inspection Scope

The inspectors observed control room operations in support of reactor shutdown for a planned refueling outage conducted on September 17 and 18, 2017. 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 001. 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 – 1 sample)a. Inspection Scope

The inspectors reviewed a sample regarding suspected borated water storage tank in-leakage on June 19, 2017, 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 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. 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.

- Yellow risk during 'A' emergency diesel generator surveillance testing with replacement of remote test unit at the substation relay house on August 8, 2017
- Yellow risk during station blackout diesel surveillance testing on August 15, 2017
- Yellow risk during remote shutdown functional test of pressure operated relief valves RC-V-2 and 3 on September 13, 2017
- Yellow risk during reduced inventory with nuclear river water cooling secured for maintenance, September 21, 2017
- Yellow risk while one decay heat removal train unavailable for reactor coolant system heat removal on September 26, 2017

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- Disconnected damper lever in the closed cooling water pump room cooler (AH-E-15B) documented in issue report 04019781 on July 10, 2017
- Malfunction of the meteorological tower attributed to a lighting strike documented in issue report 4032627 on July 16, 2017
- Operability impact on DH-V-3, decay heat common suction isolation valve after receiving a 10 CFR 21 report concerning the failure of Anchor Darling double disc gate valves on July 20, 2017
- CM-V-7, 3-way air valve for reactor building air sample system instrument air leak documented in issue report 04038165 on August 3, 2017

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. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, such as in the case of operator workarounds, the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

.1 Permanent Modifications

a. Inspection Scope

On August 24, 2017, the inspectors evaluated a modification to install a grounding brush on the shaft of the B, C, and D reactor coolant pumps implemented by engineering change package 618260, "Install Grounding Brush on Reactor Coolant Pump Shaft." 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 replacement of transformer-based power supplies with solid-state power supplies, installation of a digital excitation control system to replace the automatic

function of the Generrex excitation system, and relocation of vibration susceptible components. The inspectors also reviewed revisions to the control room alarm response procedure 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 – 3 samples)

a. Inspection Scope

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

- Integrated control system module replacement on August 21, 2017
- Nuclear river system after scheduled piping replacements on September 23, 2017
- 'C' Makeup Pump (MU-P-1C) on September 23, 2017

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 4 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:

- Emergency feedwater system auto initiation surveillance test on July 6, 2017
- 'B' decay heat pump in-service test on July 11, 2017
- Make up system surveillance testing on July 26, 2017 (in-service test)
- Train "A" emergency diesel monthly surveillance test on August 9, 2017

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - 7 samples)

a. Inspection Scope

The inspectors reviewed Exelon's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, technical specifications, Regulatory Guide 8.38, and the procedures required by technical specifications as criteria for determining compliance.

Inspection Planning

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

Radiological Hazard Assessment (1 sample)

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

Instructions to Workers (1 sample)

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

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

Contamination and Radioactive Material Control (1 sample)

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

Radiological Hazards Control and Work Coverage (1 sample)

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

Risk-Significant HRA and VHRA Controls (1 sample)

The inspectors reviewed the procedures and controls for HRAs, VHRAs, and radiological transient areas in the plant.

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

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

Problem Identification and Resolution (1 sample)

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

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 - 2 samples)

a. Inspection Scope

The inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR 20, RG 8.15, RG 8.25, NUREG/CR-0041, technical specifications, and procedures required by technical specifications as criteria for determining compliance.

Inspection Planning

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

Use of Respiratory Protection Devices (1 sample)

The inspectors reviewed the adequacy of Exelon's use of respiratory protection devices in the plant to include applicable as low as is reasonably achievable evaluations, respiratory protection device certification, respiratory equipment storage, air quality testing records, and individual qualification records.

Problem Identification and Resolution (1 sample)

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were identified at an appropriate threshold and properly addressed in Exelon's CAP.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07 - 3 samples)

a. Inspection Scope

The inspectors reviewed the radiological environmental monitoring program (REMP) to validate the effectiveness of the radioactive gaseous and liquid effluent release program and implementation of the Groundwater Protection Initiative (GPI). The inspectors used the requirements in 10 CFR 20, 40 CFR 190, 10 CFR 50 Appendix I, Exelon's technical specifications, offsite dose calculation manual (ODCM), Nuclear Energy Institute (NEI) 07-07, and the procedures required by technical specifications as criteria for determining compliance.

Inspection Planning

The inspectors reviewed: Three Mile Island 2015 and 2016 annual radiological environmental and effluent monitoring reports, REMP program audits, ODCM changes, land use census, UFSAR, and inter-laboratory comparison program results.

Site Inspection (1 sample)

The inspectors walked down various environmental dosimeter and air and water sampling locations and reviewed associated calibration and maintenance records. The inspectors observed the sampling of various environmental media as specified in the ODCM and reviewed any anomalous environmental sampling events including assessment of any positive radioactivity results. The inspectors reviewed any changes to the ODCM. The inspectors verified the operability and calibration of the meteorological tower instruments and meteorological data readouts. The inspectors reviewed environmental sample laboratory analysis results, laboratory instrument measurement detection sensitivities; and results of the laboratory quality control program audit, and the inter- and intra-laboratory comparison program results. The inspectors reviewed the groundwater monitoring program as it applies to selected potential leaking SSCs, and 10 CFR 50.75(g) records of leaks, spills, and remediation since the previous inspection.

GPI Implementation (1 sample)

The inspectors reviewed: groundwater monitoring results; changes to the GPI program since the last inspection, anomalous results or missed groundwater samples, leakage or spill events including entries made into the decommissioning files (10 CFR 50.75(g)), evaluations of surface water discharges, and Exelon's evaluation of any positive groundwater sample results including appropriate stakeholder notifications and effluent reporting requirements.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with the REMP were identified at an appropriate threshold and properly addressed in Exelon's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES4OA1 Performance Indicator Verification (71151).1 Safety System Functional Failures (1 sample)a. Inspection Scope

The inspectors sampled Exelon's submittals for the Safety System Functional Failures PI for TMI for the period of July 1, 2016, through June 30, 2017. To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed Exelon's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, condition reports, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index (5 samples)a. Inspection Scope

The inspectors reviewed Exelon's submittal of the Mitigating Systems Performance Index for the following systems for the period of July 1, 2016, through June 30, 2017:

- [MS 06] Emergency AC Power System (Emergency Diesel Generators)
- [MS 07] High Pressure Safety Injection System (Makeup)
- [MS 08] Emergency Feedwater System
- [MS 09] Decay Heat Removal
- [MS 10] Cooling Water Support Systems (Decay Closed, Decay River, Nuclear Closed, Nuclear River)

To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed Exelon's operator narrative logs, condition reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.3 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample (1 sample)

a. Inspection Scope

The inspectors reviewed licensee submittals for the RETS/ODCM radiological effluent occurrences PI for the first quarter 2016, through the second quarter 2017. The inspectors used PI definitions and guidance contained in the NEI 99-02, Revision 7, to determine if the PI data was reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data was accurately calculated and reported.

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

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The inspectors reviewed licensee submittals for the occupational radiological occurrences PI for the first quarter 2016 through the second quarter 2017. The inspectors used PI definitions and guidance contained in NEI 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walkdowns of various Locked High and VHRA entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 1 sample)

.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 (CAP) at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically, attended issue report screening and management meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, Exelon performed an evaluation in accordance with 10 CFR 21.

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues: Follow-up to Internal Flooding Issues Identified in 2016

a. Inspection Scope

The inspectors reviewed Exelon's identification, evaluation, and corrective actions associated with NRC identified non-cited violation (NCV) 05000289/2016003-01, Emergency Diesel Generator (EDG) Internal Flooding Risk Not Evaluated. The NCV identified that Exelon did not ensure the availability of the EDGs following a seismic event. Specifically, the inspectors determined that the pressurized fire water pipes in both EDG rooms were not classified as safety-related or seismically qualified, and Exelon did not have an evaluation that showed that failure of the pipe would not impact the operability and availability of the EDGs. See Section 4OA2 of NRC inspection report 05000289/2016003 (ML16313A365) for additional information.

The inspectors assessed Exelon's implemented and planned corrective actions to evaluate whether Exelon staff appropriately identified, characterized, prioritized, and corrected issues associated with the NCV. The inspectors compared the actions taken to the requirements of Exelon's CAP and 10 CFR 50, Appendix B. The inspectors interviewed engineering personnel to gain an understanding of the implemented and planned corrective actions associated with this issue. The inspectors performed a walk down of a portion of the auxiliary building to evaluate Exelon's extent of condition review regarding non-seismic fluid filled piping systems potentially impacting the operability of safety-related components following a seismic event.

b. Findings and Observations

No findings were identified.

The inspectors determined that Exelon's evaluation, corrective actions, and extent of condition review related to the previously identified NCV were appropriately focused to correct the issue. However, the inspectors noted some weaknesses in the prioritization and timeliness of corrective actions that were self-identified by Exelon's oversight processes. The inspectors' review was separated into three focus areas:

- Evaluation of the fire service piping in the emergency diesel generator buildings
- Extent of condition review of all non-seismic fluid systems within seismic class I buildings
- Corrective action program implementation of the previously identified NCV

The inspectors reviewed EC 618789, Evaluation of the Fire Service Piping in the Diesel Generator Room to Withstand a Safe Shutdown Earthquake (SSE) Event, to evaluate Exelon's conclusion that the fire service (FS) piping in the EDG buildings could withstand an SSE without loss of pressure boundary integrity. The inspectors considered whether the assumptions and inputs used in the analysis were appropriate based on the material and geometry of the FS piping in the EDG buildings. Additionally, the inspectors evaluated whether TMI specific values noted in the UFSAR, such as damping factors, were considered in the analysis. The inspectors concluded the evaluation appropriately considered the impact of an SSE to the FS piping in the EDG buildings, and it addressed the issue identified in NCV 2016003-01.

As an extent of condition (EOC) review, Exelon identified non-seismic fluid systems in seismic class I buildings and evaluated the effects of failure during a postulated earthquake on safe shutdown (SSD) systems. The inspectors reviewed Technical Evaluation 2705855-05, Internal Flooding Design Review, which documented the EOC evaluation. The inspectors referenced the list of seismic class I buildings identified in section 5.1.1 of the UFSAR to confirm those areas were considered in Exelon's EOC review. The inspectors also referred to TMI's safe shutdown equipment list to verify that systems, structures, and components relied upon for SSD were included in the EOC review. Additionally, the inspectors sampled various documents, such as drawings, alarm response procedures, and abnormal operating procedures, to confirm that proposed changes had been implemented or that implementation was being tracked for the next document update. The inspectors concluded Exelon's extent of condition review appropriately considered other locations and systems where non-seismic fluid piping could impact SSD equipment.

The inspectors reviewed PI-AA-125, Corrective Action Program (CAP) Procedure, to determine whether the issue identified in NCV 2016003-01 was completely and accurately captured in Exelon's CAP and to evaluate if the corrective actions were prioritized appropriately and completed in accordance with the timeliness guidance. Exelon staff initiated issue report 2705855 in August, 2016, which documented the subject of the NCV. The inspectors concluded that Exelon staff accurately and completely documented the violation in the CAP. However, the inspectors noted that the corrective action to resolve the issue did not meet the timeliness guidance in PI-AA-125. The inspectors noted that a March 2017 nuclear oversight (NOS) audit identified that when integrated inspection report 05000289/2016003 was received by TMI in November, 2016, the CAP process was not appropriately followed to ensure the corrective action was prioritized and assigned a due date that met the guidance of PI-AA-125. Following the NOS audit results, the corrective action (assignment #3) in issue report 2705855 was re-prioritized. The inspectors noted that when the re-prioritized corrective action was completed in May 2017, it was within the timeliness guidelines of PI-AA-125 when using the revised March 2017 date as the condition initiating date.

The inspectors determined that the untimely resolution of the condition when initially identified in August, 2016, was a performance deficiency. The inspectors independently screened the performance deficiency in accordance with IMC 0612, Appendix B, Issue Screening, and determined the issue was of minor significance, and therefore, was not subject to enforcement action in accordance with the NRC's Enforcement Policy. Specifically, the corrective action concluded that the FS piping in the EDG buildings would maintain integrity following an SSE. Exelon entered this self-identified concern into the CAP as issue report 3988515.

4OA5 Other Activities

Institute of Nuclear Power Operations (INPO) Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of TMI conducted in April 2017. The inspectors evaluated these reports to ensure that NRC perspectives of Exelon's performance were consistent with any issues identified during the assessments. The inspectors also reviewed these reports to determine whether INPO identified any significant safety issues that required further NRC follow-up.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 17, 2017, the inspectors presented the inspection results to Mr. Ed Callan, 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.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by Exelon and is a violation of NRC requirements, which meets the criteria of the NRC Enforcement Policy for being dispositioned as a non-cited violation.

Technical specification 4.1.4, "Operational Safety Review," requires each remote shutdown system function shown in Table 3.5-4 shall be demonstrated operable by the performance of the following check, test, and calibration. The technical specification surveillance requirement 4.1.4.b states that the licensee shall verify each required control circuit and transfer switch is capable of performing the intended function in accordance with the licensee's surveillance frequency control program, in this case every refueling interval. Contrary to SR 4.1.4.b, from January, 1987, until September 2017, Exelon did not verify that each required control circuit on the Unit 1 remote shutdown panel was capable of performing the intended function. Specifically, Exelon did not test four of the required six relays for the 'B' EDG either by operation of the components or by performance of a continuity check. Exelon's corrective action included entering this issue into the CAP as issue reports 4020064 and 4047426, developing a remote shutdown system testing procedure for the 'B' EDG system, and the completion of a risk evaluation as required by surveillance requirement 4.0.2.

The inspectors determined that the finding was more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. It is of very low safety significance (Green) in accordance with NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process," since the missed surveillance did not impact the ability to reach safe shutdown.

ATTACHMENT: SUPPLEMENTARY INFORMATION

**SUPPLEMENTARY INFORMATION
KEY POINTS OF CONTACT**

Licensee Personnel

E. Callan	Site Vice President
T. Haaf	Plant Manager
T. Alvey	Manager, Chemistry
D. Atherholt	Manager, Regulatory Assurance
K. Baldwin	System Engineer
P. Bennett	Mechanical Engineering Manager
R. Campbell	Manager, Site Security
J. Campenella	Radiation Protection Technician
B. Carn	Radiation Protection Technician
D. Divittore	Manager, Radiological Engineering
B. Dizebba	Radiation Protection Technician
J. Dullinger	Director of Site Operations
M. Fitzwater	Senior Regulatory Assurance Engineer
J. Goldman	Mgr. Regulatory Assurance
P. Handy	ALARA Specialist
J. Hawkins	Exelon Level III
C. Johnson	Senior Radiation Protection Technician
C. Keane	Mechanical Design Engineer
W. Lepson	Chemistry Technician Specialist
K. Maguire	Engineer Improved Once Through Steam Generator and Boric Acid Program
M. Malinen	Sr. Manager of Operations Support
G. McCarty	Radiological Engineering Manager
W. McSorley	Mechanical Design Engineer
C. O'Hogan	TMI Risk Management Specialist
T. Orth	Director of Site Work Management
L. Parlatore	Radiation Protection Senior Technical Support Specialist
J. Piazza	Senior Manager, Design Engineering
J. Popielarski	Director of Site Maintenance
M. Pruskowski	Senior Chemist
D. Repice	System Engineer
J. Raby	Sr. ALARA Specialist
W. Scarberry	Corporate Radiation Protection
K. Scone	Radiation Protection Technician
R. Scone	Radiation Protection Technician
B. Shumaker	Manager, Emergency Preparedness
G. Smith	Director, Maintenance
T. Stertzel	MSPI Program Engineer
M. Torborg	Manager Engineering Programs
K. Wagner	Supervisor Environmental/Radwaste
B. Wunderly	Engineering Manager

MISTRAS Personnel

N. Romano	Radiographer
S. Malee	Assistant Radiographer

Other Personnel

S. Martin	Nuclear Safety Specialist Pennsylvania Department of Environmental Protection Bureau of Radiation Protection
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LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

3301-SA1, Dike Inspection, Revision 17
CC-AA-201, Plant Barrier Control Program, Revision 10
OP-TM-AOP-002, Flood, Revision 6A
SDBD-T1-122, System Design Basis Document for Flood Protection Systems, Revision 3

Drawings

1E-122-01-1008, Sheet 1 and 2, TMI Flood Barrier System RB Seismic Gap Flood Seal, Revision 0

Section 1R04: Equipment Alignment

Procedures

OP-TM-541-000, Primary Component Cooling, Revision 24
1104-6, Spent Fuel Cooling System, Revision 49
1104-15D, Fuel Handling E.S.F. Ventilation System, Revision 26

Drawings

302-630, Spent Fuel Pool Cooling Flow Diagram, Revision 35
302-640, Decay Heat Removal Flow Diagram, Revision 86
302-841, Auxiliary and Fuel Handling Building Ventilation Flow Diagram. Revision 50

Miscellaneous

T11R22 Shutdown Safety Plan, Revision 1

Section 1R05: Fire Protection

Procedures

1038, Administrative Controls-Fire Protection Program, Revision 83
OP-AA-201-009, Control of Combustible Material, Revision 18
OP-MA-201-007, Fire Protection System Impairment Control, Revision 6
Three Mile Island Nuclear Station Unit No.1 Pre-Fire Plan #34, Revision 5
Three Mile Island Nuclear Station Unit No.1 Pre-Fire Plan #47, Revision 3
Three Mile Island Nuclear Station Unit No.1 Pre-Fire Plan #45, Revision 3
Three Mile Island Nuclear Station Unit No.1 Pre-Fire Plan #47, Revision 3

Miscellaneous

CC-AA-309-101, Engineering Technical Evaluations, Revision 11

IR

4032657*

Section 1R06: Flood Protection Measures

Procedures

ER-AA-300-150, Cable Condition Monitoring Program, Revision 4

MA-TM-153-001, Inspection and Maintenance of TMI-1 Electrical and Telephone Manholes, Revision 7

Miscellaneous

IRs

4046823

4046819

Section 1R08: In-service Inspection

Procedures

ER-AA-335-030 Rev 5, Ultrasonic Examination of Ferritic Piping Welds

ER-AA-335-037 Rev 3, Ultrasonic Examination of Studs and Bolts

PDI-UT-10, Revision F, PDI Generic Procedure for the Ultrasonic Examination of Dissimilar Metal Welds

PDI-UT-1, Revision F, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds

PDI-UT-2, Revision G, PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds

PDI-UT-5, Revision F, PDI Generic Procedure for the Straight Beam Ultrasonic Examination of Bolts and Studs

Miscellaneous

Ultrasonic Test Report UT-ISI-2017-003

TMI Unit 1, Outage T1R22 Steam Generator Degradation Assessment

Technical Evaluation 1650440-23, TMI Unit 1, Outage T1R21, Steam Generator Condition Monitoring and Final Operational Assessment

Technical Evaluation TMI Unit 1, Outage T1R21, Steam Generator Condition Monitoring and Final Operational Assessment

Qualification Records

Section 1R11: Licensed Operator Regualification Program

Procedures

1102-10, Plant Shutdown, Revision 100

1102-11, Plant Shutdown, Revision 155

OP-AA-1, Conduct of Operations, Revision 1

Miscellaneous

N-TM-TQ-TM-106-GOP-5012, Plant Cooldown/DHR Operations, 8/24/2017

Section 1R12: Maintenance Effectiveness

Procedures

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

OP-TM-212-000, Decay Heat Removal System, Revision 23

Miscellaneous

SDBD-T1-212, System Design Basis Document for Decay Heat Removal System (#212), Revision 9

C-1101-212-5450-040, BWST Minimum Usable Volume, Revision 2

C-1101-212-E610-069, BWST Maximum Usable Volume, Revision 0

Issue Report
4023486

Section 1R13: Maintenance Risk Assessments and Emergent Work Control Procedures

1082.1, TMI Risk Management Program, Revision 8
OU-TM-103, TMI-1, Shutdown Safety Management, Revision 10
OU-TM-103-1002, Safety Function Status of AC Power, Revision 3
WC-AA-101, On-Line Work Control Process, Revision 18
WC-AA-101, On-Line Work Control Process, Revision 26
WC-AA-101, On-Line Work Control Process, Revision 26
WC-AA-104, Integrate Risk Management, Revision 24

Drawings

302-640, Decay Heat Removal Flow Diagram, Revision 86

Miscellaneous

Three Mile Island Unit 1 Shutdown Safety, Management Plan for T1R22
T1R22 Outage Fuel Protection Criteria Brief Sheet 2017-7
Equipment Protective System Lineup for September 26, 2017
Work order: 04633297
Condition reports: 04054194

Section 1R15: Operability Evaluations

Procedures

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

Drawings

302-268, Instrument Air Flow Diagram, Revision 18
302-273, Emergency Feedwater and Mainstream Valve 2 Hour Backup Supply Air, Revision 24
302-610, Nuclear Services Closed Cycle Cooling Water, Revision 82
302-721, Hydrogen Purge, Revision 26
TMI-1 Updated Final Safety Analysis Report Section 985, Revision 23

Miscellaneous

NRC Information Notice 2017-03, Anchor/Darling Double Disc Gate Valve Wedge Pin and Stem-Disc Separation Failure, June 15, 2017
TP16-1-112, Recommendations to Resolve Flowserve 10CFR Part 21 Notification Affecting Anchor Darling Double Disc Gate Valve Wedge Pin Failure, Revision 3

Issue Reports

4015216
4038165
4033322
469670
4032627

Section 1R18: Plant Modifications

Procedures

CC-AA-102, Design Input and Configuration Change Impact Screening, Revision 30
CC-AA-103-100, Configuration Change Control for Permanent Physical Plant Changes, Revision 0
CC-AA-107, Configuration Change Acceptance Testing Criteria, Revision 10

Miscellaneous

Engineering Change 618260, Install Grounding Brush on Reactor Coolant Pump Shaft, Revision 0
 Issue Report 4044493
 Work Order 04187550

Section 1R19: Post-Maintenance TestingProcedures

1410-4-50, Leak Testing of Systems and Components, Revision 17
 1430-4-35, Bailey 721 System (ICS/NNI) Maintenance, Revision 18
 OP-TM-541-252, Leakage Exam of Nuclear River System, Revision 5

Drawings

D8032729, Integrated Control System Detailed Schematic Feedwater Control

Miscellaneous

Engineering Change 14-00196, Replace NR-V-6 Valve and Actuator, Revision 3
 Issue Report 4058842 4055126 2697048 1424867 1388646
 Work Orders 4621889 4630923 4581698 4630930 4187447
 4187450 4186464 4186848

Section 1R22: Surveillance TestingProcedures

WC-TM-430, Surveillance Testing Program, Revision 0
 WC-TM-430-1001, Surveillance Testing Program Database Interface and Maintenance, Revision 1
 OP-TM-212-202, IST of DH-P-1B and Valves from ES Standby Mode, Revision 15
 OP-TM-211-204, IST of MU-V-36 and 37, Revision 3
 OP-TM-211-242, IST of MU-V-18, Revision 8
 OP-TM-211-247, IST of MU-V-54A, Revision 1
 OP-TM-211-249, IST of MU-V-54B, Revision 1
 OP-TM-211-203, IST of MU-V-14A and 14B and DH-V-7A and 7B, Revision 5
 1303-4.16, Emergency Power System, Revision 141
 1303-11.39A, HSPS – EFW Auto Initiation, Revision 47

Miscellaneous

Work Orders 4632375 4630824 4632917 4631460 4631435
 4590381 4624771 4660525

Section 2RS1 Radiological Hazard Assessment and Exposure ControlsProcedures:

RP-AA-302, Determination of Alpha Levels and Monitoring, Revision 8
 RP-AA-441, Evaluation and Selection Process for Radiological Respirator Use, Revision 6
 RP-AA-376, Radiological Postings, Labeling, and Markings, Revision 9
 RP-AA-376-1001, Radiological Posting, Labeling, and Marking Standard, Revision 14
 RP-AA-400-2000, Department Dose Advocate, Revision 2
 RP-AA-401, Operational ALARA Planning and Controls, Revision 22
 RP-AA-460, Controls for High and Locked High Radiation Areas, Revision 29
 RP-AA-500, Radioactive Material (RAM) Control, Revision 17
 RP-AA-1008, Unescorted Access to and Conduct in Radiologically Controlled Areas, Revision 6
 RP-TM-500-1002, Radioactive Material Transfer, Revision 2
 RP-AA-300, Radiological Survey Program, Revision 15
 RP-AA-462, Controls for Radiographic Operations, Revision 13

IR's/ARs:

04024172, 04031012, 04034938, 04037723, 04037961, 04039085, 04037969, 04040792, 04043489, 04049169, 04049496, 04017630, 04014292, 04001201, 03999883, 03999892, 03994266, 03974389, 02649087, 03969701, 04042578, 04042578, 04001014, 02665618, 03974389, 03994048, 04003777, 04015154, 02649087, AR 04006977

ALARA PlanRWPDate

17-009	TM-1-17-401	September 27, 2017
17-016	TM-1-17-642	August 11, 2017
17-017	TM-1-17-618	August 16, 2017
17-020	TM-1-17-505	August 16, 2017
17-024	TM-1-17-635	August 16, 2017
17-025	TM-1-17-632	August 16, 2017

Radiation Work Permits:

TM-1-17-00401, Outage Radiography, Revision 0

TM-1-17-00613, Outage Containment Reactor Head Disassembly/Assembly Support, Revision 1

TM-1-17-00618, Outage Containment Transfer Canal Work, Revision 1

TM-1-17-00642, Outage Containment Reactor Head Disassembly/Reassembly Top of RVCH, Revision 2

TM-1-17-00704, Outage Containment OTSG Install/Remove Nozzle Covers and Dams, Revision 1

TM-1-17-00705, Outage Containment OTSG Eddy Current Testing and Tube Repairs, Revision 1

Radiological Air Samples:

B20170924001, B D-Ring;
 B20170924002, B High Point Vent;
 B20170924003, B D-Ring;
 B20170924004, B High Point Vent;
 B20170924005, Flapping;
 B1709210001, RCP 1B Seal;
 B1709210002, Deep End BZA;
 A20170923001, B OTSG Upper Manway;
 A20170923002, B OTSG Upper Manway;
 A20170923003, B OTSG Lower Manway;
 A20170923004, B OTSG Upper Manway;
 A20170923005, B OTSG Upper Manway;
 A20170923006, B OTSG Upper Manway;
 A20170923007, 346' Operating Floor;
 A20170923008, B OTSG Lower Manway;
 A20170922023, RB Equipment Hatch;
 A20170922024, 365' A D-Ring;
 A20170922025, 365' B D-Ring;
 A20170922026, RB Sump;
 A20170922027, 279' I/S D-Ring;
 A20170922028, 346' Operating Floor;
 A20170922029, 346' Operating Floor;
 A20170922030, B OTSG Upper Manway;
 B20170922005, B RCP Thermal Barrier (BZA);
 B20170922006, A RCP Motor Grind (BZA);
 B20170922007, Cold Leg Insulation Removal (BZA);
 B20170922008, 068172 (BZA);
 B20170921004, Under Vessel (BZA);
 B20170921005, B RCP Thermal Barrier (BZA);

B20170921006, [worker name withheld] (BZA);
 B20170921007, Reactor Cavity (BZA);
 B20170921008, MUV-V-68B (BZA);
 B20170921009, [worker name withheld] (BZA);
 A20170924001, RB Equipment Hatch;
 A20170924002, 365' A D-Ring;
 A20170924003, 365' B D-Ring;
 A20170924004, Sump;
 A20170924005, 279' I/S D-Ring;
 A20170924006, 346' Operating Floor;
 A20170924007, B OTSG Upper Manway;
 A20170924008, B OTSG Lower Manway;

Breathing Air Grade D or Better Tests

IA-P-4: 100516, 012216, 040816, 070116, 011817, 042517, 072717
 SA-P-1A: 100516, 012216, 040816, 070116, 011817, 042517, 072717
 SA-P-1B: 100516, 012216, 040816, 070116, 011817, 042517, 072717
 WHP-P-004: 100516, 012216, 040816, 070116, 070617, 011817, 042517

Three Mile Island Radiological Surveys:

TMI-M-20170923-26, RB C RCP HPI LINE, September 3, 2017
 TMI-M-20170918-**, Fuel Transfer Canal Initial Entry, September 18, 2017
 TMI-M-20170918-**, Top of Reactor Head Shut Down Survey, September 18, 2017
 TMI-M-20170918-**, Fuel Transfer Canal Post Decon, September 18, 2017
 TMI-M-20170918-9, Shutdown Survey 308' Reactor Building, September 18, 2017
 TMI-M-20170918-10, Shutdown Survey 279' I/S D-Rings, September 18, 2017
 TMI-M-20170918-13, Reactor Building – Letdown Cooler Room, September 18, 2017
 TMI-M-20170918-14, Shutdown Survey 365' Reactor Building, September 18, 2017
 TMI-M-20170918-16, Reactor Building - Incore Cable Gallery, September 18, 2017
 TMI-M-20170918-20, Shutdown Survey 346' Reactor Building, September 18, 2017
 TMI-M-20170918-21, Reactor Sump and Mezzanine, September 18, 2017
 TMI-M-20170918-22, 279' I/S D-Rings, September 18, 2017
 TMI-M-20170918-23, Reactor Vessel Top of Head, September 18, 2017
 TMI-M-20170918-32, Makeup Valve Alley Post Shutdown, September 18, 2017
 TMI-M-20170919-**, TMI-M-20170924-04, 279' I/S D Rings Post Crud Burst Survey,
 September 19, 2017
 TMI-M-20170919-10, Reactor Vessel Service Structure Update, September 22, 2017
 TMI-M-20170920-**, Fuel Transfer Canal Dose Rate Verification, September 20, 2017
 TMI-M-20170921-2, Transfer Canal Deep End-Post Blind Flange Removal, September 21, 2017
 TMI-M-20170922-13, Reactor Building – A LP Thermal Barrier Breach, September 20, 2017
 TMI-M-20170922-13, Reactor Building – D HP Thermal Barrier Breach, September 21, 2017
 TMI-M-20170922-20, B-OTSG After Installation of Ranger, September 22, 2017
 TMI-M-20170922-38, Reactor Vessel Head Stand Initial Survey of Flange, September 22, 2017
 TMI-M-20170924-**, Reactor Elevation 279' A RCP Motor Post Decon, September 24, 2017
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LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CFR	Code of Federal Regulations
EDG	emergency diesel generator
EOC	extent of condition
EPRI	Electric Power Research Institute
ETSS	Examination Technique Specification Sheets
FS	fire system
GPI	Groundwater Protection Initiative
HRA	high radiation area
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
NCV	non-cited violation
NEI	Nuclear Energy Institute
NOS	nuclear oversight
NRC	Nuclear Regulatory Commission
ODCM	offsite dose calculation manual
PI	performance indicator
REMP	radiological environmental monitoring program
SSC	structure, system, or component
SSD	safe shutdown
SSE	safe shutdown earthquake
TMI	Three Mile Island Unit 1
UFSAR	updated final safety analysis report
VHRA	very high radiation area