UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

January 21, 2009

Mr. Charles G. Pardee
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 5000289/2008005

Dear Mr. Pardee:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Three Mile Island, Unit 1 (TMI) facility. The enclosed inspection report documents the inspection results, which were discussed January 9, 2009, with Mr. William Noll 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.

On the basis of the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "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 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).

We appreciate your cooperation. Please contact me at 610-337-5200 if you have any questions regarding this letter.

Sincerely,

/RA/

Ronald R. Bellamy, Ph.D., Chief
Projects Branch 6
Division of Reactor Projects

Docket No: 50-289
License No: DPR-50

Enclosure: Inspection Report 05000289/2008005
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	05000289
License No:	DPR-50
Report No:	05000289/2008005
Licensee:	Exelon Generation Company, LLC (Exelon)
Facility:	Three Mile Island Station, Unit 1
Location:	P. O. Box 480 Middletown, PA 17057
Dates:	October 1 – December 31, 2008
Inspectors:	David M. Kern, Senior Resident Inspector Javier M. Brand, Resident Inspector Ronald L. Nimitz, Senior Health Physicist Eugene Huang, Reactor Inspector Heather Jones, Reactor Inspector
Approved by:	Ronald R. Bellamy, Ph.D., Chief Projects Branch 6 Division of Reactor Projects (DRP)

TABLE OF CONTENTS

SUMMARY OF FINDINGS

IR 05000289/2008005; 10/1/2008 - 12/31/2008; Exelon Generation Company, LLC; Three Mile Island, Unit 1; Routine integrated report.

The report covered a 13-week period of inspection by resident inspectors and announced inspections by regional inspectors. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, Reactor Oversight Process, Rev. 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Three Mile Island, Unit 1 (TMI) operated at approximately 100 percent rated thermal power for the entire inspection period.

At the time of inspection, AmerGen Energy Company, LLC was the licensee for Three Mile Island, Unit 1. The NRC approved a license transfer to the Exelon Generating Company, LLC on December 23, 2008 (ML082750047).

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 site sample)

a. Inspection Scope

The inspectors walked down risk significant plant areas on December 18-19 to assess Exelon's protection for cold weather conditions. The inspectors evaluated outside instrument line conditions and the status of the heat trace system. The walkdown included the condensate storage tanks and safety-related river water system components located within the intake structure. The inspectors also reviewed implementation of procedure WC-AA-107, Seasonal Readiness, Rev. 6 and OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Rev. 3 for cold weather conditions.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdowns (71111.04Q – 4 samples)

The inspectors performed four partial system walkdown samples on the following systems and components:

- On October 30, the inspectors walked down portions of the emergency feedwater system during a planned preventive maintenance replacement of the pump's bearing cooling relief valve (EF-V-35);

- On November 5, the inspectors walked down portions of the 'A' and 'C' make-up and purification train while the 'B' make-up and purification train was inoperable due to an unexpected lubricating oil leak (IR 840686);

- On December 4, the inspectors walked down portions of the 'A' emergency diesel generator (EDG), its support systems, and its associated engineered safeguards

electrical distribution system after restoration from a planned 'A' EDG unavailability; and

- On December 4, the inspectors walked down portions of the 'B' emergency diesel generator (EDG), its support systems, and its associated engineered safeguards electrical distribution system during a planned 'A' EDG unavailability.

The partial system walkdowns were conducted on the redundant and standby equipment to ensure that trains and equipment relied on to remain operable for accident mitigation were properly aligned. Additional documents reviewed are listed in the attachment.

Complete System Walkdown (71111.04S – 1 sample)

On November 10 through 14, the inspectors performed one complete system walkdown sample on the emergency feedwater system. The inspectors conducted a detailed review of the alignment and condition of the system using piping and information diagram 302-082, Emergency Feedwater System, Rev. 24. In addition, the inspectors reviewed and evaluated the corrective action program reports for impact on system operation, and interviewed the system engineer and control room operators. Additional documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Annual Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed an announced fire brigade drill on October 27, to evaluate the readiness of station personnel to respond to and fight fires. The drill demonstrated response to a fire located at the 285 foot elevation of the Unit 1 Fuel Handling Building (fire zone FH-FZ-6 - chiller room). The inspectors observed fire brigade member use of protective clothing and appropriate turnout gear, including self-contained breathing apparatus (SCBA), and their approach and methods to combat the fire as well as their interaction with the control room staff. The inspectors observed implementation of fire fighting strategies by the fire brigade, communications among participants throughout the drill, and emergency plan implementation. The inspectors reviewed the drill scenario objectives, determined whether drill scenario objectives were met, and observed the post-drill critique to verify that Exelon identified, discussed, and entered adverse conditions into the corrective action program. Minor performance deficiencies were documented in IR 836203. The inspectors also reviewed the critique report from an unannounced drill conducted in May 2008, which met the requirements of 10 CFR 50, Appendix 'R', Section III.I.3.d that an unannounced drill must be critiqued by qualified individuals independent of Exelon's staff. Additional documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

.2 Area Walkdowns (71111.05Q – 4 samples)

a. Inspection Scope

The inspectors conducted fire protection inspections for several plant fire zones, selected based on the presence of equipment important to safety within their boundaries. The inspectors conducted plant walkdowns and verified the areas were as described in the TMI Fire Hazard Analysis Report, and that fire protection features were being properly controlled per surveillance procedure 1038, Administrative Controls-Fire Protection Program, Rev. 71. The plant walkdowns were conducted throughout the inspection period and included assessment of transient combustible material control, fire detection and suppression equipment operability, and compensatory measures established for degraded fire protection equipment in accordance with procedure OP-MA-201-007, Fire Protection System Impairment Control, Rev. 6. In addition, the inspectors verified that applicable clearances between fire doors and floors met the criteria of Attachment 1 of Engineering Technical Evaluation CC-AA-309-101, Engineering Technical Evaluations, Rev. 10. Fire zones and areas inspected included:

- Fire Zone AB-FZ-2A, Auxiliary Building Elevation 281', Makeup and Purification Pump A;
- Fire Zone AB-FZ-2B, Auxiliary Building Elevation 281', Makeup and Purification Pump B;
- Fire Zone AB-FZ-2C, Auxiliary Building Elevation 281', Makeup and Purification Pump C; and
- Fire Zone IB-FZ-2, Intermediate Building Elevation 295', Turbine Driven Emergency Feedwater (EFW) Pump Room.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q – 1 sample)

a. Inspection Scope

On December 16, the inspectors observed licensed operator requalification training at the control room simulator for the 'B' operator crew. The inspectors observed the operators' simulator drill performance and compared it to the criteria listed in TMI Operational Simulator Scenario TQ-TM-106-LRU-S011, Rev. 0. The inspectors reviewed the operators' ability to correctly evaluate the simulator training scenario and implement the emergency plan. The inspectors observed supervisory oversight, command and control, communication practices, and crew assignments to ensure they were consistent with normal control room activities. The inspectors observed operator response during the simulator drill transients. The inspectors evaluated training instructor effectiveness in recognizing and correcting individual and operating crew errors. The inspectors attended the post-drill critique in order to evaluate the effectiveness of problem identification. The inspectors verified that emergency plan classification and notification training opportunities were tracked and evaluated for success in accordance with criteria established in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5. Additional documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors evaluated the listed samples for Maintenance Rule (MR) implementation by ensuring appropriate MR scoping, characterization of failed structures, systems, and components (SSCs), MR risk categorization of SSCs, SSC performance criteria or goals, and appropriateness of corrective actions. Additionally, extent-of-condition follow-up, operability, and functional failure determinations were reviewed to verify they were appropriate. The inspectors verified that the issues were addressed as required by 10 CFR 50.65, Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants; Nuclear Management and Resources Council (NUMARC) 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Rev. 2; and Exelon procedure ER-AA-310, Implementation of the Maintenance Rule, Rev. 6. The inspectors verified that appropriate corrective actions were initiated and documented in IRs, and that engineers properly categorized failures as maintenance rule functional failures and maintenance preventable functional failures, when applicable.

- IR 799447 describes abnormal noise from EFW ventilation fan AH-E-24B. Engineers and maintenance technicians believe the cause for the abnormal noise was a degraded motor outboard bearing. The inspectors verified that operability of the EFW system was not affected by this condition. Exelon concluded this issue was not a maintenance rule functional failure; and

- IR 825099 describes excessive amount of water intrusion in the 'B' heater drain pump (HD-P-1B) inboard pump bearing housing. A comprehensive troubleshooting plan was developed and a temporary deflector shield was installed. The cause of the water intrusion was determined to be leakage past the oil bearing labyrinth seal. The inboard pump bearing and labyrinth seal were replaced satisfactorily on November 18, 2008.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 3 samples)

a. Inspection Scope

The inspectors reviewed the scheduling, control, and restoration during the following maintenance activities to evaluate their effect on plant risk. This review was against criteria contained in Exelon Administrative Procedure 1082.1, TMI Risk Management Program, Rev. 7 and WC-AA-101, On-Line Work Control Process, Rev. 15.

- On October 30-31, the turbine driven emergency feedwater pump (EF-P-1) was taken out of service for planned preventive maintenance replacement of the pump's bearing cooling relief valve (EF-V-35). This condition elevated the online maintenance risk profile to Yellow;

- On November 5, the 'C' nuclear river water pump (NR-P-1C) was taken out of service for scheduled maintenance activities. The condition elevated the online maintenance risk profile to Yellow. The inspectors also reviewed the associated protected equipment log (WC-AA-101, Attachment 8) and walked down portions of the protected components; and

- On December 13, the 'A' decay heat river water train was removed from service for diver inspection to investigate indications of lower than expected discharge pressure and flow (IR 855793). This condition elevated the online maintenance risk profile to Orange. The inspectors performed field walkdowns, reviewed the protected equipment log, and interviewed the system engineer and plant operators.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 3 samples)

a. Inspection Scope

The inspectors verified that degraded conditions were properly characterized, operability of the affected systems was properly evaluated in relation to Technical Specification (TS) requirements, applicable extent-of-condition reviews were performed, and no unrecognized increase in plant risk resulted from the equipment issues. The inspectors referenced NRC Inspection Manual Chapter Part 9900, Operability Determinations & Functionality Assessments for Resolutions of Degraded or Nonconforming Conditions Adverse to Quality or Safety and Exelon Procedure OP-AA-108-115, Operability Determinations, Rev. 8, to determine acceptability of the operability evaluations. The inspectors reviewed operability evaluations for the following degraded equipment issues:

- Operability evaluation OPE-08-019 and the Engineering Change Request (ECR) TM-08-01045-000 for the Code Case N-513-2 Analysis for a microbiological induced corrosion (MIC) leak were reviewed. The leak was identified on November 17, on a portion of 30 inch diameter nuclear river water (NR) piping (IR 846049). Corrective actions included non-destructive examinations to characterize the flaw. Two additional MIC leaks on the NR system were identified in early December during additional inspections required by the American Society of Mechanical Engineers (ASME) code. The inspectors verified the operability evaluation, ECR (engineering analysis), contractor calculation, and interim follow-up compensatory measures satisfied the requirements of the ASME Code Case N-513-2, pending permanent repair or replacement. Permanent repairs have been scheduled for the Fall 2009 refueling outage.

- Inservice test (IST) evaluation #157 evaluated a nuclear river water pump (NR-P-1A) test failure due to low flow (IR 755828). The assessment concluded pump performance was satisfactory and NR-P-1A remained operable. Engineers determined the test reference conditions measured pump performance on a flat portion of the pump head performance curve. Testing on this portion of the curve causes the test results to be overly sensitive to minor deviations from test reference conditions. This resulted in a test failure when actual pump performance had not declined. The inspectors determined this was a longstanding condition which

affected all three NR pumps and that resolution to this issue was slow. However, engineers correctly determined that NR-P-1A was operable and corrective actions addressed all three pumps; and

- On December 18, an auxiliary operator identified the pressure regulator for the 'A' main feed water regulating valve (FW-V-17A) controller had an air leak. Loss of control air to FW-V-17A had the potential to affect operability of the heat sink protection system (HSPS) and to induce an unplanned secondary plant transient. Station personnel promptly developed and implemented a repair plan in accordance with work order A2213491 and OP-TM-421-451, Manual Control of 'A' OTSG, Rev. 3. The 'A' train of HSPS was correctly declared inoperable during the repair. The inspectors verified appropriate compensatory measures were established to maintain HSPS functionality and minimize duration of the repair activity. The HSPS train was declared operable following system restoration from the repair.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

a. Inspection Scope

The inspectors reviewed the following modification to determine whether it was designed and/or implemented as required by Exelon documents CC-AA-102, Design Input and Configuration Change Impact Screening, Rev. 17 and CC-AA-103, Configuration Change Control, Rev. 19. The inspectors verified the modification supported plant operation as described in the Updated Final Safety Analysis Report (UFSAR) and complied with associated TS requirements. The inspectors reviewed the function of the changed component, the change description and scope, and the associated 10 CFR 50.59 screening evaluation.

- ECR 08-198, AH-D-437 Damper Blade Riveted Extension, Rev. 0, which was installed as a temporary modification to address reverse rotation of reactor building emergency ventilation fan (AH-E-1A) while in standby alignment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

The inspectors reviewed and/or observed the following post-maintenance test (PMT) activities to ensure: (1) the PMT was appropriate for the scope of the maintenance work completed; (2) the acceptance criteria were clear and demonstrated operability of the component; and (3) the PMT was performed in accordance with procedures.

- On October 24, operators partially performed procedure 1303-4.13, RB Emergency Cooling & Isolation System Analog Test, Rev. 41, following troubleshooting for an

inadvertent Engineered Safeguards and Actuation System (ESAS) 'B' train cooling actuation during a scheduled surveillance test per the same procedure (IR 835600);

- On October 31, operators performed procedure OP-TM-424-203, IST of EFW-P-1 and Valves, Rev. 4, following scheduled replacement of pump discharge relief valve EF-V-35.

- On November 5, operators successfully performed procedure 1300-3Q.5, Quarterly Inservice Testing of CM-V-1/2/3/4 Valves During Normal Plant Operation, Interim Change IC-25281, following troubleshooting and repairs of the reactor building atmosphere sample supply containment isolation valve CM-V-1. This testing verified proper valve closure and permitted restoration of the reactor building atmosphere radiation monitor, RM-A2 (IRs 840031 and 840530);

- On November 6, operators performed post maintenance testing of the 'A' emergency diesel generator in accordance with procedure 1420-EG-1, Diesel Governor Limit Setting Adjustment, Rev. 13, following adjustments of a voltage regulator micro switch (IRs 841027 and 841518);

- On November 11, operators successfully manual stroked emergency feed water flow control valve EF-V-30C per procedure OP-TM-424-212, IST Of EF-V-30s and EF-V-52s, Rev. 3, to verify that packing adjustments completed on April 29, 2008 did not impact operator ability to manually operate the valve (IRs 799962 and 836057);

- On November 18, electricians successfully performed portions of 1420-EL-1, Station Battery Charger Maintenance, Rev. 14 to verify 'E' battery charger operability following troubleshooting and replacement of several components including a phase rectifier bridge and a control printed circuit card; and

- On December 13, operators performed OP-TM-533-401, Operating DR-P-1A For Other Than Decay Heat Removal Operations, Rev. 5, to verify operability following diver inspection and troubleshooting to investigate lower than expected pump discharge pressure and flow (IR 855793). Exelon personnel could not find anything wrong with the pump, motor, or any other system component. The condition cleared and proper flow and discharge pressure were obtained.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 – 2 samples)

a. Inspection Scope

The inspectors observed and/or reviewed the following operational surveillance tests to verify adequacy of the test to demonstrate the operability of the required system or component safety function. Inspection activities included review of previous surveillance history to identify previous problems and trends, observation of pre-evolution briefings, and initiation/resolution of related IRs for selected surveillances.

- On October 25, the inspectors reviewed a previous surveillance test of the Engineered Safeguards and Actuation Systems (ESAS) completed on September 23 per procedure 1303-4.13, RB Emergency Cooling & Isolation System Analog Test, Rev. 41. This review was to evaluate Exelon's actions following troubleshooting for an inadvertent ESAS 'B' train cooling actuation during a scheduled surveillance test per the same procedure (IR 835600); and

- On November 11, procedure OP-TM-424-212, IST of EF-V-30s and EF-V-52s, Rev. 3, following troubleshooting for slow stroke timing of valve EF-V-30C. The slower stroke time was due to packing adjustments done in April 2008. The inspectors also reviewed issue reports (IRs 843678, 843674, 836057, and 799962) which evaluated the slow open stroke time for EF-V-30C. In addition, the inspectors reviewed multiple historical surveillance tests of this valve completed on April 4, April 29, July 24, and September 7.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

20S1 Access Controls (71121.01 - 16 samples)

a. Inspection Scope

The inspectors reviewed selected activities and associated documentation in the below listed areas. The evaluation of Exelon's performance in these areas was against criteria contained in 10 CFR 20, applicable TSs, and applicable Exelon procedures.

Plant Walkdowns and Radiation Work Permit (RWP) Reviews

The inspectors walked down selected radiological controlled areas and reviewed housekeeping, material conditions, posting, barricading, and access controls to radiological areas. The inspectors reviewed exposure-significant work areas to determine if radiological controls were acceptable and conducted selective radiation surveys with a survey instrument. The inspectors also walked down onsite structures and areas for radioactive waste/materials storage as well as laundry handling and respiratory facilities.

The inspectors selectively reviewed the radiological controls for work activities associated with reactor containment entry at power (RWP- 31) and for completed work on the miscellaneous waste evaporator (RWP-29). The reviews included evaluation of the adequacy of all applied radiological controls including RWPs, procedure adherence, radiological surveys, job coverage, system breach surveys, airborne radioactivity sampling and controls, and contamination controls. The inspectors reviewed and evaluated calculation of neutron exposure and noble gas exposure for entry to the Unit 1 containment at power. The reviews included barrier integrity and the application of engineering controls for potential airborne radioactivity areas and radioactive source term, and radiation levels present.

The inspectors reviewed applicable RWPs and electronic personnel dosimeter alarm set points (both integrated dose and dose rate) to verify that the set-points were commensurate with ambient/expected conditions, plant policy, and appropriate for the conditions. The inspectors reviewed and discussed TS High Radiation Areas, including High Radiation Area controls for access to the reactor building.

The inspectors discussed controls for radiation dose rate gradients to verify that Exelon had applied appropriate radiological controls including use of multiple dosimeters or repositioning of dosimetry to accurately measure radiation doses. The inspectors also reviewed and discussed inter-comparison of electronic dosimeter and thermoluminescent dosimeter results to identify anomalies and Exelon actions. The inspectors selectively reviewed personnel exposure investigations.

The inspectors reviewed and discussed internal dose assessments for 2008 to identify any apparent occupational internal doses greater than 50 millirem committed effective dose equivalent. The review also included the adequacy of evaluation of selected dose assessments, as appropriate, and included selected review of the program for evaluation of potential intakes associated with hard-to-detect radionuclides (e.g., airborne transuranics). The inspectors selectively reviewed 2008 whole body counter logs and data.

The inspectors reviewed and discussed physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within the spent fuel pool or other storage pools.

Problem Identification and Resolution

The inspectors selectively reviewed self-assessments and audits since the previous inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors evaluated the database for repetitive deficiencies or significant individual deficiencies to determine if self-assessment activities were identifying and addressing the deficiencies.

The review also included evaluation of data to determine if any problems involved performance indicator (PI) events with dose rates greater that 25 R/hr at 30 centimeters, greater than 500 R/hr at 1 meter, unintended exposures greater than 100 millirem total effective dose equivalent, 5 rem shallow dose equivalent, or 1.5 rem lens dose equivalent. The inspectors also reviewed the corrective action database for non-PI radiological incidents to determine if follow-up activities were being conducted in an effective and timely manner consistent with radiological risk.

The review also included a review of problem reports since the last inspection which involved potential radiation worker or radiation protection personnel errors to determine if there was an observable pattern traceable to a similar cause. The review included an evaluation of corrective actions. (Section 4OA2)

High Risk Significant, High Dose Rate High Radiation Area, and Very High Radiation Area Controls

The inspectors discussed procedure changes for High Radiation Area (HRA) access controls since the last inspection with selected supervisors to determine if the changes

resulted in a reduction in the effectiveness and level of worker protection. The inspectors conducted a selective review of HRA controls (e.g., adequate posting and locking of entrances). The inspectors discussed controls for HRA and Very High Radiation Areas (VHRA) also with radiation protection technicians. The inspectors reviewed the key inventory for HRA and VHRA access and conducted a key inventory. In addition, the inspectors discussed administrative controls for keys, including key inventory.

Radiation Worker/Radiation Protection Technician Performance and Radiation Protection Technician Proficiency

The inspectors evaluated radiation protection technician performance and proficiency relative to control of hazards and work activities. In addition, the inspectors reviewed problem reports to identify problems with worker or radiation protection technician performance. The inspectors selectively questioned both radiation workers and radiation protection personnel regarding on-going activities and knowledge of controls and conditions, as applicable.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls (71121.02 - 4 samples)

a. Inspection Scope

The inspectors conducted the following activities to determine if Exelon was properly implementing operational, engineering, and administrative controls to maintain personnel occupational radiation exposure ALARA. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and applicable Exelon procedures.

Inspection Planning, Radiological Work Planning

The inspectors reviewed pertinent information since the previous inspection regarding plant collective exposure history, current exposure trends, and ongoing and planned activities in order to assess current performance and exposure challenges. The inspectors evaluated the plant's current 3-year rolling average collective exposure for the period January 2005 - December 2007. The inspectors evaluated site specific trends in collective exposures (using NUREG-0713 and plant historical data). The inspectors evaluated occupational exposures received for 2008 (year-to-date) relative to 2008 ALARA goals. The inspectors also discussed proposed occupational radiation exposure estimates for 2009.

The inspectors selected work activities likely to result in the highest personnel collective exposures and selectively reviewed the planning and preparation for those work activities. The inspectors evaluated the level of detail associated with projected dose estimation. The work activities reviewed included ALARA planning for reactor containment entry at power (RWP-31) and work on the miscellaneous waste evaporator

(RWP-29). The inspectors reviewed the integration and implementation of ALARA requirements into procedures and RWP documents.

The inspectors reviewed site specific procedures associated with maintaining occupational exposure ALARA including processes used to estimate and track work activity exposures.

Job Site Inspections and ALARA Controls

The inspectors toured throughout the facility and reviewed radiological conditions, use of shielding, and informational ALARA postings. The inspectors made independent radiation measurements to validate ambient conditions. The inspectors reviewed briefing documentation for personnel entry into containment.

The inspectors reviewed exposures of individuals from selected work groups to identify significant exposure variations which may exist among workers.

Verification of Dose Estimates and Exposure Tracking

The inspectors reviewed Exelon's method for adjusting exposure estimates or re-planning work when unexpected changes in scope, radiation levels, or emergent work were encountered to determine if the adjustments were based on sound radiation protection and ALARA principles. The inspectors also reviewed the frequency of these adjustments to evaluate the original ALARA planning process.

The inspectors determined if work activity planning included consideration of the benefits of dose rate reduction activities, such as shielding provided by water filled components/piping, job scheduling, and scaffolding installation and removal activities.

Source-Term Reduction and Control

The inspectors reviewed and discussed Exelon's understanding of the Unit 1 plant source term, including knowledge of input mechanisms to reduce the source term; and the source term control strategy in place. The inspectors selectively reviewed Exelon's efforts to reduce areas of elevated dose rates (e.g., High Radiation Areas). The inspectors discussed the TMI five year source term reduction plans. The inspectors also reviewed Station ALARA Council Meeting Minutes for 2008.

Radiation Worker/Radiation Protection Technician Performance

The inspectors selectively observed radiation worker and radiation protection technician performance in the area of ALARA practices to identify acceptable performance in areas of greatest radiological risk to workers.

Declared Pregnant Workers

The inspectors selectively reviewed the declared pregnant worker program and exposure control.

Problem Identification and Resolution

The inspectors selectively reviewed problem reports in this area since the last inspection to determine if Exelon was including ALARA deficiencies and issues in its corrective action program. (See Section 4OA2.)

The review included self-assessments, audits, and corrective action reports related to the ALARA program since the last inspection to determine if the follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 - 2 Samples)

a. Inspection Scope

The inspectors selectively reviewed radiation monitoring/measurement instrumentation in the below listed areas. The review was against criteria contained in applicable TSs and station procedures.

Verification of Instrument Calibration, Operability, and Alarm Set Point Verification

The inspectors selectively reviewed calibration and operability check records for radiological survey instrumentation used to support recent Unit 1 reactor building entries at power (ASP-1-79102; RO-2-76460; RM-25, 76169; SAC-4 - 795).

The inspectors reviewed training of personnel from onsite organizations in use of SCBA. The inspectors also selectively reviewed qualification records of personnel responsible for cleaning/repair of respiratory protective equipment.

Problem Identification and Resolution

The inspectors reviewed problem reports in this area since the last inspection to determine if Exelon was including instrument deficiencies and issues in its corrective action program. The review included self-assessments, audits and corrective action reports. (Section 4OA2)

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Mitigating Systems (5 samples)

The inspectors reviewed Exelon's assessment of mitigating systems performance indicators (MSPIs). Verification included the review of selected definitions, data reporting elements, calculation methods, definition of terms, use of clarifying notes, Consolidated Data Entry MSPI Derivation Reports for unavailability and unreliability, monitored component demands, demand failure data, operator logs, maintenance rule database entries, and corrective action program documents for the period October 2007 through September 2008. Reviews were performed to determine whether associated PI data had been accurately reported to the NRC in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 5. Additional documents reviewed are listed in the Attachment. The following PIs were evaluated:

- MSPI: High Pressure Safety Injection System (Makeup)
- MSPI: Emergency Feedwater System
- MSPI: Emergency AC Power System (Emergency Diesel Generators)
- MSPI: Decay Heat Removal
- MSPI: Cooling Water Support Systems (Decay Closed, Decay River, Nuclear Closed, Nuclear River)

Cornerstone: Occupational Radiation Safety: (1 sample)

Implementation of the Occupational Exposure Control Effectiveness PI Program was reviewed. The inspectors reviewed corrective action program records for occurrences involving HRAs, VHRAs, and unplanned personnel radiation exposures for October 2007 through September 2008. The inspectors reviewed individual radiation exposure results and selectively reviewed exposure records and associated radiation work permits. The review was against the applicable criteria specified in NEI 99-02. The purpose of this review was to verify that occurrences that met NEI criteria were recognized and identified as PI occurrences.

Cornerstone: Public Radiation Safety: (1 sample)

Implementation of the Radiological Effluents Technical Specifications / Offsite Dose Calculation Manual Radiological Effluent Occurrences PI was reviewed. The inspectors reviewed corrective action program records and projected monthly and quarterly dose assessment results due to radioactive liquid and gaseous effluent releases for October 2007 through September 2008. The inspectors selectively reviewed 2007/2008 projected exposure data. The inspectors also reviewed and discussed potential abnormal releases via groundwater or effluents. The review was against the applicable criteria specified in NEI 99-02. The purpose of this review was to verify that occurrences that met NEI criteria were recognized and identified as PI occurrences.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Issue Reports and Cross-References to Problem Identification and Resolution Issues Reviewed Elsewhere

The inspectors performed a daily screening of items entered into Exelon's corrective action program. This review was accomplished by reviewing a list of daily IRs, reviewing selected IRs, attending daily screening meetings, and accessing Exelon's computerized corrective action program database.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope (1 sample)

The inspectors performed a semi-annual review of common cause issues in order to identify any unusual trends that might indicate the existence of a more significant safety issue. This review included an evaluation of repetitive issues identified via the corrective action program, self-revealing issues, and issues evaluated using programs supplemental to the formal corrective action program, such as the maintenance rule program and corrective maintenance program. The results of the trending review were compared with the results of normal baseline inspections.

b. Findings

No findings of significance were identified. Overall, corrective action program (CAP) implementation was good and continued gradual improvement was noted through the second half of 2008. Extent-of-condition reviews and corrective actions to address recent NRC identified issues (electrical relay malfunctions and degraded floor penetration fire seals) were thorough and have improved safety system reliability. Additionally, programs to monitor the effect of MIC on safety related piping systems were effectively implemented. Use of wave guide inspection methodology improved engineers' ability to identify potential areas of MIC degraded piping. Repairs and expanded inspection scope were timely.

The inspectors observed several instances where issues were not identified, investigated, and corrected in a timely manner, indicating inconsistent station performance. Examples which indicated inconsistent station performance are discussed below. Several evolution critiques or event investigations (i.e., force-on-force drill critique, fire brigade drill critiques, licensed operator requalification training) were deficient in that the evaluators did not identify certain noteworthy occurrences/performance deficiencies or didn't investigate causes. Investigations regarding a 'B' EDG room ventilation design issue and repetitive river water pump IST failures were untimely (IRs 601670, 716735, 755828). Compensatory measures to mitigate a 'B' EDG room ventilation issue were unreliable (IRs 712611, 855286, 856518). Additionally, the number of station material deficiencies warranting adverse condition monitoring plans increased to seven and could pose unnecessary operator challenges during an event. The inspectors discussed these observations with station management who initiated actions or evaluations for these issues.

.3 Annual Sample - Review of Corrective Actions Related to Credited Manual Operator Actions

a. Inspection Scope (1 sample)

The inspectors reviewed Exelon's evaluation and corrective actions associated with a group of manually operated valves credited for use in emergency operating procedures

or other tasks. However, the maintenance of these valves was not clearly defined. In some cases, the valves were nonfunctional, had not been cycled for some time, if ever, or had not been reviewed for preventive maintenance.

The inspectors reviewed IRs 717662, 718096, 719053, 724130, 731274, 7752431, and the associated actions to ensure that the full extent of the issues were identified, appropriate evaluations were performed, and appropriate corrective actions were specified and prioritized. The inspectors interviewed relevant station personnel, performed a plant walkdown, and reviewed applicable station procedures, technical evaluations, and the fire hazards analysis report.

b. Findings

No findings of significance were identified. Exelon is taking appropriate actions to identify all manual valves credited for use in emergency operating procedures and other tasks. Additionally, Exelon is evaluating their programs to determine if further preventive maintenance is warranted. Overall, the licensee initiated timely repair or cycling of manual valves used for credited manual actions. The inspectors questioned the justification of scheduling a manual valve (FW-V-3A) repair to take place five years from now. In response to this concern, engineers revised selected procedures to operate an alternate valve in place of FW-V-3A until repairs are made. Exelon is also reevaluating the timeline for repair of FW-V-3A to determine whether or not the valve can be repaired during the Fall 2009 refueling outage.

.4 Annual Sample: Review of TMI Relay Failures

a. Inspection Scope (1 sample)

The inspectors reviewed Exelon's corrective actions and extent-of-condition reviews for multiple relay failures, including an adverse trend regarding Joslyn Clark relays used in safety related applications. Specifically, in the last two years, TMI relays have experienced multiple degraded conditions such as not properly anchored coil wires on a Westinghouse X relay (IRs 735277 and 735778), oxidation buildup of the silver plated input contacts for a block loading timer relay (IR 835600), relay binding due to moisture in the magnet coil (IR 697493), premature contact oxide build-up (IRs 512773, 700761, and 789527), contact blocks not properly seated (IRs 717254, 725846, 742030, and 742080), contact misalignment, and hung-up contacts that resulted in a 10 CFR Part 21 notification (IRs 513923 and 786322). The inspectors verified that Exelon implemented multiple corrective actions to address the adverse trends including multiple procedure revisions, enhanced inspections, training for engineers, technicians and operators, and an enhanced maintenance rule approach for relays to ensure proper monitoring of maintenance effectiveness.

b. Findings

No findings of significance were identified

.5 Problem Identification & Resolution for Radiation Safety (71121.01, 71121.02 71121.03, 71151)

a. Inspection Scope

The inspectors selectively reviewed problem reports, self-assessments, and audits to determine if identified problems were entered into the corrective action program for resolution. The inspectors selectively reviewed the reports to evaluate Exelon's threshold for identifying, evaluating, and resolving problems. The review included a check of possible repetitive issues, such as worker or technician errors (Issue Reports 757895, 758312, 759534, 765190, 768345, 770026, 776875, 786518, 786754, 789472, 795603, 796820, 799443, 802040, 810384, 814323, 815041, 815506, 810385, 824690, 815506, 818967, 819085, 666192, 660687, 666504, 666506, 714196, 765975, 793210, 796427) (NOS Audit - TMI-07-06)(NOS Reports 2008).

This review was against criteria contained in 10 CFR 20, TSs, and the station procedures.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153 – 3 samples)

.1 TMI North Gate Site Access Blocked

a. Inspection Scope

On October 29, the TMI north gate access was blocked for one hour due to electronic problems which caused the railroad crossing arms to lower and close off the north gate access (IR 837709). The following week, the north gate access was similarly blocked due to proximity of a train which was stopped on the track near the north bridge access crossing. Similar occurrences in 2004 had the potential to impact the ability to properly implement site evacuation and receive offsite support. The inspectors reviewed the recent occurrences to verify whether Exelon's ability to properly implement EP-AA-1009, Radiological Emergency Plan Annex for TMI Station, Rev. 12 was adversely affected. The inspectors verified access to the plant via the south gate bridge was available. Based on reviewing the current Memorandum of Understanding between Exelon and Norfolk Southern Railway Company and discussions with TMI personnel, the inspectors determined that appropriate corrective actions remained in effect to support site access and egress during emergency events.

b. Findings

No findings of significance were identified.

.2 Positive Fitness For Duty Test Results

a. Inspection Scope

Two licensee employees tested positive for prohibited substances during this inspection period. In each case, the employee had been randomly selected for testing as part of the unannounced test program required by 10 CFR 26.24, Chemical and Alcohol Testing and procedure SY-AA-102, Exelon Nuclear Fitness For Duty Program, Rev. 11. The inspectors discussed the two issues and Exelon's response to the event with appropriate management personnel to verify the individuals' site access, work areas, and past work

activities were properly assessed. Work performance investigations were completed as required by procedure SY-AA-102-224, Work Performance Investigation, Rev. 3. The inspectors also performed additional plant walkdowns, worker interviews, and behavioral observations to assess whether the two issues were indicative of a more widespread problem.

b. Findings

No findings of significance were identified.

.3 Inadvertent Actuation of 'B' Cooling Train During ESAS Surveillance Testing

a. Inspection Scope

On October 24, operators identified an inadvertent start of the 'B' cooling train pumps during a scheduled channel 1 ESAS surveillance test (IR 835600). This train includes the 'B' decay heat closed cooling pump (DC-P-1B), the 'B' decay river cooling pump (DR-P-1B), and the 'C' nuclear river pump (NR-P-1C). The 'C' nuclear service cooling pump (NS-P-1C) is also in this train but was already running at the time of the actuation. The actuation occurred while channel 1 was already tripped via a manual switch for the surveillance test. The associated relays were found energized and all contacts were in the correct state. No equipment damage or abnormal indications were observed. Operators reported this event via telephone in accordance with 10 CFR 50.73 (a)(20)(IV)(A).

The function of ESAS is to detect a loss of coolant accident (LOCA) and upon detection to actuate equipment to mitigate the effects of a LOCA. ESAS consists of three separate channels for automatic actuation and one channel for manual actuation. Each channel provides input to both 'A' and 'B' trains. ESAS automatic logic requires 2 of 3 channels for actuation. Engineers determined the cause was oxidation buildup of the silver plated input contacts for the block loading timer relay. This oxidation buildup created higher than normal resistance on the sensing circuit of the block timer relay causing the inadvertent actuation of the 'B' ESAS train. Prior to this failure, TMI engineers and technicians thought that these contacts were exposed to higher voltages, making the use of silver-plated contacts acceptable. However, while investigating this event engineers discovered that there was a voltage drop in the relay circuit, which made these contacts susceptible to oxidation. Current industry practice recommends use of gold plated contacts in low voltage circuit applications. Corrective actions included an extent-of-condition review, and replacement of all applicable silver plated contacts with gold plated contacts. The inspectors reviewed the operators' actions during the event, reviewed the event for reportability under 10 CFR 50.72, interviewed station operators and system engineers, and reviewed the engineering evaluation and operability assessment of the ESAS components and cooling pumps. In addition, the inspectors verified that no additional notification under 10 CFR Part 21 is required since the failure is related to a design application issue and did not appear to meet the criteria for a deviation of a basic component.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following observations of security force personnel and activities to verify that the activities were consistent with Exelon security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

- Multiple tours of operations within the Central and Secondary Security Alarm Stations;
- Owner Controlled Area and Protected Area access control posts; and
- Other security officer posts including the ready room and compensatory posts.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. These observations were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Implementation of Temporary Instruction (TI) 2515/176 – Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

a. Inspection Scope

The objective of TI 2515/176, "Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing," is to gather information to assess the adequacy of nuclear power plant EDG endurance and margin testing as prescribed in plant-specific TSs. The inspectors reviewed EDG ratings, design basis event load calculations, surveillance testing requirements, and EDG vendor's specifications and gathered information in accordance with TI 2515/176.

The inspectors assessment and information gathered while completing this TI was discussed with Exelon personnel. This information was forwarded to the Office of Nuclear Reactor Regulation for further review and evaluation.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 9, 2009, the resident inspectors presented the inspection results to Mr. William Noll and other members of the TMI staff who acknowledged the findings. The regional specialist inspection results were previously presented to members of Exelon management. The inspectors asked Exelon whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Alvey	Manager, Operations Support
D. Atherholt	Manager, Regulatory Assurance
C. Baker	Manager, Chemistry
P. Bennett	Manager, Engineering
B. Carsky	Director, Site Engineering
R. Davis	Manager, Radiation Protection
D. DiVitore	Manager, Radiological Engineering
T. Dougherty	Plant Manager
D. Etheridge	Radiation Protection Technical Manager
T. Flemming	System Engineer
R. Godwin	Training
J. Heischman	Director, Maintenance
F. Kresser	System Engineer
W. Laudenbach	System Engineer
F. Linsenbach	Manager, OTSG Replacement Radiation Protection
A. Miller	Regulatory Assurance
D. Mohre	Manager, Security
P. Mussleman	Security Supervisor
D. Neff	Manager, Emergency Preparedness
W. Noll	Site Vice President
S. Queen	Director, Site Operations
T. Roberts	Radiation Protection Supervisor
D. Trostle	Operations Security Analyst
L. Weir	Manager, Nuclear Oversight Services
C. Wend	Manager, Radiation Protection
H. Yeldell	Director, Work Management

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened & Closed

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

Issue Reports

IR 833871, TMI Winter Readiness Potentially at Risk (10/21/08)
IR 837735, DH-V-29A and 4" Line Heat Trace Doesn't Test on HT-PNL-4A
IR 846452, Reinstall Insulation on Heat Traced 'B' Condensate Surge Line (11/18/08)

Section 1R04: Equipment Alignment

Procedures

1303-4.16, Emergency Power System Surveillance Procedure, Rev. 119

Issue Reports

IR 837731, EF-V-12B Suspected Leak-by (10/30/08)
IR 836057, EF-V-30C, Exceeded Open Allowable Stroke Time (10/26/08)
IR 826935, 230 KV-1091 Line Grid Disturbance (10/6/08)
IR 822989, MS-LI-281 Required Blowdown per OP-TM-424-451 (9/26/08)
IR 799962, EF-V-30C, Exceeds Open Allowable Stroke Time (7/24/08)
IR 799447, AH-E-24B Motor Has Bad Outboard Bearing (7/23/08)
IR 754109, MS-LI-821 Did Not Drain As Required by OP-TM-424-451 (3/25/08)
IR 719499, MS-LI-821, Required Blowdown per OP-TM-424-451 (1/8/08)
IR 718772, Possible Steam Trap EX-ST-3A Failure (1/7/08)
IR 718776, Possible Steam Trap EX-ST-5B Failure (1/7/08)

Drawings

302-011, Main Steam Flow Diagram, Rev. 68
302-082, Emergency Feedwater Flow Diagram, Rev. 24
302-351, Emergency Diesel Generator Services Flow Diagram, Rev. 18
302-354, Diesel Generator Jacket & Air Cooler Flow Diagram, Rev. 16
302-660, Makeup and Purification System Flow Diagram, Rev. 44

Section 1R05: Fire Protection

Procedures:

OP-AA-201-003, Fire Drill Performance, Rev. 10
OP-TM-201-501-1001, Fire Brigade Response, Rev. 1
OP-TM-AOP-001, Fire, Rev. 4
TQ-AA-127, Fire Brigade Training Program, Rev. 4

Other Documents:

Fire Drill Scenario No. TMI-1/002, TMI-1 Fuel Handling Building, Chiller Room, Electrical Motor Fire, Rev. 0
TMI-1 Fire Pre-Plan Strategies and Smoke Removal Plan for Zone FH-FZ-6, Fuel Handling Building Elevation 285' Chiller Room
2008 Second Quarter Fire Drill (2/1/C/08/#2) Critique dated May 21, 2008
2008 Fourth Quarter Fire Drill (4/1/D/08) Critique dated October 27, 2008

Section 1R011: Licensed Operator Requalification Program

Procedures

OP-TM-AOP-025, Loss of ICS Hand and Auto Power, Rev. 3
OP-TM-AOP-040, RCP #1 Seal Failure, Rev. 0

OP-TM-EOP-001, Reactor Trip, Rev. 10
OP-TM-EOP-005, OTSG Tube Leakage, Rev. 6
OP-TM-EOP-010, Abnormal Transients Rules, Guides, and Graphs, Rev. 10
EP-AA-1009, Radiological Emergency Plan Annex for TMI Station, Rev. 12

Section 2OS1, 2OS2, 2OS3: Access Controls; ALARA Planning and Controls; Radiation Monitoring Instrumentation and Protective Equipment

Procedures
6610-ADM-4250.10, Radiological Controls/Chemistry Actions When RMS Malfunctions, Rev. 14
RP-AA-203-1001, Personnel Exposure Investigations, Rev. 5
RP-AA-270, Prenatal Radiation Exposure, Rev. 4
RP-AA-300, Radiological Survey Program, Rev. 4
NF-AA-390, Spent Fuel Pool Material Control, Rev. 2
RP-AA-460-001, Controls for Very High Radiation Areas, Rev.1
RP-AA-460-002, Additional High Radiation Exposure Control, Rev. 0
RP-AA-460, Controls for High and Locked High Radiation Areas, Rev.18
RP-AA-500, Radioactive Material (RAM) Control, Rev. 14
RP-AA-500-1001, Requirements for Radioactive Materials Stored Outside, Rev. 2
RP-TM-460-1008, Locked High Radiation Area Key Control, Rev. 2

Other Documents
Check-in Self-Assessment – 704945-02
NOS Objective Evidence Reports- 2008
NOS Audit – TMI-07-06
Plant source term analysis data
Annual Bioassay Program Review - 2008
Personnel training records (SCBA use, respiratory protection equipment maintenance)
Various radiation monitor calibration and operability check data
Various radiological survey records for completed work activities including records
Various radiation work permits for completed work activities and associated ALARA plans
Various personnel whole body count data results, personnel exposure investigation logs
Various outdoor storage container inspection logs
Locked High Radiation Area Control Check logs
Radiological Controls Contamination Logs
Various 2008 Station ALARA Committee Meeting Minutes

Section 4OA1 Performance Indicator Verification

Procedures
LS-AA-2200, Mitigating System Performance Index Data Acquisition & Reporting, Rev. 2

Other Documents
TMI-2006-004, MSPI Basis Document, Rev. 1
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5
ER-AA-2008, TMI, MSPI Failure Determination Evaluation For NR-P-1C Trip (8/16/08), Rev.1
ER-AA-2008, TMI, MSPI Failure Determination Evaluation For DR-P-1B Failure (2/13/08), Rev.1

Section 4OA2: Problem Identification and Resolution

Drawings
Feedwater Flow Diagram 302-081, Rev. 53
Emergency Feedwater Flow Diagram 302-082, Rev. 24
Condensate Flow Diagram 302-101, Rev. 64
Makeup and Purification Flow Diagram, 302-660, Rev. 44

Procedures
OP-TM-421-000, Condensate and Feedwater Systems, Rev. 8
OP-TM-EOP-020, Cooldown From Outside of Control Room, Rev. 9
MA-AA-716-210, Performance Centered Maintenance, Rev. 7
OS-24, Conduct of Operations during Abnormal and Emergency Events, Rev. 17

Work Orders
2032572
2082760

Condition Reports
591795
717662
718096
719053
724130
731274
752431
854018

Licensee Documents
TMI Component Classification for the Emergency Feedwater System and the Makeup and Purification System
TMI List of EOP operated valves to establish correct PMs
TMI Fire Hazards Analysis Report, Rev. 23
PC 12032
PC 12595
PC 24513
ECR 06-00617
ECR 07-00702
A/R A2173521
A/R A2130826

Section 4OA5: Implementation of Temporary Instruction (TI) 2515/176 – Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

Issue Reports
IR 00114597
IR 00241789
IR 00261007
IR 00439289
IR 00787308
IR 00834772
IR 00835330

Surveillance Procedures
1301-8.2, Diesel Generator Major Inspection (Mechanical), Rev. 84
1301-8.2A, Diesel Generator Inspection (Electrical), Rev. 16
1301-8.2B, Diesel Generator Inspection (Instrumentation), Rev. 22
1303-4.16, Emergency Power System, Rev. 119

Completed Surveillance Procedures
1303-4.16, Emergency Power System, Rev.119 performed on 8/14/2008
1303-4.16, Emergency Power System, Rev.119 performed on 8/08/2008
1303-4.16, Emergency Power System, Rev.118 performed on 7/09/2008
1303-4.16, Emergency Power System, Rev.118 performed on 7/03/2008
1303-4.16, Emergency Power System, Rev.118 performed on 6/15/2008
1303-4.16, Emergency Power System, Rev.118 performed on 6/05/2008

Maintenance Procedures
1405-3.2, Diesel Engine Maintenance, Rev. 40

Design Analysis
C-1101-212-5360-043, Load of the ECCS Pumps during LBLOCA, Rev. 3
C-1101-741-E420, TMI Emergency Diesel Generator Voltage and Frequency Response, Rev. 9
C-1101-741-E510-005, Loading Summary of Emergency Diesel Generators and Engineered Safeguards Buses, Rev. 5
C-1101-862-5360-002, TMI Emergency Diesel Generator Fuel Requirement, Rev. 4

Drawings
E-206-011, Main One Line and Relay Diagram, Rev. 51
E-206-022, One Line and Relay Diagram, Rev. 21
302-351, Emergency Diesel Generator Services Flow Diagram, Rev. 18
302-353, Diesel Generator Services Flow Diagram, Rev. 11
302-354, Diesel Generator Jacket and Air Cooler, Rev. 16

Other Documents
VM-TM-0191, TMI-1 Vendor Manual, MFR: Fairbanks Morse (Colt Industries) Emergency Diesel Generators
TP 622/1, Diesel Generator Load Test, Rev. 0
Section 8.0, Electrical Power Safety Evaluation Docket No. 50-289
1107-3, Diesel Generator Operating Log, Rev. 62 for 5/20/94 test
1303-4.16, Diesel Generator Operating Log, Rev. 59 for 12/12/91 test
PCM MA-AA-716-210-1001
Response to IEB 79-23, Potential Failure or Emergency Diesel Generator Field Exciter Transformer
TQ-TM-104-701-C001
OP-TM-642-231, ES Train A Emergency Sequence and Power Transfer Test, Rev. 1
OP-TM-642-232, ES Train B Emergency Sequence and Power Transfer Test, Rev. 1
OP-TM-861-901, Diesel Generator EG-Y-1A Emergency Operations, Rev. 10
OP-TM-861-902, Diesel Generator EG-Y-1B Emergency Operations, Rev. 10
1405-3.2, Diesel Engine Maintenance, Rev. 40 for 5/1994 test
UFSAR, Chapter 8 Electrical Systems, Rev. 18
TMI Technical Specifications

LIST OF ACRONYMS

ADAMS	Agencywide Documents and Management System
ALARA	As Low As is Reasonably Achievable
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
ESAS	Engineered Safeguards and Actuation System
HRA	High Radiation Area
HSPS	Heat Sink Protection System
IR	Issue Report
IST	Inservice Test
LOCA	Loss of Coolant Accident
MIC	Microbiological Induced Corrosion
MR	Maintenance Rule
MSPT	Mitigating Systems Performance Indicators
NEI	Nuclear Energy Institute
NR	Nuclear Riverwater
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
ODCM	Offsite Dose Calculation Manual
OTSG	Once Through Steam Generator
PADEP	Pennsylvania Department of Environmental Protection
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Test
RETS	Radiological Effluents Technical Specification
RWP	Radiation Work Permit
SCBA	Self Contained Breathing Apparatus
SSC	Structures, Systems, and Components
TI	Temporary Instruction
TMI	Three Mile Island, Unit 1
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
VHRA	Very High Radiation Area