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

March 1, 2011

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Rd.
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000289/2011007

Dear Mr. Pacilio:

On February 11, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at Three Mile Island, Unit 1. The enclosed inspection report documents the inspection results, which were discussed on February 11, 2011, with Mr. Richard Libra 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. The inspectors also reviewed mitigation strategies for addressing large fires and explosions.

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

In accordance with Title 10 of the Code of Federal Regulations Part 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm/adams.html (The Public Electronic Reading Room).

Sincerely,

John F. Rogge

John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

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

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Sincerely,

/RA/

John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

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

SUNSI Review Complete: JFR (Reviewer's Initials)
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NAME	JMLilliendahl/JML		JFRogge/JFR							
DATE	2/28/11		3/01/11							

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Enclosure: Inspection Report No. 05000289/2011007

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D. Bearde, DRS
RidsNrrPMThreeMileIsland Resource
RidsNrrDorlLpl1-2Resource
ROPReportsResource@nrc.gov

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.:	50-289
License No.:	DPR-50
Report No.:	05000289/2011007
Licensee:	Exelon Generation Company, LLC
Facility:	Three Mile Island Station, Unit 1
Location:	Middletown, PA 17057
Dates:	January 24, 2011 – February 11, 2011
Inspectors:	J. Lilliendahl, Reactor Inspector, DRS (Team Leader) W. Schmidt, Senior Reactor Analyst, DRS R. Fuhrmeister, Senior Reactor Inspector, DRS K. Young, Senior Reactor Inspector, DRS J. Rady, Reactor Inspector, DRS
Approved by:	John F. Rogge, Chief Engineering Branch 3 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000289/2011007; 01/24/2011 – 02/11/2011; Exelon Generation Company, LLC; Three Mile Island, Unit 1; Triennial Fire Protection Team Inspection.

The report covered a two-week triennial fire protection team inspection by specialist inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

No findings were identified.

REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection." The objective of the inspection was to assess whether Exelon has implemented an adequate fire protection program and that post-fire safe shutdown capabilities have been established and are being properly maintained at the Three Mile Island (TMI) Station, Unit 1. The following fire areas (FAs) and fire zones (FZs) were selected for detailed review based on risk insights from the TMI Individual Plant Examination (IPE)/Individual Plant Examination of External Events (IPEEE):

- AB-FZ-5, Auxiliary Building General Area 281 Foot Elevation;
- CB-FA-3D, 1S Switchgear;
- CB-FA-3D, Relay Room; and
- IB-FZ-3, Motor Driven Emergency Feedwater Pump Area.

Inspection of these areas/zones fulfills the inspection procedure requirement to inspect a minimum of three samples.

The inspection team evaluated the licensee's fire protection program (FPP) against applicable requirements which included plant Technical Specifications, Operating License Conditions 2.C.4 and 2.C.17, NRC Safety Evaluations, 10 CFR 50.48, 10 CFR 50, Appendix R, and Branch Technical Position (BTP) Chemical Engineering Branch (CMEB) 9.5-1. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.9, the fire hazards analysis report (FHAR), and the post-fire safe shutdown analyses.

The team also evaluated two licensee mitigating strategies for addressing large fires and explosions as required by Operating License Conditions 2.C.17. Inspection of these strategies fulfills the inspection procedure requirement to inspect a minimum of one sample.

Specific documents reviewed by the team are listed in the attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05T)

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the FHAR, safe shutdown analyses and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected.

The team ensured that applicable separation requirements of Section III.G of 10 CFR 50, Appendix R and the licensee's design and licensing bases were maintained for the credited safe shutdown equipment and their supporting power, control and instrumentation cables. This review included an assessment of the adequacy of the selected systems for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and associated support system functions.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material conditions and the adequacy of design of fire area boundaries (including walls, ceilings, floors, fire doors and fire dampers), electrical raceway fire barriers, and equipment fire barriers to ensure they were appropriate for the fire hazards in the area.

The team reviewed installation, repair and qualification records for a sample of openings and penetration seals to ensure the fill material was of the appropriate fire rating and that the installation met the engineering design. The team reviewed similar records for the fire protection wraps to ensure the material was of an appropriate fire rating and that the installation met the engineering design. The team also reviewed completed surveillance and maintenance procedures for selected passive fire protection features to verify that maintenance and inspection activities are adequate.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected plant fire areas. This included verification that the manual and automatic detection and suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association (NFPA) code of record, or as NRC approved exemptions, and that each suppression system would control or extinguish fires associated with the hazards in the selected areas. A review of the design capabilities of the suppression agent delivery systems were verified to meet the code requirements for the hazards involved. The team also performed a walkdown of accessible portions of the detection and suppression systems in the selected areas as well as a walkdown of major system support equipment in other areas (e.g. fire pumps and carbon dioxide storage tanks and supply system) to assess the material condition and the operational lineup and availability of the systems and components.

The team reviewed electric and diesel fire pump flow and pressure tests to ensure that the pumps were meeting their design requirements. The team also reviewed the fire main loop flow tests to ensure that the flow distribution circuits were able to meet the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also compared pre-fire plans for the selected fire areas with as-built plant conditions and fire response procedures to verify fire-fighting pre-fire plans are consistent with the fire protection features and potential fire conditions described in the FPP. In addition, the team inspected the fire brigade equipment (including smoke removal equipment) to determine operational readiness for fire fighting.

b. Findings

No findings were identified.

.04 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected fire areas would not indirectly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains;
- A fire in one of the selected fire areas (or the inadvertent actuation or rupture of a fire suppression system) would not indirectly cause damage to all redundant trains (e.g. sprinkler caused flooding of other than the locally affected train); and,
- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Shutdown Capability – Normal and Alternative

a. Inspection Scope

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR and other supporting documents for the selected fire areas to verify that the licensee had properly identified the systems and components necessary to achieve and maintain safe shutdown conditions.

The team assessed the adequacy of the selected systems and components for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and support system functions. This review included verification that alternative post-fire shutdown could be performed both with and without the availability of offsite power. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the safe shutdown and fire hazards analyses. The team verified that the systems and components credited for use during shutdown would remain free from fire damage.

The team verified that the training program for licensed and non-licensed operators included alternative shutdown capability. The team also verified that personnel required for safe shutdown using the normal or alternative shutdown systems and procedures are trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits.

Specific procedures reviewed for normal and alternative post-fire shutdown included the following:

- OP-TM-EOP-020, Cooldown From Outside of Control Room;
- OP-TM-AOP-001-C2B, Fire in 1S 480V Switchgear Room;
- OP-TM-AOP-001-A05, Fire in AB 281' General Area; and
- OP-TM-AOP-001, Fire.

The team reviewed manual actions to ensure that they had been properly reviewed and approved and that the actions could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each fire area. The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to ensure the tests are adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

No findings were identified.

.06 Circuit Analysis

a. Inspection Scope

The team verified that the licensee performed a post-fire safe shutdown analysis for the selected fire areas and the analysis appropriately identified the structures, systems, and components important to achieving and maintaining safe shutdown.

Additionally, the team verified that the licensee's analysis ensured that necessary electrical circuits were properly protected and that circuits that could adversely impact safe shutdown due to hot shorts or shorts to ground were identified, evaluated, and dispositioned to ensure spurious actuations would not prevent safe shutdown.

The team's review considered fire and cable attributes, cable routing, potential undesirable consequences and common power supply/bus concerns. Specific items included the credibility of the fire threat, cable insulation attributes, cable failure modes, and actuations resulting in flow diversion or loss of coolant events.

The team also reviewed cable raceway drawings and cable routing matrices for a sample of components required for post-fire safe shutdown to verify that cables were routed as described in the safe-shutdown analysis. The team also reviewed equipment important to safe shutdown, but not part of the success path, to verify that the licensee had taken appropriate actions in accordance with the design and licensing basis and NRC Regulatory Guide 1.189.

Cable failure modes were reviewed for the following components:

- EF-P-2A(B), Emergency Feedwater Motor Driven Pumps;
- DH-P-1A(B), Decay Heat Removal Pumps;
- DH-V-6A(B), Decay Heat Sump Isolation Valves;
- MU-V-16C(D), RCS Make-Up Valves;
- PI-949, RCS Pressure Wide Range Indicator;
- PI-963, RCS Pressure Wide Range Indicator; and
- RC3A-PI, RCS Pressure Wide Range Indicator.

The team reviewed a sample of circuit breaker coordination studies to ensure equipment needed to conduct post-fire safe shutdown activities would not be impacted due to a lack of coordination that could result in a common power supply or common bus concern.

The team verified that the transfer of control from the control room to the alternative shutdown location(s) would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis, and associated documents to verify an adequate method of communications would be available to plant operators following a fire.

During this review the team considered the effects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade and for plant operators. The team also verified that communications equipment such as repeaters and transmitters would not be affected by a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of eight-hour emergency lights throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation or instrumentation monitoring for post-fire safe shutdown. The team also verified that the battery power supplies were rated for at least an eight-hour capacity. Preventive maintenance procedures, the vendor manual, completed surveillance tests, and battery replacement practices were also reviewed to verify that the emergency lighting was being maintained consistent with the manufacturer's recommendations and in a manner that would ensure reliable operation.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The team verified that the licensee had dedicated repair procedures, equipment, and materials to accomplish repairs of components required for cold shutdown which might be damaged by the fire to ensure cold shutdown could be achieved within the time frames specified in their design and licensing bases. The team verified that the repair equipment, components, tools, and materials (e.g. pre-cut cables with prepared attachment lugs) were available and accessible on site.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g. detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

The team reviewed compensatory measures in the form of manual actions for 10 CFR Part 50 Appendix R, Section III.G.2 areas to verify that there is reasonable assurance that manual actions can be accomplished. Specific attributes reviewed include diagnostic instrumentation, environmental consideration, staffing, communications, equipment availability, training, procedures, and verification and validation.

b. Findings

No findings were identified.

.11 Fire Protection Program Changes

a. Inspection Scope

The team reviewed recent changes to the approved fire protection program to verify that the changes did not constitute an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed the licensee's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHAR. A sample of hot work and transient combustible control permits were also reviewed. The team performed plant walkdowns to verify that transient combustibles and ignition sources were being implemented in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Large Fires and Explosions Mitigation Strategies

a. Inspection Scope

The team reviewed the licensee's preparedness to handle large fire or explosions by reviewing two mitigating strategies to verify they continue to meet operating license condition 2.C.17 by determining that:

- Procedures are being maintained and adequate;
- Equipment is properly staged and is being maintained and tested; and,
- Station personnel are knowledgeable and can implement the procedures.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that the licensee was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that the licensee had taken or planned appropriate corrective actions.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented their preliminary inspection results to Mr. Richard Libra, Plant Manager, and other members of the site staff at an exit meeting on February 11, 2011. No proprietary information was included in this inspection report.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Libra, Plant Manager
P. Alaimo, Reactor Operator
T. Alvey, Operations Service Manager
G. Ciraula, Fire Protection Engineer
J. Dullinger, Senior Operations Service Manager
R. Ezzo, Senior Staff Engineer
M. Fitzwater, Licensing Engineer
W. McSorley, Design Engineer
R. Meyers, Site Fire Marshall
T. O'Connor, Fire Protection Contractor
C. Pragman, Exelon Corporate Fire Protection
J. Schork, Senior Operations Training Instructor
T. Snyder, Reactor Operator
M. Taylor, Exelon Corporate Fire Protection
M. Torborg, Steam Generator Program Engineer
J. Troiano, Warehouse Manager

NRC

J. Rogge, Chief, Engineering Branch 3, Division of Reactor Safety
D. Kern, Senior Resident Inspector, Three Mile Island
J. Heinly, Resident Inspector, Three Mile Island

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing Documents

990-1745, TMI-1 Fire Hazards Analysis Report, Rev. 24
Exemption TMI, Unit 1, TMI Nuclear Generating Station, 10 CFR Part 50 Appendix R Exemption Request, Dated 7/11/97
Exemption TMI, Unit 1, Request for Exemption from Title 10 of the Code of Federal Regulations Part 50, Appendix R Requirement, Dated 3/30/09
Exemption Request, Request for Exemption from 10 CFR 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability," Dated 2/4/08
Exemption Request, Response to Request for Additional Information from 10 CFR 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability," Dated 1/28/09
UFSAR Section 9.9, Fire Protection Program, Rev. 20
SER, Fire Protection for TMI-1, Dated 12/30/86

Design Changes

08-01051, Revise FHAR Control Room Evaluation and Loss of Seal Cooling Strategy, Rev. 0
09-00196, FHAR Changes for Manual Action Submittals, Rev. 0
10-00194, Add ELU for 1D 4160, Rev. 1
ECR TM 08-00145, Replacement of Atmospheric Steam Dump Valves MS-V-4A/B, Rev. 1
FPE No. 113202341, Permanent Installation of Lead Shielding on DH System, Rev. 0
Temporary Shielding Package 99-1-019, Rev. 0
Temporary Shielding Package 99-1-020, Rev. 0
C-1101-211-E610-066, Makeup Tank Level and Pressure Limits, Rev. 9

Calculations/Engineering Evaluation Reports

86-9101191-001, TMI-1 Appendix R Transient Evaluation Summary, Dated 6/8/09
C1101-732-5350-005, Sh. 7, TMI-1 Emergency Feedwater Pumps – 450 Hp Time Current Characteristic Curve, EF-P-2A(2B), Dated 12/28/95
C1101-732-5350-005, Sh. 11, TMI-1 Decay Heat Removal Pumps – 350 Hp Time Current Characteristic Curve, DH-P-1A(1B), Dated 12/28/95
C1101-732-5350-005, Sh. 15, TMI-1 4.16KV Switchgear 1D and 1E Time Current Characteristic Curves, Dated 12/28/95
C1101-733-5350-003, Sh. 27, TMI-1 Class 1E 480V Switchgear Time Current Characteristic Curve, Dated 2/17/87
Configuration Change - #T1-CCD-417109-001, Rev. 3
ECD C306691, TMI-1 Aux Building Fire Boundary Re-Classification, Dated 5/13/98
Fire Barrier Penetration Seal Evaluation Report, Rev. 0
Fire Test Configuration for BISCO Three Hour Fire Seal, Report No. 3001-03-B, Rev. 0
Metal Clad Fire Wall Penetration Barrier Fire Testing, BISCO Test No. 748-14, Rev. 0
PC 26455, Procedure Changes Documenting OMA Timelines, Dated 6/9/10
PC 26717, Procedure Changes to OP-TM-AOP-001, OP-TM-AOP-0011, OP-TM-EOP-020, OP-TM-AOP-0201, Documenting OMA Timelines, Dated 2/6/09

Technical Evaluation 352410, Loss of RCP Seal Cooling Impact on TMI FHAR Assumptions, Dated 10/2/09
Technical Evaluation 751354-11, RCP Trip Manual Action Time Basis, Dated 5/8/08
Technical Evaluation 817422, Time between Fire Detection and Cable Failure in CB-FA-3d and CB-FA-4b, Dated 7/2/09
TM 07-00702, Add CO Values to the FHAR and Change MU Valves Action Times, Dated 3/7/08
TM 09-00034, Technical Evaluation for Time to Isolate Seal Return in Event of Fire, Dated 2/3/09
TM 09-00527, Appendix R Control Room Evacuation Transient Analysis, Dated 8/12/09

Procedures

1104-45R, Fire Protection System Operations Surveillance, Rev. 0
1301-15.1, Appendix "R" Cold Shutdown Repair Material Inventory, Rev. 13, 13A, and 14
1303-12.24, Raceway Fire Barrier Inspection, Rev. 17
1303-13.4, Remote Shutdown System Functional Test, Rev. 8
1420-Y-30, Repair of Appendix "R" Cold Shutdown and Remote Shutdown Sys. Circuits, Rev. 15
1430-Y-41, Foxboro Multinest Power Supply Maintenance, Rev. 4
AP 1038, Administrative Controls, Fire Protection Program, Rev. 76
CC-AA-209, Fire Protection Program Configuration Change Review, Rev. 1
CC-AA-211-1001, Generic Letter 86-10 Evaluations, Rev. 0
OP-AA-201-005, Fire Brigade Qualification, Rev. 7
OP-TM-102-106, Control of Time Critical Operator Actions at TMI, Rev. 0
TQ-AA-173, Emergency Services Training, Rev. 0
WC-TM-430, Surveillance Testing Program, Rev. 0

Operations Procedures

OP-TM-226-901, Loss of all RCP Seal Cooling, Rev. 4
OP-TM-424-901, Emergency Feedwater, Rev. 1
OP-TM-AOP-001, Fire, Rev. 8
OP-TM-AOP-001-A05, Fire in AB 281' General, Rev. 3
OP-TM-AOP-001-C2B, Fire in 1S 480V Switchgear Room, Rev. 6
OP-TM-AOP-0011, Fire in AB 281' General Area Basis Document, Rev. 5
OP-TM-AOP-0011, Fire in 480V Switchgear Room Basis Document, Rev. 8
OP-TM-EOP-020, Cooldown From Outside of Control Room, Rev. 12
OP-TM-EOP-0201, Cooldown From Outside of Control Room Basis Document, Rev. 6
OP-TM-AOP-041, Loss of Seal Injection, Rev. 5
OP-TM-AOP-0411, Loss of Seal Injection Basis Document, Rev. 5
OS-24, Conduct of Operations During Abnormal and Emergency Events, Rev. 18

Completed Tests/Surveillances

ST 1301-12.2, Hose Station Inspection, Completed 8/18/10
ST 1301-12.3, Fire System Hose Station Inspection and Functional Test, Completed 8/19/10
ST 1302-6.6A, Calibration of Channel A RCS Temp/Press, Tsat Monitor, ATWS, and DSS, Completed 1/19/10

ST 1303-12.8A, Fire Protection Instrumentation Functional Test (Control Building Elevation 355'), Completed 7/12/10
ST 1303-12.8B, Fire Protection Instrumentation Functional Test (Control Building Elevation 338'), Completed 11/22/10
ST 1303-12.8C, Fire Protection Instrumentation Functional Test (Control Building Elevation 322'), Completed 7/12/10
ST 1302-12.11, Halon System Tests, Completed 11/13/10
ST 1303-4.16, Emergency Power System, Rev. 121, Completed 9/10/09
ST 1303-12.23, Fire Damper Inspection, Rev. 28
ST 1303-12.24, Raceway Fire Barrier Inspection, Completed 1/20/10
ST 1303-13.4, Remote Shutdown System Functional Test, Completed 9/9/09, 10/28/09, 11/3/09, 11/21/09, and 11/27/09
ST 1303-13.4, Remote Shutdown System Functional Test, Completed 12/18/09 and 12/26/09
ST 1303-13.4, Remote Shutdown System Functional Test, Rev. 7
ST 1303-14.2, Inspection of Fire Brigade Vehicle Equipment, Rev. 10
ST 3303-A2, Fire System Main Header Flush and Loop Test, Completed 6/28/10
ST 3303-A2, Fire System Main Header Flush and Loop Test, Completed 6/28/10
ST 3303-A2, Fire System Main Header Flush and Loop Test, Completed 9/13/09
ST 3303-A3, Fire Pump Capacity Testing, Completed 6/26/10 and 7/30/09
ST 3391-SA1, Fire Hydrant Inspection, Rev. 27

Quality Assurance Audits and Self Assessments

NOSA-TMI-08-09 (AR 766950) Three Mile Island, Rev. 0
NOSA-TMI-10-10 (AR 1101376) Three Mile Island, Rev. 0
1081194, Inspection Preparatory Self-Assessment, Rev. 0

System Health Reports

762-Emergency Lighting System, 2nd Quarter 2010
762-Emergency Lighting System, 4th Quarter 2010

Drawings and Wiring Diagrams

1E-120-01-001, Site Plan Units No. 1 & 2, Above Ground Facilities, Rev. 74
1E-156-02-003, General Arrangement Intermediate Building Floor Plan EL 332', Rev. 11
1-FHA-025, Fire Area Layout Aux Building and Air Intake Tunnel Plans and Sections, Rev. 7
1-FHA-026, Fire Area Layout, Auxiliary and Fuel Handling Buildings, Rev. 18
1-FHA-027, Fire Area Layout Auxiliary and Fuel Handling Buildings Plan Floor 305', Rev. 10
1-FHA-035, Fire Area Layout, Control Tower 322', Rev. 13
1-FHA-037, Fire Area Layout, Control Tower Section A-A, Rev. 6
1-FHA-038, Fire Area Layout, Control Tower Section B-B, Rev. 6
1-FHA-039, Fire Area Layout, Intermediate Building 295', Rev. 7
1-FHA-040, Fire Area Layout, Intermediate Building 305', Rev. 4
1-FHA-043, Fire Area Layout, Intermediate Building Sections, Rev. 4
1-FHA-046, Fire Area Layout, Intake Screen and Pump House, Rev. 8
201-401, Electrical-Arrangement Remote Shutdown Panel A Front Panel Layout, Rev. 1
201-402, Electrical-Arrangement Remote Shutdown Panel B Front Panel Layout, Rev. 1

201-404, Electrical-Arrangement Auxiliary Remote Shutdown Panel B Front Panel Layout, Rev. 0
201-411, TMI-1 Remote Shutdown Transfer Switch Panel B, Rev. 0
208-203, Electrical Elementary Diagram 4160V Switchgear (ES) (1D3) Motor Driven Emergency Feedwater Pump EF-P2A, Rev. 15
208-205, Electrical Elementary Diagram 4160V Switchgear (ES) (1E5) Motor Driven Emergency Feed Water Pump EF-P-2B, Rev. 17
208-211, Electrical Elementary Diagram 4160V Switchgear (ES) (1D6) Decay Heat Removal Pump DH-P-1A, Rev. 3
208-212, Electrical Elementary Diagram 4160V Switchgear (ES) (1E7) Decay Heat Removal Pump DH-P-1B, Rev. 5
208-434, Sh. 1, Electrical Elementary Diagram 480V Control Center 1A-ESV Unit 3B RB Sump to DH Pump A Valve DH-V-6A, Rev. 8
208-434, Sh. 2, Electrical Elementary Diagram 480V Control Center 1B-ESV Unit 3B, RB Sump to DH Pump B Valve DH-V-6B, Rev. 6
208-442, Sh. 3, Electrical Elementary Diagram 480V Control Center 1B-ESV Unit 4B Emergency Makeup Valve MU-V-16C, Rev. 6
208-442, Sh. 4, Electrical Elementary Diagram 480V Control Center 1B-ESV Unit 4C Emergency Makeup Valve MU-V-16D, Rev. 0
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208-757, TMI-1 Electrical Elementary Diagram Remote Shutdown Trnsfr Switch Panel A, Rev. 1
208-758, TMI-1 Electrical Elementary Diagram Remote Shutdown Trnsfr Switch Panel C, Rev. 3
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210-483, Electrical Arrangement and Wiring Diagram Remote Shutdown Panel B Rear and Side Panel, Rev. 3
224-336, Sh. 5, Electrical Instrumentation Channel A Containment Vessel Penetration No. 204E, Rev. 16
224-336, Sh. 7, Electrical Instrumentation Channel B Containment Vessel Penetration No. 205E, Rev. 19
CB2B-7, SWGR Room East Wall, Rev. 4
CD-13-1, Sh. 1, TMI-1 Reactor Coolant System Saturation Margin Monitor Channel A, Rev. 9
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D-215-183, TMI-1 Electrical Conduit and Cable Layout Auxiliary Building Elev. 305' Auxiliary Plan, Rev. 18
D8032703, Auxiliary Control System Detailed Schematic Reactor Coolant Part 3, Rev. X
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E-206-011, TMI-1 Electrical Main One Line and Relay Diagram, Rev. 51
E-214-024, TMI-1 Electrical Cable Trays Reactor Aux Building Below Elev. 329', Rev. 13

Piping and Instrumentation Diagrams

302-011, Main Steam Flow Diagram, Rev. 72
302-031, Composite Startup Flow Diagram, Rev. 9
302-081, Feedwater Flow Diagram, Rev. 54

302-082, Emergency Feedwater Flow Diagram, Rev. 24
302-101, Condensate, Rev. 64
302-131, Condenser, Rev. 45
302-202, Nuclear Services River Water, Rev. 77
302-231, Sh. 1, Fire Services Water, Rev 107

302-231, Sh. 2, Fire Services Water, Rev. 16
302-231, Sh. 3, Fire Services Water, Rev. 20
302-231, Sh. 4, Fire Services Water, Rev. 8
302-231, Sh. 5, Fire Services Water, Rev. 1
302-610, Closed Cycle Cooling Water, Rev. 78
302-620, Intermediate Cooling Flow Diagram, Rev. 50
302-650, Reactor Coolant System Flow Diagram, Rev. 59
302-660, Make-up and Purification Flow Diagram, Rev. 44
302-661, Make-up and Purification Flow Diagram, Rev. 59
IE-200-21-1000, Reactor Plant Systems Flow Diagram, Rev. 1

Vendor Manuals

MIN-1, Electroswitch Miniature Instrument and Control Switch for Power Industry Applications, Dated 4/1/91

Pre-Fire Plans

IB-FZ-3, Rev. 2
CB-FA-2B, Rev. 2
CB-FA-3D, Rev. 2
AB-FZ-5, Rev. 1

Fire Brigade Training

FBP01, Introduction/Orientation, Rev. 6
FBP02, Protective Clothing, Rev. 5
FBP04, Fire Behavior and Essentials, Rev. 10
FBP05, Ventilation, Rev. 6
FBP07, Hose Streams, Appliances, Tools, Rev. 6
FBP09, Extinguishers and Agents, Rev. 8
FBP11, Tactics and Strategy, Rev. 8
FBP13, Plant Communications, Rev. 3
FBP14, Building Construction/Awareness, Rev. 6
FBP15, Pre-Fire Plans, Rev. 6
FBP17, Foam/Multi-Agent Operations, Rev. 2
IMS-01, Incident Management System, Rev. 2

Operator Safe Shutdown Training

N-TM-TQ-104-E20, Cooldown From Outside Control Room, Rev. 2
TQ-TM-104-E20-S001, Cooldown Outside Control Room, Rev. 4
TQ-TM-106-A01-S002, Fire in ESAS Room, Rev. 1
Miscellaneous Job Performance Measure Scenarios, Reviewed on 1/27/11

Miscellaneous Documents

SP-1101-11-245, Specification for Procurement of Replacement 4KV Breakers, Rev. 2

GAI Report – Cable and Cable Tray Routing Data
2544244, Certificate of Calibration for Fluke Digital Multimeter, Dated 10/24/03
10293143, Certificate of Calibration for Programma Vidar, Dated 1/15/04
10297315, Certificate of Calibration for Aristo Stopwatch, Dated 2/17/04
10627797, Certificate of Calibration for Programma Micro Ohmmeter, Dated 1/7/11
10632409, Certificate of Calibration for Programma Vidar, Dated 2/7/11
E-Light Condition Monitoring Failure Report, Dated 2/10/11
Operations Shift Roster, Dated 1/1/11 through 1/4/11

Issue Reports

0812129	1059949	1129297	1168103*
0813701	1059974	1157084	1168105*
0815641	1060000	1157579	1170412*
0815877	1060006	1157593	1171108*
0869855	1060048	1157664	1173363*
0985314	1060051	1157706	1173432*
1059605	1060065	1166262*	1173456*
1059887	1060070	1167489*	1173654*
1059893	1060077	1167550*	1173657*
1059933	1119408	1167613*	1173662*

* NRC identified during this inspection.

Work Orders

A2186408	C2005482	R2112272	R2126681
A2214541	C2005483	R2112274	R2132441
A2214735	C2005484	R2112276	R2165284
A2219847	R1835635	R2112433	R2173076
A2227513	R2072878	R2112434	
C2005480	R2072880	R2112488	
C2005481	R2102398	R2113256	

Large Fires and Explosions Mitigation Strategies Documents

SP 3303-A3, Rev. 16
ER-TM-TSC-0025, Rev. 2
OP-AA-201-010-1001, Rev. 0
OP-TM-220-911, Rev. 4
OP-TM-424-921, Rev. 3
OP-TM-811-911, Rev. 1
OP-TM-AOP-009, Rev. 4

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
BTP	Branch Technical Position
CFR	Code of Federal Regulations
CMEB	Chemical Engineering Branch
DRS	Division of Reactor Safety
DRP	Division of Reactor Projects
FA	Fire Area
FHAR	Fire Hazards Analysis Report
FPP	Fire Protection Program
FW	Feedwater
FZ	Fire Zone
IP	Inspection Procedure
IPE	Individual Plant Examination
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory commission
PAR	Publicly Available Records
P&ID	Piping and Instrumentation Drawing
TMI	Three Mile Island
UFSAR	Updated Final Safety Analysis Report