



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

August 5, 2008

Mr. Charles G. Pardee
Chief Nuclear Officer (CNO) and Senior Vice President
Exelon Generation Company, LLC
Chief Nuclear Officer (CNO)
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348

**SUBJECT: THREE MILE ISLAND STATION, UNIT 1 – NRC INTEGRATED
INSPECTION REPORT 5000289/2008003**

Dear Mr. Pardee:

On June 30, 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 July 21, 2008, 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. However, a licensee identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance of the violation and because it is entered into your corrective action program, the NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-001; and the NRC Resident Inspector at Three Mile Island

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

Sincerely,

/RA by David Kern Acting for/

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

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

Enclosure: Inspection Report 05000289/2008003
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION
REGION 1

Docket No: 05000289

License No: DPR-50

Report No: 05000289/2008003

Licensee: AmerGen Energy Company, LLC (AmerGen)

Facility: Three Mile Island Station, Unit 1

Location: PO Box 480
Middletown, PA 17057

Dates: April 1 – June 30, 2008

Inspectors: David M. Kern, Senior Resident Inspector
Javier M. Brand, Resident Inspector
Jeffrey Bream, Reactor Engineer
Brian Haagensen, NRC License Examiner

Approved by: Ronald R. Bellamy, Ph.D., Chief
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SUMMARY OF FINDINGS

IR 05000289/2008003; 4/1/08-6/30/08; AmerGen Energy Company, LLC; Three Mile Island, Unit 1; Flood Protection Measures.

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

Violations of very low safety significance, that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Three Mile Island, Unit 1 (TMI) began the period at 100 percent rated thermal power. On May 30, operators briefly reduced power to 89 percent while performing periodic turbine valve stroke testing. Upon completing turbine valve testing, operators restored the plant to 100 percent rated thermal power.

1. REACTOR SAFETY**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**1R01 Adverse Weather Protection (71111.01).1 Power Grid Reliability: Readiness of Offsite and Alternate AC Power Systems (1 sample)a. Inspection Scope

The inspectors verified plant features and procedures for continued operation and reliability of the offsite power grid and onsite alternate AC power systems during adverse weather (i.e. thunderstorms and hot weather extremes). Reviews included station procedures affecting operation of onsite electrical generation sources and communication protocols between control room operators and the transmission system operator to verify appropriate information is exchanged when issues arise that could impact the offsite power system. The inspectors reviewed procedures, interviewed station personnel, reviewed equipment maintenance and corrective action program records, and performed in-plant walkdowns to physically verify the material condition, readiness, and alignment of the electrical switchyard, offsite electrical transformers, and onsite emergency diesel generators. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Seasonal Readiness - Summer (1 sample)a. Inspection Scope

The inspectors reviewed the TMI design features and AmerGen's implementation of procedures to protect risk significant mitigating systems and components from adverse weather effects due to high temperatures. The inspectors also reviewed AmerGen's summer readiness preparations performed in accordance with WC-AA-107, Seasonal Readiness, Rev. 5. The inspectors reviewed operator logs, excessive heat warnings in effect for June 6 through 10, active adverse contingency monitoring plans, performed plant walkdowns, discussed equipment performance issues with station personnel, and reviewed the corrective action data base to verify that AmerGen personnel were identifying and resolving weather-related equipment problems. Systems reviewed included Emergency Diesel Generators, Control Building Ventilation, Spent Fuel Pool

Cooling and Clean-up, and Main Condenser Vacuum System. Additional documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdowns (71111.04Q – 3 samples)

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

- On May 13, the inspectors walked down portions of the 'A' make-up and purification train while the 'B' make-up and purification train was inoperable due to scheduled maintenance.
- On May 13, the inspectors walked down portions of the 'C' make-up and purification train while the 'B' make-up and purification train was inoperable due to scheduled maintenance.
- On June 24, the inspectors walked down portions of the two motor driven emergency feedwater pumps EF-P-2A and 2B while the turbine driven emergency feedwater pump (EF-P-1) was inoperable for scheduled surveillance testing.

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. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (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 properly controlled per surveillance procedure 1038, Administrative Controls-Fire Protection Program, Rev. 69. 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. 5. 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. 9. Additional documents reviewed during this inspection are listed in the Attachment. Fire zones and areas inspected included:

- Fire Zone IB-FZ-2, Intermediate Building Elevation 295', Turbine Driven EFW Pump Room;
- Fire Zone AB-FZ-2A, Auxiliary Building Elevation 281', Makeup and Purification Pump A;
- Fire Zone AB-FZ-2C, Auxiliary Building Elevation 281', Makeup and Purification Pump C;
- Fire Zone CB-FA-01, Control Building Elevation 305', Health Physics and Lab Area and fire impairment A2192604-00-01.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06 – 2 samples)

a. Inspection Scope

The inspectors performed visual inspections of flood barriers, system boundaries, and water line break sources located in portions of the control building where internal flooding could adversely affect safety-related systems needed for safe shutdown of the plant. The inspectors reviewed IR 789447, dated June 23, 2008, documenting a degraded penetration seal (# 68) in the engineered safeguards actuation system (ESAS) room, 338 foot elevation. In addition, the inspectors reviewed IRs 566501, 677235, 635450, and 588565 which document questions regarding flood seals and TMI's evaluation of NRC Information Notice 2007-01, Recent Operating Experience Concerning Hydrostatic Barriers. The inspectors noted that TMI has not yet identified which penetration seals perform an internal flood protection function, and that the penetration seals in the control building are currently designated for seismic and fire protection function only. The inspectors verified that TMI has actions under IR 677235 to establish and complete a listing of the TMI building penetrations that serve external or internal flood protection functions. The areas inspected included:

- Control Building Elevation 322', East Battery Room and West Battery Room
- Control Building Elevation 338', ESAS Room and Relay Room

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Licensed Operator Requalification Program (71111.11Q – 1 sample)

a. Inspection Scope

On April 1, the inspectors observed licensed operator requalification training at the control room simulator for the 'C' operator crew. The inspectors observed the operators' simulator drill performance and compared it to the criteria listed in TMI Operational Simulator Scenario Number 8, Loss of ICS/NNI Hand Power, Reactor Coolant System Leak, Anticipated Transient without Scram, Small Break Loss of Coolant Accident, and Loss of 25F Subcooled Margin, Rev. 12. 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 critiques 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.

.2 Biennial Licensed Operator Requalification Program (71111.11B – 1 sample)

a. Inspection Scope

On April 9, region-based inspectors conducted an in-office review of licensee-administered annual operating tests. The inspectors assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, Operator Requalification Human Performance Significance Determination Process. The inspectors verified that:

- Crew failure rate was less than 20%. (Crew failure rate was 0%)
- Individual failure rate on the dynamic simulator test was less than or equal to 20%. (Individual failure rate was 0%)
- Individual failure rate on the walk-through test was less than or equal to 20%. (Individual failure rate was 4%)
- Overall pass rate among individuals for all portions of the exam was greater than or equal to 80%. (Overall pass rate was 96%)

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q – 3 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 AmerGen 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.

- On April 1, operators were unable to remotely secure nuclear river water pump NR-P-1B (IR 757512) during surveillance testing. The 'B' emergency diesel generator was accordingly declared inoperable due to inoperable bus load shed capabilities. Technicians identified the breaker was improperly aligned (causing bent electrical contact stabs) when operators racked in the breaker while setting up for the test. NR-P-1B was promptly realigned to a separate electrical bus and controls put in place to verify operability. Additional actions were initiated to restore NR-P-1B reliability on both electrical buses.
- On April 17, control building chiller AH-C-4B failed to start due to low oil pressure (IR 764227). On May 3, operators observed the idle chilled water supply pump for this chiller was rotating backwards, indicating a leaking check valve (IR 771415). These unrelated problems impacted AH-C-4B operability. Technicians verified the 'A' control building chiller remained operable and initiated appropriate corrective action to make AH-C-4B available and address long term operability.
- IR 739905 describes a February 22 loss of control function for make-up valve MU-V-36 during a scheduled engineered safeguard (ES) load sequence test. The failure was due to a loose fuse which had been replaced in November 2007 as part of a preventive maintenance activity. This valve is one of the two motor operated valves installed in series in the common minimum flow recirculation line for the safety related make-up and purification system. AmerGen identified the failure as a Maintenance Rule Functional Failure. This failure was also a Maintenance Preventable Functional Failure because technicians did not properly perform required inspections and verification of proper tightness of the fuse and fuse clips. The licensee identified that loose fuses have been a repetitive problem at TMI and that corrective actions were not effective. The safety significance was minor because procedurally controlled manual operator actions were in place to assure the containment isolation and high pressure injection safety functions remained available (Section 40A2).

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors reviewed the scheduling, control, and equipment restoration during the following maintenance activities to evaluate their effect on plant risk. This review was against criteria contained in AmerGen Administrative Procedure 1082.1, TMI Risk Management Program, Rev. 8 and WC-AA-101, On-Line Work Control Process, Rev. 14.

- On April 23, emergency feed water valve EF-V-30C was removed from service for scheduled maintenance activities. The condition elevated the online maintenance risk profile to yellow (Risk Document 1020, Rev. 5)
- On April 29, the 'A' decay heat removal and building spray system trains were removed from service for scheduled maintenance activities. The condition elevated the online maintenance risk profile to orange (Risk Document 1133, Rev. 6).
- On May 6-7, the 'A' building spray train was removed from service for scheduled maintenance activities. The condition elevated the online maintenance risk profile to yellow (Risk Document 1264, Rev. 1).
- During the week of May 12, divers performed de-silting of the TMI pump bay area for multiple safety and non-safety related pumps. This condition elevated the on-line maintenance risk profile to yellow (Risk Documents 662, Rev. 8; 663, Rev. 5; and 664, Rev. 3).
- On May 13, the 'B' make-up and purification train was removed from service for scheduled maintenance activities. The condition elevated the online maintenance risk profile to yellow (Risk Document 796, Rev. 6).
- On June 24, the turbine driven emergency feedwater pump was removed from service for scheduled surveillance testing. The online maintenance risk profile remained green during this evolution (Risk Document 599, Rev. 9).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 5 samples)

a. Inspection Scope

The inspectors verified that degraded conditions in question were properly characterized, operability of the affected systems was properly evaluated in relation to 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 IMC Part 9900, Operability Determinations & Functionality Assessments For Resolutions of Degraded or Nonconforming Conditions Adverse to Quality or Safety and AmerGen procedure OP-AA-108-115, Operability Determinations, Rev. 6, to determine acceptability of the operability evaluations. Additional documents

reviewed during this inspection are listed in the Attachment. The inspectors reviewed operability evaluations for the following degraded equipment issues:

- On February 22, during 'A' train ES sequence load testing, electrical technicians identified a loss of light indication for the 'A' train high pressure injection pump recirculation isolation valve (MU-V-36). Troubleshooting identified a loose fuse in the fuse clip holder. This valve is one of the two motor operated valves installed in series in the common minimum flow recirculation line for the safety related make-up and purification system. Engineers determined that this condition did not affect operability of the high pressure injection system.
- On February 28, engineers identified two separate ESAS relays (63T/RC4A and 63Y-1/RC-3B) that had improperly seated relay contact blocks. One of the two relays (63Y-1/RC-3B) had two improperly seated contact blocks. Engineers determined that this condition did not affect operability of the ESAS system or associated safety components (IRs 742030 and 742080).
- On March 10, operators observed a through wall leak on a two inch nuclear riverwater (NR) pipe, caused by microbiologically induced corrosion (MIC). Engineers assessed the leak using American Society of Mechanical Engineers (ASME) Code Case N-513-2, Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy class 2 or 3 Piping, Section XI, Division I. Engineers subsequently expanded the inspection scope to approximately 130 inspection locations including all small bore (< two inch) piping in the NR, decay river and reactor river systems. During the next two months, inspections identified two additional through-wall leaks and 35 locations where MIC had reduced pipe wall thickness below the ASME acceptance criteria. These locations were also assessed as acceptable using Code Case N-513-2. The inspectors reviewed operability evaluations (OPE-008-004/7/9) and verified enhanced monitoring programs (daily visual, monthly/quarterly ultrasonic testing) required by the operability evaluations were being performed. The enhanced monitoring program is required until scheduled permanent repairs are performed.
- On March 26, the reactor building atmosphere sample isolation valve (CM-V-3) was declared inoperable because it failed to close within the maximum allowed time during periodic surveillance testing (IR 755166). The TS required action to isolate this line in turn caused the reactor building atmosphere radiation monitor RM-A2 to be inoperable. Operators properly applied the 72-hour limiting condition of operation. Technicians and engineers performed troubleshooting, circuit analysis, maintenance history reviews, component disassembly, and inspections. Station personnel documented their evaluation in Inservice Test Evaluation 156, CM-V-3, Rev. 0 and concluded the valve was operable. The most likely cause of the slow closure time was minor debris in the actuator air supply line, although inspections had found the air lines clear. The valve was successfully retested and placed on an accelerated test interval for continued assessment.
- Engineers identified that commercial grade relay coils had inadvertently been installed in two safety related ESAS applications (IR 726097). The relays affected one channel of the actuation logic for reactor building isolation, starting decay river water pump DR-P-1A, and starting nuclear river water pumps NR-P-1A/1B. The

inspectors reviewed Operability Evaluation 08-002 for this non-conforming condition. Based upon procurement documentation, pre-installation and post-installation testing, visual inspections, and successful periodic surveillance testing, the evaluation concluded ESAS remained operable. Appropriate corrective actions were also initiated to replace the parts with safety related relay coils.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 – 2 samples)

a. Inspection Scope

The inspectors reviewed the following temporary modifications (TMs) and associated implementing documents, interviewed the respective system engineers, and walked down the in-plant systems to verify the plant design basis and the system or component operability was maintained. Procedures CC-AA-112, Temporary Configuration Changes, Rev. 12, and CC-TM-112-1001, Temporary Configuration Change Implementation, Rev. 5, specified requirements for development and installation of TMs.

- Engineering Change Request (ECR) 08-309, Temporarily Disconnect Faulty Bank 2 Upper Fan-1B Main Transformer Fan, Rev. 1, which was installed to address an abnormal noise from the 1B main transformer fan.
- On May 16, operators observed increased reactor building sump inleakage (9 gallons per minute) and determined the source of the leakage was a failed open nuclear service closed cooling water relief valve (IR 776301). Engineering change request 08-438, NS-V-45C Temporary Modification to Blank Off Outlet, Rev. 0 was installed in accordance with work order C2017773 to stop the leak.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19 – 5 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 March 27, operators successfully performed procedure 1300-3Q.5, following troubleshooting, disassembly, and reassembly of the reactor building atmosphere sample supply isolation valve CM-V-3. This testing verified proper valve closure stroke time and permitted restoration of the reactor building atmosphere radiation monitor.

- On April 4, operators performed procedure 1303-4.16, Rev. 118, following completion of the biennial maintenance outage on emergency diesel generator EG-Y-1A. Elevated cylinder exhaust temperatures during the PMT were evaluated in IR 759167.
- On April 30, operators performed OP-TM-533-201, Inservice Testing of DR-P-1A and Valves, Interim Change 24441, following system maintenance including breaker and relay replacements, valve actuator testing, and modification of decay river water strainer DR-S-1A.
- On May 6, operators performed OP-TM-214-201, Inservice Testing of building spray pump BS-P-1A and Valves, Rev. 8, and non-destructive testing using work order R2112550 to verify no air voids existed in affected 'A' train of the building spray, decay heat, and decay closed cooling water systems following a planned 'A' building spray train maintenance outage (IRs 772566 and 772575).
- On May 16, operators performed OP-TM-211-206, IST Of MU-P-1B, Rev. 2, following a scheduled pump outage. The work activities included protective relay maintenance, fuse and fuse clip replacement, MU-V-64B repacking, and heat exchanger MU-C-3B/4B/5B cleaning.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope (3 IST Samples and 2 Routine Surveillance Samples)

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 March 14, procedure OP-TM-541-208, Inservice Test (IST) of nuclear service water pump NS-P-1A, Rev. 4. The test failed to meet acceptance criteria and NS-P-1A was declared inoperable. Subsequent engineering evaluation determined that the pump flow reference values required revision. Test acceptance criteria were revised, the test was determined to be successful, and the NS-P-1A was declared operable (IR 749438).
- On April 15, control room emergency ventilation filter AH-F-3B using procedures 1303-11.13, Control Room Filtering System Test, Rev. 19 and U-36, Ventilation Filter Diethylphthalate and Halide Testing, Rev. 12.
- On April 30, procedure OP-TM-533-201, IST Of DR-P-1A and Valves, Rev.10.
- On May 23-24, procedure 1303-5.2A, 'A' Emergency Loading Sequence and HPI Logic Channel/Component Test, Rev 4.

- On June 24, procedure OP-TM-424-203, IST Of Emergency Feed Water Pump EF-P-1 and Valves, Rev. 3.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors observed an emergency event training evolution conducted on April 1, 2008, at the Unit 1 control room simulator to evaluate emergency procedure implementation, event classification, and event notification. The event scenario involved multiple safety-related component failures and plant conditions warranting simulated Site Area Emergency event declaration. The inspectors observed the drill critique to determine whether the licensee critically evaluated drill performance to identify deficiencies and weaknesses. Additionally, the inspectors verified the Drill/Exercise performance indicators were properly evaluated consistent with 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.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 1 sample)

a. Inspection Scope

Cornerstone: Initiating Events

The inspectors reviewed selected station records to verify NRC Performance Indicators (PIs) had been accurately reported to the NRC as required by NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5. The PI sample listed below was verified for the period April 2006 to March 2008.

- Reactor Coolant System Activity

The inspectors reviewed corrective action program database documents, calculation methods, and definition of terms.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – 2 samples)

.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 the licensee's corrective action program. This review was accomplished by reviewing a list of daily IRs, reviewing selected IRs, attending daily screening meetings, and accessing the licensee's computerized corrective action program database.

.2 Annual Sample: Review of The Operator Work-around Program

a. Inspection Scope (1 sample)

The inspectors reviewed the cumulative effects of the existing operator work-arounds (OWAs), the list of operator challenges, existing operator aids and disabled alarms, and the list of open main control room deficiencies to identify any effect on emergency operating procedure operator actions, and impact on possible initiating events and mitigating systems. The inspectors also interviewed selected operations and engineering personnel to assess their understanding of the OWAs and other listed disabled alarms and control room deficiencies. The inspectors evaluated whether station personnel were identifying, assessing, and reviewing OWAs as specified in AmerGen administrative procedure OP-AA-102-103, Operator Work-Around Program, Rev. 2.

b. Findings

No findings of significance were identified.

.3 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. However, the inspectors noted a recurrent adverse trend regarding Joslyn Clark relays used in safety related applications including the engineered safeguards and actuation system. Specifically, in the last two years, these relays have experienced multiple degraded conditions such as relay binding due to moisture in the magnet coil (IR 697493), premature contact oxide build-up (IR 512773, 789527, and 700761), contact blocks not properly seated (IRs 717254, 725846, 742030, and 742080), contact misalignment, and a hung-up contact issue that resulted in a 10 CFR Part 21 notification (IR 513923 and 786322). The inspectors verified that AmerGen implemented multiple corrective actions to address this trend including multiple procedure revisions, enhanced inspections, training for technicians, operators &

engineers, full extent-of-condition inspections, and an enhanced maintenance rule approach for these relays to ensure proper monitoring of maintenance effectiveness.

The inspectors also noted that, at times, fire protection engineers relied on informal processes (e.g., memory) rather than the formal corrective action program (CAP) to evaluate and track implementation of corrective actions for degraded conditions. Following identification and repair of an inoperable floor penetration fire seal (IR 789447), fire engineers did not document the need to expand the inspection scope of similar fire seals per station procedures. A week later the inspectors identified four additional degraded floor penetration fire seals. No actions to expand the fire seal inspection scope were documented in the CAP or in the work control system. During interviews one fire engineer stated he was aware of the need to expand the inspection scope and accordingly planned to develop a list of additional penetration seals for inspection. The inspectors had previously identified that fire engineers informally tracked actions to evaluate and correct a degraded halon fire suppression system for the air intake tunnel. In that case, engineers were slow to identify and implement corrective actions until questioned by the inspectors. The inspectors discussed these issues with station management and fire engineers who acknowledged the importance of using the CAP to document such issues.

40A6 Meetings, Including Exit

Exit Meeting Summary

On July 21, 2008, the resident inspectors presented the inspection results to Mr. William Noll and other members of the TMI staff who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

40A7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a NCV.

- 10 CFR 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components, requires measures be established to control parts which do not conform to requirements in order to prevent their inadvertent use or installation. Procedures MA-AA-1000, MA-AA-716-010, and MA-MA-716-010-1005 require that repair techniques must maintain the original design basis of the plant. This includes maintaining the as-designed safety class designation of parts. Contrary to the above, on July 25, 2006 and on June 29, 2006 non-safety related relay coils were installed in the safety related ESAS system using work orders C2011634 and C2015443, respectively. This event is documented in the licensee's corrective action program as IR 726097. The finding is of very low significance because the ESAS system remained operable. (Section IR15)

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

C. Baker	Manager, Chemistry
B. Carsky	Director, Operations
T. Dougherty	Plant Manager
J. Heischman	Director, Maintenance
A. Miller	Regulatory Assurance
D. Mohre	Manager, Security
J. Murray	Operations Training Manager
D. Neff	Manager, Emergency Preparedness
W. Noll	Site Vice President
T. Roberts	Radiation Protection
J. Schork	Lead LORT Instructor
D. Trostle	Operations Security Analyst
L. Weir	Manager, Nuclear Oversight Services
C. Wend	Manager, Radiation Protection
H. Yeldell	Work Management

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened/Closed

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

Procedures:

1082.1, TMI Risk Management Program, Rev. 8
OP-AA-108-107, Switchyard Control, Rev. 2
OP-AA-108-107-1001, Station Response to Grid Capacity Conditions, Rev. 2
OP-TM-108-107-1002, TMI Switchyard Operations, Rev. 1
OP-TM-AOP-020, Loss of Station Power, Rev. 12
OP-TM-AOP-022, Load Rejection, Rev. 3
WC-AA-101, On-Line Work Control Process, Rev. 14

Other:

TMI-1 Technical Specification 3.7, Unit Electric Power System
Protocol Between Exelon Nuclear and FirstEnergy dated April 6, 2007
IR-701512, 2008 TMI Site Summer Readiness Actions
TMI Summer Readiness equipment Watch List

Section 1R04: Equipment Alignment

Drawings:

302-660, Make-up and purification Flow Diagram, Rev. 44

302-661, Make-up and purification Flow Diagram, Rev. 59

Other:

Tagging and Clearance order 08500551

Section 1R05: Fire Protection

Procedures

OP-TM-112-101-1002, On-Shift Staffing Requirements, Rev. 3

Other

IR 751354

IR 752431

IR 761038

IR 789759

NUREG 1852, Demonstrating Feasibility and Reliability of Operator Manual Actions in Response to a Fire dated October 2007.

Section 1R011: Licensed Operator Requalification Program

Procedures

OP-TM-AOP-026, Loss of ATB or ICS Hand Power, Rev. 1

OP-TM-EOP-001, Reactor Trip, Rev. 9

OP-TM-EOP-002, Loss of 25F Subcooled Margin, Rev. 6

OP-TM-EOP-006, Loss of Coolant Accident Cooldown, Rev. 6

OP-TM-EOP-010, Abnormal Transients Rules, Guides, and Graphs, Rev. 9

EP-AA-1009, Radiological Emergency Plan Annex for TMI Station, Rev. 11

Section 1R012: Maintenance Rule

Procedures

OP-TM-642-241, ES 480V UV Trip Test – Train A, Rev. 0

OP-TM-732-404, Rack in 480V ES Breaker, Rev. 2

Section 1R15: Operability Evaluations

Procedures

1300-3Q.5, Quarterly Inservice Testing of CM-V-1/2/3/4 Valves During Normal Plant Operations, Rev. 1

MA-AA-716-004.F01TM, Troubleshooting Log for CM-V-3 Work Order C2017312, Rev. 1

Drawings

209-053, Reactor Building Air Sample Line Isolation Valve CM-V-3, Rev. 4

Other

Technical Specification 3.1.6, Leakage

TMI-1 Operations Narrative Logs dated March 27 – April 1, 2008

Section 1EP6: Drill Evaluation

Procedures

EP-AA-111, Emergency Classification and Protective Action Recommendations, Rev. 13

EP-AA-1009, Radiological Emergency Plan Annex for TMI Station, Rev. 11

OP-TM-AOP-062, Inoperable Rod, Rev. 1

OP-TM-EOP-001, Reactor Trip, Rev. 9

OP-TM-EOP-003, Excessive Primary to Secondary Heat Transfer, Rev. 5

OP-TM-EOP-005, Once Through Steam Generator Tube Leakage, Rev. 5
 OP-TM-EOP-010, Abnormal Transients Guides, Rules, and Graphs, Rev. 9

Other

Licensed Operator Drill Scenario Number 55, Nuclear Instrument Failure, Reactor Trip/Turbine Trip, and Main Steam Safety Valve Failure Resulting in "B" Once Through Steam Generator Tube Leak, Rev. 1

LIST OF ACRONYMS

ADAMS	Agencywide Documents and Management System
AmerGen	AmerGen Energy Company, LLC
AR	Action Request
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
ECR	Engineering Change Request
ES	Engineered Safeguards
ESAS	Engineered Safeguards and Actuation System
IMC	Inspection Manual Chapter
IR	Issue Report
IST	Inservice Testing
MIC	Microbiologically Induced Corrosion
MR	Maintenance Rule
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NR	Nuclear Riverwater
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
OWA	Operator Work-Around
PADEP	Pennsylvania Department of Environmental Protection
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Test
SDP	Significance Determination Process
SSC	Structures, Systems, and Components
TM	Temporary Modification
TMI	Three Mile Island, Unit 1
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report