

May 2, 2007

Mr. Christopher M. Crane
President and CEO
AmerGen Energy Company, LLC
200 AmerGen Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 - NRC INTEGRATED INSPECTION
REPORT 05000289/2007002

Dear Mr. Crane:

On March 31, 2007, 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 April 13, 2007, with Mr. Tom Dougherty 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, and 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
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000289/2007002
w/Attachment: Supplemental Information

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Plant Manager - TMI, Unit 1, AmerGen

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J. Johnsrud, National Energy Committee

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D. Allard, PADEP

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U.S. NUCLEAR REGULATORY COMMISSION
REGION 1

Docket No: 05000289

License No: DPR-50

Report No: 050000289/2007002

Licensee: AmerGen Energy Company, LLC (AmerGen)

Facility: Three Mile Island Station, Unit 1

Location: PO Box 480
Middletown, PA 17057

Dates: January 1 - March 31, 2007

Inspectors: David M. Kern, Senior Resident Inspector
Javier M. Brand, Resident Inspector
Dante Johnson, Reactor Inspector
Adam Ziedonis, Reactor Inspector
John Caruso, Senior Operations Engineer/Examiner
Joseph D'Antonio, Senior Operations Engineer

Approved by: Ronald R. Bellamy, Ph.D., Chief
Projects Branch 6
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SUMMARY OF FINDINGS

IR 05000289/2007002; 1/1/2007 - 3/31/2007; AmerGen Energy 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," Revision 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 or near 100 percent rated thermal power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 2 system samples)

a. Inspection Scope

The inspectors walked down risk significant plant areas for several days in February 2007 and assessed AmerGen's protection for cold weather conditions. The inspectors were sensitive to outside instrument line conditions and the potential for freezing in areas with unheated ventilation systems. The inspectors also reviewed implementation of procedures WC-AA-107, "Seasonal Readiness," Rev. 1 and OP-AA-108-111-1001, "Severe Weather Guidelines," Rev. 2 for cold weather conditions. Specific systems were inspected and assessed to determine whether they were properly maintained to address the effects of cold weather included:

- On February 5 and 6, the emergency feedwater system, including the condensate storage tanks and the turbine driven pump steam exhaust piping. The inspectors also walked down outside structures including the borated water storage tank, the cooling water intake and screen pump house, and the fire protection system pumps.
- On February 9, the inspectors evaluated TMI's susceptibility to a main transmission line rupture disc failure that occurred at another nuclear facility due to cold weather. Specifically, water that collected in a sulfur hexafluoride pressure rupture disc froze and expanded, causing the rupture disc failure.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04Q - 3 samples and 71111.04S - 1 sample)

a. Inspection Scope

Partial System Walkdowns

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

- On January 25, 2007, the inspectors reviewed issue report (IR) 582267 which documented a rub on the high pressure fuel return line for the 'B' emergency

Enclosure

diesel generator (EDG). The inspectors performed an extent of condition review and inspected the fuel return lines for both EDGs (EG-Y-1A and 1B).

- On February 1, the inspectors reviewed the 'B' train of the building spray system while the 'A' train of the building spray system was unavailable due to planned maintenance.
- On February 2, the inspectors reviewed the 'B' train of the decay heat removal system and the decay heat closed cooling system while the 'A' train of the decay heat removal system was unavailable due to planned maintenance.

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. Issue Report 587483 addressed compensatory measures to maintain sufficient reactor building sump level to support decay heat removal system design. Additional documents reviewed during the inspection are listed in the Attachment.

Complete System Walkdown

The inspectors performed one complete system walkdown sample on the following system:

- On February 28, 'A' and 'B' make-up trains while the 'C' make-up pump was unavailable due to planned maintenance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 10 samples)

a. Inspection Scope

Area Walkdowns

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. 63. 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. 2. 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. 7. Fire zones and areas inspected included:

- Fire Zone AB-FZ-2A, Auxiliary Building Elev. 281', Makeup and Purification Pump A;
- Fire Zone AB-FZ-2B, Auxiliary Building Elev. 281', Makeup and Purification Pump B;
- Fire Zone AB-FZ-2C, Auxiliary Building Elev. 281', Makeup and Purification Pump C;
- Fire Zone AB-FZ-3, Auxiliary Building Elev. 281', Makeup Valve Alley;
- Fire Zone AB-FZ-4, Auxiliary Building Elev. 281', Reactor Building Pipe Penetration Area;
- Fire Zone IB-FZ-1, Intermediate Building Elev. 295', Valve Gallery and Penetration Room;
- Fire Zone IB-FZ-2, Intermediate Building Elev. 295', Turbine Driven EFW Pump Room;
- Fire Zone IB-FZ-3, Intermediate Building Elev. 295', Motor Driven EFW Pump Room;
- Fire Zone IB-FZ-4, Intermediate Building Elev. 295', Hallway;
- Fire Zone IB-FZ-8, Intermediate Building Elev. 279', Cable Tendon gallery area.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 2 Internal samples)

a. Inspection Scope

The inspectors performed visual inspections of flood barriers, system boundaries, and water line break sources located in portions of the auxiliary building and the intermediate building where internal flooding could adversely affect safety-related systems needed for safe shutdown of the plant. The review included (1) the auxiliary building tendon gallery area, and (2) the control building tower. Documents used to support this inspection included:

- Updated Final Safety Analysis Report (UFSAR) Section 2.6.4, "Flood Studies"
- TMI Fire Hazard Analysis Report, Section 6.0, "Protection Against Water Spray to Conform with 10 CFR 50, Appendix R"
- Section 10, "Internal Flooding Analysis," from TMI Unit-1 Probabilistic Risk Assessment (Level 1) Update

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program1. Quarterly Licensed Operator Requalification Program (71111.11Q - 1 sample)a. Inspection Scope

On March 20, the inspectors observed licensed operator requalification training at the control room simulator for the 'D' operator crew. The inspectors reviewed the operators' ability to correctly evaluate the simulator training scenario and implement the emergency plan. The inspectors observed the operators' simulator drill performance and compared it to the criteria listed in TMI Operational Simulator Scenario Number 2, "Earth Quake, Loss of 1D 4 KV, EG-Y-1A Failure To Start, Loss Of I/A, Stuck Rod, and FW Control Problems," Rev. 9, and Simulator Scenario Number 9, "RC Pump High Vibration and Sheared Shaft, Turbine Trip Failure, and Reactor Coolant System (RCS) Leak Degrading To a Loss of Coolant Accident (LOCA)," Rev. 10. 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 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. 4. Additional documents reviewed during the inspection 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

The following inspection activities were performed using NUREG-1021, Rev. 9; "Operator Licensing Examination Standards for Power Reactors," Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program;" NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP);" and 10 CFR 55.46 Simulator Rule (sampling basis), as acceptance criteria.

The inspectors reviewed documentation of operating history since the last requalification program inspection. The inspectors also discussed facility operating events with the resident staff. Documents reviewed included NRC inspection reports, licensee IRs and Assignment Requests (ARs) that involved human performance issues for licensed operators (see document list attached).

The inspectors reviewed three sets of comprehensive biennial written exams, scenarios and job performance measures (JPMs) administered during this current exam cycle (i.e., weeks 3, 4, and 5) to ensure that the quality of these exams met or exceeded the criteria established in the Examination Standards and 10 CFR 55.59. In addition, the inspectors specifically reviewed all five of JPMs that were administered to certain SROs (Control Room Supervisors) this exam cycle for the purpose of examining the Emergency Director function.

During the week of the inspection, the inspectors observed the administration of operating examinations to one operating crew (i.e., Bravo Shift). The operating examinations consisted of three crew simulator scenarios and one set of five JPMs administered to each individual.

Conformance with Simulator Requirements Specified in 10 CFR 55.46

For the site specific simulator, the inspectors observed simulator performance during the conduct of the examinations, and reviewed discrepancy reports to verify compliance with the requirements of 10 CFR 55.46. Areas reviewed included:

A sample of simulator tests with transients, normal, steady state, malfunctions, as well as core performance tests, and a sample of completed simulator work requests (SWRs) from the past two-year period were reviewed. For a listing of the specific simulator tests reviewed, see the attachment.

Conformance with operator license conditions was verified by reviewing the following records:

- Eight medical records, confirming all records were complete, that restrictions noted by the doctor were reflected on the individual's license and that the exams were given within 24 months.
- Proficiency watch-standing and reactivation records. A sample of two licensed operator reactivation records were reviewed as well as a random sample of one quarter of watch-standing documentation for time on shift to verify currency and conformance with the requirements of 10 CFR 55.
- Remediation training records for six remediations were reviewed for the past two-year training cycle. These records covered two out of the box crew failures, two cyclic quiz failures, one shift manager failure regarding improper event classification, and one annual operating 2006 crew exam failure.

Licensee's Feedback System. The inspectors interviewed training instructors, training/operations management personnel, and four licensed operators for feedback regarding the implementation of the licensed operator requalification program to ensure the requalification program was meeting their needs and responsive to noted deficiencies/recommended changes.

The inspectors conducted an in-office review of licensee requalification exam results. These results included the annual operating tests and the comprehensive written exams administered this year. The inspection 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 on the dynamic simulator was less than 20%. (Failure rate was 0.0%)
- Individual failure rate on the dynamic simulator test was less than or equal to 20%. (Failure rate was 0.0%)
- Individual failure rate on the walkthrough test (JPMs) was less than or equal to 20%. (Failure rate was 0.0%)
- Individual failure rate on the comprehensive biennial written exam was less than or equal to 20%. (Failure rate was 2.4%)
- More than 75% of the individuals passed all portions of the exam. (97.6% of the individuals passed all portions of the exam).

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

1. Quarterly Inspection (71111.12Q - 2 samples)

a. Inspection Scope

The inspectors evaluated Maintenance Rule (MR) implementation for the following: 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. 5. 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 594623 and 594871 described no-flow indication for the 'A' building spray pump during inservice testing per procedure 1303-5.2A, "A Emergency Loading sequence and HPI Channel/Component Test," Rev. 3.
- IR 495742 describes a failure of the control room area radiation monitor RM-G-1 due to an aging failure of the monitor function selector switch.

b. Findings

No findings of significance were identified.

2. Biennial Inspection (71111.12B - 6 samples)

a. Inspection Scope

The inspector conducted a review of the licensee's periodic evaluation of implementation of the Maintenance Rule as required by 10 CFR 50.65(a)(3). The evaluation covered a period from July 2003 to December 2006. The purpose of this review was to ensure that the licensee established appropriate goals, and effectively assessed system performance and preventive maintenance activities. The inspectors verified that the evaluation was completed within the required time period and that industry operating experience was utilized, where applicable. Additionally, the inspectors verified that station personnel appropriately balanced equipment reliability and availability and made adjustments when appropriate.

The inspectors selected a sample of six risk-significant systems to verify that: (1) the structures, systems, and components were properly characterized, (2) goals and performance criteria were appropriate, (3) corrective action plans were adequate, and (4) performance was being effectively monitored in accordance with ER-AA-310, "Implementation of the Maintenance Rule." The following systems were selected for this detailed review:

- Control Building HVAC
- Reactor Building Emergency Cooling
- Main Steam
- Borated Water Storage Tank
- Feedwater Heater Drains
- Engineered Safeguards Actuation System

These systems were either in (a)(1) status, had been in (a)(1) status at some time during the assessment period, or experienced degraded performance. The inspectors reviewed corrective action documents for malfunctions and failures of these systems to determine if: (1) system failures had been correctly categorized as functional failures, and (2) system performance was adequately monitored to determine if classifying the system as (a)(1) was appropriate.

The inspectors interviewed the maintenance rule coordinator and several system engineers, reviewed documentation for applicable systems, and reviewed a sample of condition reports. The documents that were reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 5 samples)

a. Inspection Scope

The inspectors reviewed scheduling, control, and restoration during the following maintenance activities to evaluate the effect on plant risk. This review was against criteria contained in AmerGen Administrative Procedure 1082.1, "TMI Risk Management Program," Rev. 5 and WC-AA-101, "On-Line Work Control Process," Rev. 12. Additional documents reviewed during the inspection are listed in the Attachment.

- On January 18, the turbine driven emergency feedwater pump (EF-P-1) was removed from service to replace a pressure regulator for air operated valve EF-V-30A. This condition elevated the on-line maintenance risk profile to yellow (Risk Document 599, Rev. 6).
- On January 25, an air operated make-up valve (MU-V-20) was removed from service to install a gag to hold the valve open and to investigate and repair a small air leak. This condition elevated the on-line maintenance risk profile to yellow (Risk Document 1222, Rev. 2).
- On February 1-2, 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. 4).
- On February 28, 'C' make-up pump was removed from service for scheduled maintenance activities. The condition elevated the online maintenance risk profile to yellow (Risk Document 971, Rev. 2).
- On March 3, operators manually operated EFW header isolation valve EF-V-30A to verify manual operation capability. This activity required one train of EFW to be declared inoperable and the appropriate Technical Specification (TS) limiting condition for operation was applied (Risk Document 1238, Rev. 1).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 7 samples)a. Inspection Scope

The inspectors reviewed operability evaluations for the following degraded equipment issues. The inspectors verified that degraded conditions in question were properly characterized, operability of the affected systems was properly evaluated in relation to TS requirements, that 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 (IMC) Part 9900, "Operable/Operability-Ensuring the Functional Capability of a System Component" and AmerGen procedure LS-AA-105, "Operability Determinations," Rev. 1, to determine acceptability of the operability evaluations. Additional documents reviewed during the inspection are listed in the Attachment.

- On November 11, 2005, and November 28, 2006, and January 18, 2007, operators identified that make-up valve (MU-V-20) had an air leak and did not remain open for the required 15 minute time frame. Engineers developed a troubleshooting plan and implemented corrective actions (IR-397873 and 562611). Operability of valve MU-V-20 was not affected.
- On November 7, 2006, engineers identified that additional hydrogen producing components, not accounted for in design calculation C-1101-901-5360-007, Rev. 9, were inside the reactor building (RB) containment. Engineering determined that this additional material did not affect the operability of the RB containment (IR-554806).
- On January 16, 2007, operators identified a lower oil consumption rate for the turbine driven emergency feedwater pump (EF-P-1) governor. Engineering determined that the oil consumption was within vendor recommended rates and no operability concern existed (IR 579385).
- On January 24, the '1B' 120 volt vital AC inverter unloaded output voltage was below the required range following a maintenance outage. Engineers assessed inverter performance and design calculations, and discussed inverter performance with manufacturer representatives. Engineers concluded the '1B' inverter remained capable of performing its design functions (IR 583000, 256706, and 123446).
- On January 24, the inspectors determined that operators occasionally pumped down the reactor building sump below the minimum level necessary to protect decay heat removal suction header isolation valves (DH-V-6A/B) from the effects of thermal binding during a LOCA (IR 582909). Operators promptly established compensatory measures to raise the sump minimum level requirements to ensure DH-V-6A/B remained covered and would not be directly exposed to hot reactor coolant during the early stages of a LOCA. The inspectors subsequently determined that the compensatory measures did not properly account for

instrument accuracy (IR 587483). In response to this concern, operators raised the sump minimum level requirement further. The inspectors monitored planned maintenance activities, the revised corrective actions, and actual reactor building sump level to verify DH-V-6A/B remained available.

- On February 2, operators declared one train of low pressure injection (LPI) inoperable and entered the associated 72-hour TS limiting condition of operation. Two issues identified during the previous day (LPI backflow and flow instrument error effects) had raised concern that LPI pump throttling criteria, specified in station emergency operating procedures (EOPs), may not provide adequate core cooling flow without exceeding pump flow limitations. Neither issue had previously been addressed in station emergency core cooling system (ECCS) flow modeling or accident analysis. Station personnel reported the condition to the NRC in accordance with 10 CFR 50.72, performed engineering change request temporary modification (TM) 07-00088, revised EOPs to further reduce LPI flow to maintain sufficient pump net positive suction head, and entered the issue into the corrective action program (IRs 586478, 587191, 589130, and 589472).
- On February 25, during performance of a flow test, operators identified erratic flow indication on the 'B' train low pressure injection (LPI) header (DH-FT-803). Engineers developed a troubleshooting plan and implemented repairs including venting, replacement of square root converter and chassis. Engineering determined that operability of the 'B' LPI system train was not affected. The flow transmitter was later replaced on March 15 after recurrence of erratic flow indications (IR 595881, and 598706).

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. Additional documents reviewed during this inspection are listed in the Attachment. The following PMTs were observed and/or evaluated:

- On January 18, 2007, operators performed testing in accordance with procedure OP-TM-424-203, "IST OF EF-P-1 AND VALVES," Rev. 2, following corrective maintenance to repair an air leak on the regulator for valve EF-V-30A.

- On January 26, operators and maintenance technicians performed testing in accordance with procedure OP-TM-999-049, "Gagging MU-V-20 For Troubleshooting," Rev. 1, following investigations and actuator cap seal replacement to repair an air leak.
- On February 2, operators performed as-left diagnostic testing in accordance with work order R2037359-10 and partially performed OP-TM-212-201, "Inservice Test of DH-P-1A and Valves from ES Standby Mode," Rev. 5 following preventive maintenance and NRC GL 96-05 testing of decay heat injection valve DH-V-4A.
- On February 26, maintenance technicians and plant operators performed testing in accordance with procedure 1302-5.18, "HPI/LPI Flow Channel Calibration," Rev. 34, following troubleshooting and repairs on the 'B' decay heat removal flow indicator DH-DPT-803.
- On March 2, operators performed testing in accordance with procedure OP-TM-211-208, "IST OF MU-P-1C," Rev. 2, following scheduled preventive maintenance and lubricating oil replacement.
- On March 27, operators performed testing in accordance with procedure OP-TM-424-203, "IST OF EF-P-1 AND VALVES," Rev. 2, following scheduled preventive maintenance and lubricating oil replacement.
- On March 29, operators performed testing in accordance with procedure OP-TM-541-201, "IST OF NSRW PUMPS AND VALVES," Rev. 2, following scheduled preventive maintenance.

b. Findings

No findings of significance were identified

1R22 Surveillance Testing (71111.22 - 5 IST samples and 1 Isolation Valve sample)

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. Additional documents reviewed during the inspection are listed in the Attachment.

- On January 18, 2007, procedure OP-TM-212-20, "IST OF DH-P-1B And Valves From ES Standby Mode," Rev. 5.

- On February 2, procedure OP-TM-543-201, "Inservice Test OF DC-P-1A," Rev. 2.
- On February 2, procedure 1101-3, "Containment Integrity and Access Limits," Rev.83.
- On February 9, procedure OP-TM-212-201, "IST OF DH-P-1A And Valves From ES Standby Mode," Rev. 5.
- On March 5, procedure OP-TM-541-208, "IST Of NS-P-1A/B/C," Rev. 1.
- On March 16, procedure OP-TM-424-202," IST Of EF-P-2B," Rev. 2

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 sample)

a. Inspection Scope

The inspectors reviewed the following Temporary Modification (TM) and associated implementing documents, interviewed the respective system engineer, and walked down the in-plant system to verify the plant design basis and the system or component operability was maintained. Procedures CC-AA-112, "Temporary Configuration Changes," Rev. 8, and CC-TM-112-1001, "Temporary Configuration Change Implementation," Rev. 1, specified requirements for development and installation of TMs.

- TM 07-043 was implemented on January 25, 2007 to install a temporary power supply for the Smart Analog Signal Select System (SASS) Rack # 1 to address multiple mismatch alarms occurring in this rack. This TM is associated with Engineering Change Request ECR 07-043-00, "Multiple SASS Mismatch Conditions Received," Rev. 0

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

On February 21, 2007, the inspectors observed an emergency event training evolution conducted at the Unit 1 control room simulator, the technical support center, and the operations support center to evaluate emergency procedure implementation, event classification, event notification, and protective action recommendation development. The

Enclosure

event scenario involved multiple safety-related component failures and plant conditions warranting simulated Unusual Event, Alert, Site Area Emergency, and General Emergency event declarations. The licensee counted this training evolution toward the Emergency Preparedness Drill/Exercise Performance (DEP) Indicator. The inspectors attended a portion of the station critique, and reviewed the critique report to determine whether the licensee critically evaluated drill performance to identify deficiencies and weaknesses. Additionally, the inspectors verified the DEP performance indicators (PIs) were properly evaluated consistent with Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 4. Additional documents used for this inspection activity included:

- TMI Emergency Preparedness Drill Scenario T5X
- EP-AA-1009, "Radiological Emergency Plan Annex for TMI Station," Rev. 7
- EP-AA-111, "Emergency Classification and Protective Action Recommendations," Rev. 11
- EP-AA-111-F-09, "Three Mile Island Plant Based Protective Action Recommendation Flowchart," Rev. C
- EP-AA-112-F-01, "Command and Control Turnover Briefing Form," Rev. C
- EP-TM-TSC-006, "Technical Support Center Guideline for Core Damage Assessment," Rev. 0

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151- 3 Samples)

a. Inspection Scope

The inspectors reviewed selected station records to verify NRC PIs had been accurately reported to the NRC as required by NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 4. The three PI samples listed below were verified for the period January to December 2006.

Initiating Events Cornerstone

- Unplanned Scrams per 7000 Critical Hours
- Scrams with a Loss of Normal Heat Removal
- Unplanned Transients per 7000 Critical Hours

The inspectors reviewed operator logs, licensee event reports, monthly station operating reports, corrective action program database documents, calculation methods, definition of terms, and use of clarifying notes. The inspectors also verified accuracy of the number of reported critical hours used in the calculations.

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b. Findings

No findings of significance were identified.

4OA2 Review of Identification and Resolution of Problems (71152)

Review of Items Entered into the Corrective Action Program and Cross-References to Problem Identification And Resolution Issues Reviewed Elsewhere

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, 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 issue reports, by performing detailed reviews of selected issue reports, attending daily screening meetings, and accessing the licensee's computerized database.

The inspectors also reviewed a sample of IRs associated with 10 CFR 50.59 issues and plant modification issues to ensure that AmerGen was appropriately identifying, characterizing, and correcting problems associated with these areas and that the planned or completed corrective actions were appropriate.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On April 13, 2007, the resident inspectors presented the inspection results to Mr. Tom Dougherty and other members of the TMI staff. The regional specialist inspection results were previously presented to members of AmerGen management. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary and none was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

C. Baker	Manager, Chemistry
R. Barley	Maintenance Rule Coordinator
J. Bashista	System Engineer
P. Bennett	Manager, Design Engineering
R. Bensel	System Engineer
M. Benson	Program Engineer
J. Carney	Licensed Operator Requalification Program Supervisor
B. Carsky	Director, Operations
G. Chick	Plant Manager (departing)
T. Dougherty	Plant Manager (incoming)
E. Eilola	Director, Site Engineering
E. Eisen	System Engineer
M. Fitzwater	System Engineer
R. Godwin	Training Director
J. Hayes	System Engineer
J. Heischman	Director, Maintenance
R. Masoero	Program Engineer
A. Miller	Regulatory Assurance
J. Murray	Operations Training Manager
T. Nahay	Director, Work Management
D. Neff	Manager, Emergency Preparedness
L. Porter	System Engineer
L. Rajkowski	Manager Engineering Programs
C. Smith	Manager, Regulatory Assurance
L. Weir	Manager, Nuclear Oversight Services
C. Wend	Manager, Radiation Protection
R. West	Vice President, TMI Unit 1
T. Wickel	Senior Manager, Design Engineering

Others:

M. Murphy	Pennsylvania Department of Environmental Protection, Bureau of Radiation Protection
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LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Drawings:

302-640, "Decay Heat Removal," Rev. 80
302-645, "Decay Heat Closed Cycle Cooling," Rev. 37
302-712, "Reactor Building Spray," Rev. 48

Procedures:

OP-TM-212-000, "Decay Heat Removal System," Rev. 6
OP-TM-212-271, "Decay Heat Removal ES Standby Mode Lineup Verification," Rev. 2
OP-TM-214-000, "Building Spray System," Rev. 6
OP-TM-214-101, "Engineered Safeguards Standby Alignment for Building Spray System," Rev. 3
OP-TM-543-000, "Decay Heat Closed System," Rev. 5

Section 1R11: Licenses Operator Requalification Program

Drawings:

302-712, "Reactor Building Spray," Rev. 48

Procedures:

OP-TM-MAP-E0203, RB Spray Flow LO, Rev. 2
OP-TM-214-000, Building Spray System, Rev. 6

Other Documents:

AR 00610562, NRC 71111.11 Exit Meeting Observations regarding JPMs used for testing junior SROs in the role of Emergency Director.

Simulator Procedures:

TQ-TM-302-0102, rev 2, TMI Plant-Referenced Simulator Certification Plan
TQ-AA-302-0105, rev 0, Simulator Testing Report Annual Update Template (for test period beginning July 2005 and ending June 2006)

Transient Tests:

PRS-TTS07, Rev. 5, RCS Safety Valve Failure Certification Test, 10/21/2006
PRS-TTS19, Rev. 7, Loss of Forced Flow Certification Test, 9/05/2006
PRS-TTS57, Rev. 5, Simultaneous Closure of All MSIVs Certification Test, 1/12/2007
OES 25 Rev. 1, 12/13/2006 Reactor Trip Comparison, 1/30/2007

Malfunction/Transient Tests:

TTS02, Rev. 5, OTSG A Tube Rupture Low, 3/9/2007
TTS01, Rev. 6, OTSG B Tube Rupture Low, 2/10/2007
TTS03, Rev. 4, RCS Leak (Hot leg Nozzle) Loop A, 1/5/2007
TTS04, Rev. 4, Letdown Line Relief Valve Fails, 10/21/2006
TTS09, Rev. 4, Loss of Inst Air Cert Test, 3/9/2007

Steady State Tests:

SSP01 Steady State Stability Test (100%), 1/4/2006

Normal Evolution Tests:

NOT06, Rev. 2, Simulator Normal Operating Test 6 Core Flood Valve Operability Test, 2/24/2007
 NOT07, Rev. 3, Simulator Normal Operating Test 7 Emergency Power System Surveillance Test, 9/5/2006

Core Performance Tests (BOC):

SWR 8019, Cycle 16 Core Model Update
 TQ-AP-303-101, Rev. 2, PWR Moderator Temperature Coefficient of Reactivity
 TQ-AP-303-102, Rev. 2, PWR Rod Worth Coefficient of Reactivity
 TQ-AP-303-103, Rev. 2, PWR Boron Coefficient of Reactivity
 TQ-AP-303-105, Rev. 1, PWR Approach to criticality Using Control rods
 TQ-AP-303-106, Rev. 3, PWR Differential Boron Coefficient of Reactivity
 TQ-AP-303-107, Rev. 0, PWR Fuel and Doppler Coefficient of Reactivity
 TQ-AP-303-108, Rev. 1, PWR Xenon Worths

Condition Reports/ Work Requests:

AR00203521, Simulator Malfunction Testing
 SWR8393, During pressurizer boron equalization, PZR temp rose too high
 AR00490194, Simulator Annual ANSI Test Failure
 AR00511251, Incomplete Simulator Test Records Maintained
 AR00511240, Inadequate Documentation of Simulator Test Results

Section 1R12: Maintenance Effectiveness

Issue Reports:

426075	371356	512632	511893
507797	486210	457752	457763
440083	323449	321327	296398
296075	292634	431961	396595
392569	385617	375556	370622
365877	208389	286662	271412
567370	480811	399721	575725
429574	544153	578279	577093
567442	567439	536371	508807
321290	550541	552759	585393
385339	216128	235547	334255
475175	349025		

Procedures:

ER-AA-310, "Implementation of the Maintenance Rule," Rev. 5
 ER-AA-310-1001, "Maintenance Rule Scoping," Rev. 2
 ER-AA-310-1002, "Maintenance Rule - SSC Risk Significance Determination," Rev. 2
 ER-AA-310-1003, "Maintenance Rule Performance Criteria Selection," Rev. 3
 ER-AA-310-1004, "Maintenance Rule Performance Monitoring," Rev. 5
 ER-AA-310-1005, "Maintenance Rule - Dispositioning Between (a)(1) and (a)(2)," Rev. 4
 ER-AA-310-1006, "Maintenance Rule Expert Panel Roles and Responsibilities," Rev. 3
 ER-AA-310-1007, "Maintenance Rule Periodic (a)(3) Assessment," Rev. 3

HVB-1-11, "Alarm Response Procedure: Heating and Ventilation Panel Annunciator B," Rev. 12
LS-AA-115, "Operating Experience Procedure," Rev. 10

System Health Overview Reports:

Control Building HVAC: June 2006, December 2006
Feedwater Heater Drains: December 2005, December 2006
LPI/Decay Heat Removal System: December 2006
Main Steam: September 2005, December 2006
Plant Computer: June 2006, December 2006
Reactor Building Emergency Cooling: December 2005, December 2006

Maintenance Rule Documents:

Three Mile Island Unit 1, Maintenance Rule Periodic Assessment Per 10 CFR 50.65 (a)(3):
July 1, 2003 to December 31, 2004
Maintenance Rule Failure Report, January 1, 2005 to February 27, 2007
Maintenance Rule Status Report, Failure Reviews, February 27, 2007

Maintenance Rule Expert Panel Meeting Minutes:

03-07: 07/21/2003	05-01: 01/24/2005	05-02: 02/14/2005
05-03: 03/21/2005	05-04: 04/11/2005	05-05: 05/09/2005
05-06: 06/30/2005	05-07: 07/18/2005	05-08: 08/08/2005
05-09: 09/19/2005	05-12: 12/12/2005	06-01: 01/09/2006
06-02: 02/06/2006	06-02-01: 02/28/2006	06-03: 03/13/2006
06-04: 04/17/2006	06-05: 05/08/2006	06-06: 06/14/2006
06-07: 07/10/2006	06-08: 08/21/2006	06-09: 09/11/2006
06-10: 10/16/2006	06-11: 11/13/2006	06-12: 12/11/2006

Maintenance Rule (a)(1) Determinations:

IR 457763, Assignment #2

Maintenance Rule (a)(1) Action Plans:

Control Building HVAC, IR 431961, Assignment #2
Feedwater Heater Drains, IRs 252836 & 277886
Main Steam, IR 296075-02
Reactor Building Emergency Cooling, IR 321327, Assignment #2

Miscellaneous:

MA-AA-716-230-1002, "Vibration Analysis/Acceptance Guideline," Rev. 1

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures:

1104-40, "Plant Sump and Drainage System," interim change 22163
1302-5.25, "Reactor Building Sump Level," Rev. 21
OP-TM-108-108-1008, "TMI Supplement to OP-TM-108-108," Rev. 4
OP-TM-99-054, "Test /Lubrication of EF-V-30A," Rev. 1
OP-TM-AOP-028, "Loss of Instrument Air," Rev. 2

Other Documents:

Operations Department Night Order dated February 6, 2007
NRC Generic Letter 95-07, "Potential for Pressure Locking and Thermal Binding of Safety Related Power Operated Gate Valves"
Calculation C-1101-572-5350-005, "Reactor Building Sump Minimum Level Setpoints," Rev. 1
PORC Meeting # 2007-06, "Interim Change to Loss of Instrument Air OP-TM-AOP-028"

Section 1R15: Operability Evaluations

Drawings:

302-640, "Decay Heat Removal," Rev. 80

Procedures:

OP-TM-EOP-010, "Emergency Procedures Rules, Guides, and Graphs," Rev. 7

Other Documents:

Plant Operating Review Committee 2007-03 Meeting Agenda and Meeting Minutes Dated 2/03/07
TMI-1 Updated Final Safety Analysis Report Section 6.1.3.2 and Tables 6.1-6 and 14.2-27
Engineering Change Request TM 07-00088, "LPI Pump Net Positive Suction Head Margin" Rev. 0

Section 1R19: Post-Maintenance Testing

Procedures:

MA-AA-723-301, "Periodic Inspection of Limitorque Model SMB/SB/SDB-000 through 5 Motor Operated Motor Operated Valves," Rev. 3
OP-TM-424-203, "IST of EF-P-1 and Valves" Rev. 2
OP-TM-541-201, "IST of NSRW Pumps and Valves," Rev. 2

Issue Reports:

151256
379821
609647

Section 1R22: Surveillance Testing

Procedures:

OP-AA-108-103, "Locked Equipment Program," Rev. 2

Other Documents:

UFSAR Section 5.3, "Isolation System"
UFSAR Table 5.3-2, "Reactor Building isolation Valve Information"

LIST OF ACRONYMS

ADAMS	Agencywide Documents and Management System
AmerGen	AmerGen Energy Company, LLC
AmerGen	AmerGen Energy Company, LLC
AR	Assignment Request
CFR	Code of Federal Regulations
DEP	Drill/Exercise Performance
DRA	Deputy Regional Administrator
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
EOP	Emergency Operating Procedures
EP	Emergency Preparedness
HVAC	Heating, Ventilating and Air Conditioning
IMC	Inspection Manual Chapter
IR	Issue Report
JPM	Job Performance Measure
LOCA	Loss of Coolant Accident
LPI	Low Pressure Injection
MR	Maintenance Rule
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NUMARC	Nuclear Management and Resources Council
OEDO	Office of Executive Director for Operations
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Test
RA	Regional Administrator
RB	Reactor Building
RCS	Reactor Coolant System
SASS	Smart Analog Signal Select
SDP	Significance Determination Process
SRO	Senior Reactor Operator
SSC	Structures, Systems, and Components
SWR	Simulator Work Requests
TM	Temporary Modification
TMI	Three Mile Island, Unit 1
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report