December 8, 2000

Mr. Mark E. Warner
Vice President, TMI Unit 1
AmerGen Energy Company, LLC
Three Mile Island Nuclear Station
P.O. Box 480
Middletown, Pennsylvania 17057-0480

SUBJECT: NRC'S INTEGRATED THREE MILE ISLAND REPORT 05000289/2000-007

Dear Mr. Warner:

On November 11, 2000, the NRC completed an inspection at your Three Mile Island Unit 1 reactor facility. The enclosed report documents the inspection findings which the resident inspectors discussed with you and other members of your staff on November 17, 2000.

This 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. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observation of activities, and interviews with personnel.

No findings of significance were identified during this inspection.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

We appreciate your cooperation. Please contact me at (610) 337-5146 if you have any questions regarding this letter.

Sincerely,

/RA/

John F. Rogge, Chief
Projects Branch 7
Division of Reactor Projects

Docket No: 05000289
License No: DPR-50

Enclosure: NRC Inspection Report 05000289/2000-007

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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	05000289
License No:	DPR-50
Report No:	2000-007
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	PO Box 480 Middletown, PA 17057
Dates:	October 1-November 11, 2000
Inspectors:	J. Daniel Orr, Senior Resident Inspector Craig W. Smith, Resident Inspector Neil S. Perry, Senior Project Engineer Ronald Nimitz, Senior Health Physicist, DRS Nancy T. McNamara, Emergency Preparedness Inspector, DRS
Approved by:	John F. Rogge, Chief Projects Branch 7 Division of Reactor Projects

SUMMARY OF FINDINGS

Three Mile Island, Unit 1
NRC Inspection Report 0500289/2000-007

IR 0500289/2000-007, on 10/01/2000-11/11/2000, AmerGen Energy Company, LLC, Three Mile Island Unit 1, integrated resident inspector report.

The report covers a six-week period of resident inspection supplemented by a regional senior project engineer, a regional health physics specialist, and a regional emergency preparedness specialist. The significance of issues is indicated by their color (Green, White, Yellow, Red) and was determined by the Significance Determination Process (SDP) in Inspection Manual Chapter 0609 (see Attachment 1).

- No findings of significance were identified.

Report Details

Summary of Plant Status

AmerGen Energy Company, LLC (AmerGen) operated Three Mile Island, Unit 1 (TMI) at 100 percent power throughout the inspection period with the exception of an unplanned power reduction transient to 65 percent power on November 3, 2000, due to the inadvertent tripping of the A main feedwater pump. The plant was returned to 100 percent power on November 4, 2000.

1 REACTOR SAFETY

Initiating Events/Mitigating Systems/Barrier Integrity [REACTOR - R]

R04 Equipment Alignment

a. Inspection Scope

The inspector conducted partial equipment alignment verifications on the nuclear service closed cooling water and the intermediate closed cooling water systems. Actual system configuration and operating parameters were compared against system operating procedures and design documents. The inspector sampled the licensee's corrective action program records for both systems to verify the licensee was identifying and evaluating equipment alignment problems at an appropriate threshold.

b. Issues and Findings

No findings of significance were identified.

R05 Fire Protection

a. Inspection Scope

The inspector conducted fire protection inspections for the following plant areas and fire protection equipment:

- Emergency diesel generator building while the normally installed fire house station was out of service for planned maintenance,
- Relay room carbon dioxide suppression system,
- Control room, and
- Decay heat closed cycle cooling water pump power supplies.

The inspector conducted plant walkdowns and reviewed fire protection program documentation for the inspected areas and equipment. The plant walkdowns included observations of combustible material control, fire detection and suppression operability, and compensatory measures established for degraded fire protection equipment.

b. Issues and Findings

No findings of significance were identified.

R12 Maintenance Rule Implementation

.1 Main Feedwater Pumps

a. Inspection Scope

The inspector reviewed the maintenance and performance history for the main feedwater pumps. The main feedwater pumps are a transient initiator for an automatic plant power reduction for the loss of one pump and an automatic reactor trip on the loss of both pumps. Since February 2000, the main feedwater pumps experienced infrequent oscillations in the speed control circuit, which sometimes resulted in minor fluctuations in primary and secondary plant operating parameters. The inspector reviewed the licensee's plans for improving system performance and resolving the main feedwater pump speed oscillations.

b. Issues and Findings

No findings of significance were identified.

.2 Wide Range Nuclear Instrument Indication Failure

a. Inspection Scope

The inspector reviewed the licensee's maintenance rule evaluation for a failed wide range nuclear instrument indication identified by the licensee on October 4, 2000. The failed instrument provided wide range indication of nuclear power to the remote shutdown panel. The licensee evaluated the failure as a maintenance rule functional failure because of the loss of remote shutdown panel indication. The licensee determined the failure was not maintenance preventable. The inspector reviewed the licensee's evaluation as documented in corrective action process (CAP) event number T2000-0846.

b. Issues and Findings

No findings of significance were identified.

R13 Maintenance Risk Assessment and Emergent Work Control

.1 Maintenance Risk Assessment

a. Inspection Scope

The inspector reviewed planning and risk assessments for two scheduled maintenance outages:

- Replacement of a failed main generator field current transducer on October 25, 2000 (Job Order 187233), and
- Preventive maintenance on the C nuclear river water strainer during the week of October 31, 2000 (Job Orders 175877 and 178178).

The inspector observed selected maintenance activities, attended pre-job briefs, and verified contingency actions required by the risk assessment documents were appropriately established.

b. Issues and Findings

No findings of significance were identified.

.2 Deferred Maintenance

a. Inspection Scope

The inspector reviewed a deferred maintenance outage on the A make-up/high pressure injection pump. The work was originally scheduled for the week of October 6, 2000, and was deferred until March 2001. The inspector assessed the risk significance of the corrective and preventive maintenance items that were postponed and verified the deferred surveillance activities were appropriately rescheduled.

b. Issues and Findings

No findings of significance were identified.

.3 A Main Feedwater Pump Trip

a. Inspection Scope

The inspectors observed troubleshooting activities on the A main feedwater pump following an unexpected trip during emergency governor overspeed trip testing. The inspectors examined the maintenance precautions established to prevent a subsequent feedwater transient. A control room walkdown was performed to confirm that the reactor and secondary plant system responses were as expected from the initial A main feedwater pump trip.

b. Observations and Findings

No findings of significance were identified.

R19 Post-Maintenance Testing

a. Inspection Scope

The inspector reviewed post-maintenance tests performed for the following maintenance activities:

- Replacement of the C nuclear river water pump strainer during the week of October 31, 2000 (Job Order 175877), and
- Scheduled biennial overhaul of the station black-out diesel generator during the week of November 6, 2000 (Job Order 182601).

The inspector witnessed testing activities and reviewed test data to verify that the components were returned to service capable of performing their design functions.

b. Issues and Findings

No findings of significance were identified.

R22 Surveillance Testing

a. Inspection Scope

The inspector reviewed the following surveillance tests:

- Reactor Building Emergency Cooling and Isolation System Test, Surveillance Procedure 1303-4.13, on October 19, 2000,
- Inservice Testing of Turbine Driven Emergency Feedwater Pumps and Valves, Surveillance Procedure 1300-3G, on October 28, 2000, and
- Reactor Protection System Channel B Test, Surveillance Procedure 1303-4.1B, on October 30, 2000.

The inspector witnessed the surveillance tests and reviewed the test data to verify that the test performance met technical specification and procedure requirements. The inspector sampled the licensee's corrective action program for problems identified during past performance of the surveillances to ascertain the licensee's threshold for identifying and resolving problems.

b. Issues and Findings

No findings of significance were identified.

R23 Temporary Plant Modifications

a. Inspection Scope

The inspector reviewed a temporary plant modification for the D channel reactor protection system vital inverter power supply. The licensee installed a relay to monitor the output of the D inverter in response to an isolated transient voltage drop on the circuit that occurred on October 4, 2000. The inspector reviewed the temporary modification documentation, observed the temporary modification installation, and considered the impact on system operability.

b. Issues and Findings

No findings of significance were identified.

Emergency Preparedness [EP]

EP2 Alert and Notification System Testing

a. Inspection Scope

The inspector reviewed emergency plan implementing procedure TEPSUR-1310.09, Prompt Notification System Testing Program, which described the licensee's offsite siren program and the commitments for performing surveillance tests and routine maintenance. Surveillance test records and the alert and notification system (ANS) performance indicator (PI) data were reviewed for compliance with the PI criteria and emergency plan commitments. An interview was conducted with the siren vendor to evaluate the design of the offsite siren system, the vendor's testing protocol, and corrective actions for inoperable sirens. In addition, a visit was made to the Dauphin County Emergency Control Center to determine the adequacy of training for sounding the sirens during a real event.

b. Issues and Findings

No findings of significance were identified.

EP3 Emergency Response Organization Augmentation

a. Inspection Scope

The inspector reviewed drill/exercise reports, emergency response organization (ERO) qualifications, and automated pager notification test records to determine the licensee's ability to achieve facility activation goals and identify problems related to the effectiveness of ERO augmentation. Also, emergency plan implementing procedure TEP-SUR-1310.01, Emergency Communications Test Procedure, was reviewed to

verify the licensee's commitments for ERO augmentation and system activation and for a description of the overall maintenance of the program.

b. Issues and Findings

No findings of significance were identified.

EP4 Emergency Action Level Revision Review

a. Inspection Scope

A regional in-office review of revisions to the Three Mile Island Emergency Plan, emergency plan implementing procedures, and emergency action level (EAL) revision changes was performed to verify the changes did not decrease the effectiveness of the emergency plan.

b. Issues and Findings

No findings of significance were identified.

EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

To verify the licensee's ability to effectively identify program weaknesses and correct deficiencies, the following documentation was reviewed:

- AmerGen procedure 1000-ADM-1291.03, Self Assessment Process,
- AmerGen procedure 1097, Corrective Action Process,
- Quality assurance audit reports, S-TMI-00-09 and S-TMI-99-08,
- Self assessment reports, 95911-PA-00-002, 95911-PA-00-005 and 95911-PA-00-001,
- EP Program Post-Indian Point 2 SGTF [Steam Generator Tube Failure] Event Assessment for TMI,
- Drill and exercise critique reports and licensed operator requalification training records, and
- Action items listed in the corrective action tracking system.

b. Issues and Findings

No findings of significance were identified.

EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an announced emergency preparedness drill conducted by the licensee on November 8, 2000. The inspectors evaluated the opportunities for classification and notification of the emergency action levels presented in the drill scenario and observed the licensee's critique of the operating crews performance. The inspectors observed the drill from the simulator main control room, emergency control center, and technical support center.

b. Issues and Findings

No findings of significance were identified.

2 RADIATION SAFETY

Occupational Radiation Safety [OS]

OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

The inspector reviewed the following documents and conducted the following activities to determine the effectiveness of access controls to radiologically significant areas:

- The inspector toured accessible areas of the radiological controlled area and physically inspected and challenged seven locked high radiation area access points to determine if access controls were sufficient to preclude unauthorized entry.

- The inspector reviewed access controls to licensee defined very high radiation areas.

- The inspector made independent radiation level measurements within accessible radiologically controlled areas (RCAs) at the station to: 1) verify areas expected to exhibit radiation levels in excess of 100 mR/hr, were posted and controlled as high radiation areas or locked as appropriate; and 2) confirm posted survey data.

- The inspector reviewed 10 CFR Part 61 radionuclide analysis data to: 1) evaluate the potential presence and magnitude of hard to detect radionuclides, including transuranics; and 2) to evaluate the adequacy of licensee controls for personnel exposure to such materials.

- The inspector reviewed recently completed self-assessments (Nos. 95934-PA-00-003, 95935-OB-00-026, 95935-OB-OO-027, and AmerGen Mid-Atlantic Regional Operating Group Evaluation dated August 2000) to evaluate licensee actions on self-identified findings.

The inspector reviewed the implementation and adequacy of radiological controls provided for transfer and handling of spent resin during the period September 29 - October 10, 2000. The inspector verified conformance with applicable high radiation area access controls including radiation work permit requirements. Work coordination activities, survey data, and individual exposure results were reviewed.

b. Issues and Findings

No findings of significance were identified.

OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector selectively reviewed the adequacy and the effectiveness of the licensee's program to reduce occupational radiation exposure to as low as is reasonably achievable (ALARA). The following matters were reviewed:

- Radiological Health and Safety 13R Outage Report,
- Unit 1 13R Outage Report,
- Source Term Reduction Program,
- TMI Unit 1 Performance and Goals,
- 13R Early Boration Evaluation,
- 13R daily task dose tracking sheets,
- Procedure 6610-ADM-4010.02, Rev. 6, ALARA Review Program,
- Procedure 6610-IMP-3282.01, Rev. 7, Installation of Temporary Shielding,
- Procedure 6610-ADM-4110.04, Rev. 9, Radiation Work Permit, and
- Two and three year average dose per unit.

The inspector evaluated ALARA planning and implementation for four major radiological work tasks conducted during the 13R outage (radiation shielding, reactor refueling, steam generator work activities, and scaffolding construction). The inspector evaluated the ALARA planning for these tasks, reviewed methods to track ongoing accumulation of aggregate radiation dose, and inter-compared initial dose estimates with final aggregate dose results to evaluate the adequacy and effectiveness of planning and exposure control efforts.

b. Issues and Findings

No findings of significance were identified.

OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector selectively reviewed elements of the radiation monitoring instrumentation program:

- The inspector reviewed the calibration and checking of radiation monitoring instruments used by radiological controls personnel and workers during job coverage surveys and work associated with resin transfer operations conducted during the period September 29 - October 10, 2000, to verify properly calibrated and checked instrumentation was used. The inspector also evaluated calibration sources used to determine if sources were appropriate for radiation types and energies encountered within the facility. Calibration records for the following instruments were reviewed:

  - Bicron RSO-50 serial nos. B239Yand B247Y,
  - Ludlum 2000 serial no. 10079,
  - Xetex Telescan - serial no. 42532 (probe 442533),
  - Eberline AMS-3 serial no. 217 (RAP No. 339),
  - E-140 N serial no. 1133, and
  - Four electronic personnel dosimeters (serial nos. 1912, 1972, 1948, and 2019)

- The inspector reviewed calibration, operating practices, and minimum detectable activity data for the licensee's standup whole body counter to determine if the equipment was capable of providing adequate direct bioassays for radionuclides encountered at the licensee's facility.

- The inspector reviewed the use and testing of self-contained breathing apparatus (SCBA) to determine if adequate quantities of such devices were available, filling stations were available, and appropriate personnel had been trained on the use of the devices including the changing of air bottles.

The following associated documentation was reviewed:

- AmerGen procedure 6610-ADM-4020.01, Rev. 5, Respiratory Protection Program,
- AmerGen procedure 1104-67C, Rev. 4, Inspection and Maintenance of Respiratory Protection Equipment,
- AmerGen procedure TEP-ADM-1300.05, Rev.7 and Rev. 8, Emergency Equipment Readiness,
- SCBA surveillance records, October 2000, Attachment 12, Inspection of Emergency Respiratory Equipment, and
- SCBA personnel training records for personnel on watch on October 30,2000.

b. Issues and Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

OA1 Performance Indicator Verification

.1 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspector examined the adequacy and effectiveness of the licensee's implementation of the Occupational Exposure Control Effectiveness PI. The inspector reviewed the following matters.

- The inspector reviewed corrective action program records for occurrences involving high radiation areas, very high radiation areas, and unplanned personnel exposures for the past quarter against the applicable criteria specified in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 0, to verify that all conditions that met the NEI criteria were recognized and identified as Performance Indicators.

- The inspector reviewed personnel exposure data for the past quarter to identify instances where personnel exited the radiological controls area with a dose in excess of 100 mrem (based on secondary dosimetry) to verify that such doses were not unplanned.

b. Issues and Findings

No findings of significance were identified.

.2 Safety System Functional Failures

a. Inspection Scope

The inspectors reviewed TMI licensee event reports submitted within the previous year and to verify that AmerGen had included all safety system functional failures (SSFF) in the SSFF PI.

b. Issues and Findings

No findings of significance were identified.

.3 Emergency Planning Drill/Exercise Performance

a. Inspection Scope

The inspector reviewed the licensee's programs for gathering and submitting data for the Drill/Exercise Performance (DEP) PI. The review included the licensee's exercise/drill critique reports, licensed operator requalification records and drill participation records with respect to making emergency classifications, notifications, protective action recommendations and drill participation of key emergency response organization positions within the past 24 months. The review of the Alert and Notification System PI was conducted and described in 1EP2 of this inspection report. The PI data reviewed was through the 3rd quarter of 2000.

b. Issues and Findings

No findings of significance were identified.

OA6 Management Meetings

.1 Exit Meeting Summary

On November 17, 2000, the resident inspectors presented the inspection results to Mr. Warner and other members of licensee management. The licensee acknowledged the findings presented.

The emergency preparedness inspector and senior health physicist presented their inspection results to members of licensee management on October 20, 2000, and November 3, 2000, respectively.

PARTIAL LIST OF PERSONS CONTACTED

Licensee
M. Warner, Vice President, TMI Unit 1
R. Fraile, Plant Manager
D. Atherholt, Director - Operations
O. Limpias, Director - Site Engineering
J. Telfer, Director - Radiation Health & Safety
D. Ethridge, Director - Maintenance
E. Fuhrer, Manager - Regulatory Licensing
A. Miller, Regulatory Licensing

ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents and Management System
ALARA	As Low As is Reasonably Achievable
AmerGen	AmerGen Energy Company, LLC
ANS	Alert and Notification System
CAP	Corrective Action Process
CFR	Code of Federal Regulations
DEP	Drill/Exercise Performance
DRS	Division of Reactor Safety
EAL	Emergency Action Level
ERO	Emergency Response Organization
IR	Inspection Report
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
PI	Performance Indicator
RCA	Radiological Controlled Area
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
TMI	Three Mile Island, Unit 1

ATTACHMENT 1

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
• Initiating Events	• Occupational	• Physical Protection
• Mitigating Systems	• Public	
• Barrier Integrity		
• Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.