

June 5, 2000

Mr. John B. Cotton
Vice President, TMI Unit 1
AmerGen Energy Company, LLC
Three Mile Island Nuclear Station
PO Box 480
Middletown, Pennsylvania 17057-0480

SUBJECT: NRC'S THREE MILE ISLAND INSPECTION REPORT NO. 05000289/2000-003

Dear Mr. Cotton:

On May 13, 2000, the NRC completed an integrated inspection at your Three Mile Island Unit 1 reactor facility. The enclosed report presents the results of that inspection. The results of this inspection were discussed with Mr. Mike Ross and other members of your staff on May 19, 2000.

This inspection was an examination of 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, observations of activities, and interviews with personnel. There were no findings identified during this inspection.

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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 No. 05000289/2000-003

Mr. J. Cotton

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cc w/encl:

PECO Energy Company - Correspondence Control Desk

D. Allard, PADER

TMI-Alert (TMIA)

Mr. J. Cotton

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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No. 05000289
License No. DPR-50

Report No.: 2000-003

Licensee: AmerGen Energy Company, LLC (AmerGen)

Facility: Three Mile Island Station, Unit 1

Location: PO Box 480
Middletown, PA 17057

Dates: April 2, 2000 to May 13, 2000

Inspectors: Wayne L. Schmidt, Senior Resident Inspector
Craig W. Smith, Resident Inspector
Gregory C. Smith, Senior Physical Security 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 05000289/2000-003

The report covered a 6-week period of resident inspection and an announced inspection by a regional physical security inspector. 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 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.

1 REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Nuclear River Water System

a. Inspection Scope

The inspector conducted a complete walkdown of the nuclear river water (NR) system. This system was chosen because the loss of NR is a risk significant event initiator requiring operators to manually trip the reactor and then trip the running reactor coolant pumps, due to loss of cooling to the reactor coolant pump seals, bearings and motors.

The inspector compared actual system operating parameters and valve, electrical circuit breakers, and control switches positions against the system operating procedure. The inspector also reviewed the corrective action process (CAP) database for identification and resolution of significant issues with the NR system for the last year.

b. Issues and Findings

There were no findings identified.

.2 Borated Water Storage Tank Piping System and Level Instrumentation

a. Inspection Scope

The inspector conducted a partial system walkdown of the borated water storage tank (BWST) piping system and level instrumentation. The system is risk significant because the TMI plant design includes only a single BWST and discharge line supplying the emergency core cooling system (ECCS) high pressure and low pressure safety injection pumps during the initial phase of a design basis loss of coolant accident (LOCA). The level instrumentation and associated alarms provide indication to the control room operators for manually swapping the suction of the safety injection pumps from the BWST to the reactor building sump during the recirculation phase of the accident.

During the walkdown, the inspector compared the system alignment against the system operating procedure and piping and instrumentation drawings. The inspector reviewed the CAP database for identification and resolution of significant issues involving the BWST piping system and level instrumentation for the last year.

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted fire protection inspection activities consisting of plant walkdowns and a review of AmerGen's fire protection program documentation including Administrative Procedure (AP) 1038, Administrative Controls - Fire Protection Program, and the TMI Fire Hazards Analysis Report. Plant walkdowns included observations of combustible material control, fire detection and suppression equipment availability, and compensatory measures. The inspectors conducted fire protection inspections for the following areas:

- Screen house
- Turbine Building - Main Feed Pumps
- Auxiliary Building - ThermoLag remediation areas
- Intermediate Building

b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

.1 High Pressure Injection System Maintenance Rule Review

a. Inspection Scope

The inspector reviewed the high pressure injection/makeup system to assess AmerGen's compliance with the NRC Maintenance Rule for this system. The system has been in Maintenance Rule category a(1), requiring improvement, since February 1997 due to system unavailability and since January 1999 due to maintenance preventable functional failures (MPFFs). The inspector reviewed each MPFF and the plans for reducing system unavailability against the associated system performance criteria.

b. Issues and Findings

There were no findings identified.

.2 Feedwater Flow Transmitters Found Out of Calibration

a. Inspection Scope

While performing routine calibration of the feedwater flow instruments during the week of March 27, 2000, technicians found three of the four instruments were reading lower than the acceptable band for input differential pressures at the high end of the differential pressure range (i.e. at the normal differential pressure for 100 percent power). These instruments are used as inputs to the heat balance for calculating core thermal power to calibrate the nuclear instruments and as an input to the Integrated Control System. In their as-found condition, the three instruments provided lower than actual readings of feed flow, a non-conservative input for calculating core thermal power. The inspector reviewed the engineering documentation associated with the MPFF determination.

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

.1 Planned 1B Inverter Maintenance Risk Assessment

a. Inspection Scope

During the week of April 3, 2000, the inspector reviewed the conduct of planned maintenance activities on the 1B safety related inverter and 1B battery charger power supply circuit breaker. The risk involved while these systems were out-of-service for maintenance was the potential loss of two vital buses resulting in a reactor scram initiating event. The inspector reviewed AmerGen's work scheduling and the conduct of maintenance as well as the contingency actions put into place to minimize plant risk during the time period the equipment was out-of-service.

b. Issues and Findings

There were no findings identified.

.2 Planned Emergency Diesel Generator Maintenance Risk Assessment

a. Inspection Scope

During the week of April 16, 2000, the inspector reviewed the conduct of planned maintenance activities for the annual inspection of the A emergency diesel generator (EDG). The inspector reviewed AmerGen's risk evaluation and compensatory actions put into place to reduce plant risk during the time period the A EDG was out-of-service. The inspector verified the compensatory actions were that were in place prior to and throughout the time period the A EDG was out-of-service.

b. Issues and Findings

There were no findings identified.

.3 Planned Reactor River Strainer Maintenance Risk Assessment

a. Inspection Scope

The inspectors reviewed AmerGen's risk evaluation and compensatory actions put into place for taking one train of the reactor river water system out-of-service on May 4, 2000, for work on the associated pump discharge strainer (RR-S-1B). AmerGen developed On-Line Risk Document 343 to address and control this activity.

b. Issues and Findings

There were no findings identified.

.4 Emergent Emergency Safeguards Actuation System Relay Replacement

a. Inspection Scope

On May 12, 2000, during scheduled engineered safeguards actuation system (ESAS) functional testing, a containment isolation relay failed to actuate when required. The relay did not reposition to its safety function state when it was de-energized during testing. AmerGen documented this failure on CAP 2000-398. The inspector reviewed the operator actions in response to this event including: entry into the Technical Specification (TS) Limiting Condition for Operation for lack of redundancy due to the failed relay, On-Line Risk Document 351 developed to evaluate and manage plant risk while performing maintenance activities to replace the failed relay, and the operating crew briefing for replacement of the failed relay.

b. Issues and Findings

There were no findings identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

The inspector reviewed operator performance during the automatic transfer of the A inverter output transfer switch to the alternate power supply on April 5, 2000, during restoration from maintenance activities and in response to discovery that the 1B NR pump discharge valve had not been closed following surveillance testing on May 10, 2000.

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed two operability evaluations during the inspection period:

- On April 4, 2000, with the 1B battery charger out-of-service for planned maintenance, the 1D battery charger supply breaker opened. The B battery was left with only one charger supplying the 125 volt DC battery bank. The inspector reviewed the operability determination for this condition performed by the Shift Manager as documented in CAP 2000-292.
- On April 4, 2000, while performing routine calibration activities, maintenance technicians identified two of three degraded grid relay dropout setpoints on the 1D 4160 volt emergency safeguards electrical bus outside their allowed tolerance. The inspector reviewed the operability determination performed by the Shift Manager for this condition as documented in CAP 2000-314. The review also included attending an April 11, 2000, meeting of the Plant Review Group discussion of the operability evaluation.

b. Issues and Findings

There were no findings identified.

1R16 Operator Work-Arounds

a. Inspection Scope

After it was identified during testing in March 2000 that the 1B reactor river pump strainer motor tripped on thermal overload for unknown reasons, AmerGen established an operator work-around to provide procedural guidance to operate the 1B reactor river pump discharge strainer manually. The inspector reviewed the work-around documentation and the installation of the staging and equipment necessary to manually turn the strainer in the event the strainer motor tripped and could not be recovered. The strainer was subsequently repaired and returned to full operational status on May 6, 2000.

b. Issues and Findings

There were no findings identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspector reviewed a permanent plant modification for raising the BWST low level alarm setpoint. The inspector compared the engineering evaluation request that implemented the setpoint change against the TS requirements and Updated Final Safety Analysis Report design basis for the BWST. The inspector also reviewed the design basis calculation for the BWST level instrument accuracy analysis.

b. Issues and Findings

There were no findings identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspector observed post maintenance testing activities conducted on April 21, 2000, following the annual inspection of the A EDG. The inspector reviewed the associated maintenance work packages for proper documentation of the post maintenance testing activities and evaluated the test results.

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing

.1 Reactor Building Containment Purge Valve Leakrate Testa. Inspection Scope

During the week of April 2, 2000, the inspector reviewed the surveillance testing conducted to demonstrate that the containment purge outlet isolation valves (AH-V-1A/1B) met the leak tightness requirements of TS 4.4.1.2. This inspection activity included a review of the regulatory requirements for performance-based testing of containment isolation valve leakage rates (Type C testing), AmerGen surveillance procedure 1303.11-18, Reactor Building Leak Rate Test Program, and CAP reports generated during previous performance of the containment purge valve Type C testing.

b. Issues and Findings

There were no findings identified.

.2 Emergency Feedwater System Surveillance Testing

a. Inspection Scope

The inspectors conducted a detailed review of the turbine and motor driven emergency feedwater pump quarterly surveillance tests and observed the performance of the tests. The review included verification that the procedure could be conducted as written, operators properly performed the procedure, and the in-service test program commitments were properly administered. The inspector verified that several issues identified during the testing of the turbine driven pump were in the Electronic Task Tracking System (ETTS) under task numbers 31473 and 31475 for resolution by the system engineer.

b. Issues and Findings

There were no findings identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspector reviewed the installed temporary plant modifications including those on mechanical, electrical, and computer software systems finding none that were safety significant.

b. Issues and Findings

There were no findings identified.

Cornerstone: Emergency Planning

EP6 Drill Evaluation

a. Inspection Scope

The inspector observed an announced emergency preparedness drill conducted on an operating crew using the plant simulator on April 12, 2000. The inspector evaluated the crew's performance in the classification and notification of the site area emergency and observed AmerGen's critique of the crew's performance.

b. Issues and Findings

There were no findings identified.

3 SAFEGUARDS

Cornerstone: Physical Protection

3PP1 Access Authorization Program

a. Inspection Scope

The inspector verified that the licensee was properly implementing the behavior observation portion of its personnel screening and Fitness-for-Duty program. The inspector interviewed representatives of licensee management and escort personnel concerning their understanding of their behavior observation responsibilities and ability to recognize aberrant behavior traits. The inspector also reviewed self-assessments for the Access Authorization and Fitness-for-Duty programs, event reports, audits and loggable events.

b. Issues and Findings

No findings were identified.

3PP2 Access Control

a. Inspection Scope

The inspector verified AmerGen's access controls and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area that could be used to commit radiological sabotage. The inspector verified that an identification and authorization process was used to confirm that only those individuals who had been properly screened were granted unescorted access to the protected and vital areas. The inspector observed access control activities including multiple observations of personnel processing through the search equipment during peak ingress periods and testing of all access control equipment. The inspector also reviewed the access control event log, audits, and maintenance work requests on access control equipment.

b. Issues and Findings

No findings were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspector reviewed AmerGen's programs for gathering and submitting data for the Fitness-for-Duty, Personnel Screening, and Protected Area Security Equipment Performance Indicators. The review included AmerGen's tracking and trending reports and security event reports for the Performance Indicator data submitted from the 2nd quarter of 1997 through the 1st quarter of 2000.

b. Issues and Findings

No findings were identified.

4OA5 Performance Indicator Data Collecting and Reporting Process Review

a. Inspection Scope

The inspector reviewed AmerGen's methods of calculation and definition of terms used in the performance indicator information for unplanned power changes per 7000 hours, safety system unavailability and functional failures, emergency response organization drill participation, occupational exposure control effectiveness, and protected area security equipment performance index, in accordance with Temporary Instruction 2515-144.

b. Issues and Findings

There were no findings identified and documented during this inspection.

4OA6 Meetings

Exit Meeting Summary

On May 19, 2000, the resident inspectors presented the inspection results to Mr. Mike Ross and other members of licensee management. The physical security inspector presented the results of his inspection on April 13, 2000. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Cotton, Site Vice President
R. Fraile, Plant Manager
R. Goodrich, Site Security Manager
E. Fuhrer, Manager Regulatory Licensing
D. Atherholt, Director - Operations
M. Ross, Director - Work Management
O. Limpas, Director - Site Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

AmerGen	AmerGen Energy Company, LLC
AP	Administrative Procedure
BWST	Borated Water Storage Tank
CAP	Corrective Action Process
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
ESAS	Engineered Safeguards Actuation System
ETTS	Electronic Task Tracking System
LOCA	Loss of Coolant Accident
MPFF	Maintenance Preventible Functional Failure
NR	Nuclear River Water
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
PERR	Public Electronic Reading Room
SDP	Significance Determination Process
TMI	Three Mile Island Unit 1
TS	Technical Specification

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

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

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>.