August 28, 2001

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

SUBJECT: THREE MILE ISLAND STATION, UNIT 1-NRC INSPECTION REPORT 50-289/01-05

Dear Mr. Warner:

On August 11, 2001, the NRC completed an inspection at your Three Mile Island Unit 1 facility. The enclosed report documents the inspection findings which were discussed on August 17, 2001, with you and other members of your staff.

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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green). The issue was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because the problem has been entered into your corrective action process, the NRC is treating this issue as a non-cited violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Three Mile Island Unit 1 facility.

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).

Sincerely,

/RA/

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

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

Enclosure: NRC Inspection Report 50-289/01-05
Attachment 1: Supplemental Information

cc w/encl: Amergen Energy Company - Correspondence Control Desk
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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	50-289
License No:	DPR-50
Report No:	50-289/01-05
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	PO Box 480 Middletown, PA 17057
Dates:	July 1 - August 11, 2001
Inspectors:	J. Daniel Orr, Senior Resident Inspector Craig W. Smith, Resident Inspector
Approved by:	John F. Rogge, Chief Projects Branch 7 Division of Reactor Projects

SUMMARY OF FINDINGS

Three Mile Island, Unit 1
NRC Inspection Report 50-289/01-05

IR 05000289-01-05, on 7/01 - 8/11/2001, AmerGen Energy Company, LLC, Three Mile Island Unit 1, surveillance testing.

The inspection was conducted by resident inspectors. The inspection identified one Green finding, which was classified as a non-cited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- **Green**. Equipment operators failed to verify that a turbine-driven emergency feedwater pump steam admission valve operated consistent with surveillance procedure requirements.

  The safety significance of the procedure error was very low (Green) because AmerGen reperformed the missed portion of the surveillance and verified proper operation of the valve. Technical specification 6.8, "Procedures and Programs," requires, among other requirements, that written procedures shall be established and implemented for surveillance activities of equipment that affect nuclear safety. The emergency feedwater system is important to safety because it provides a method of decay heat removal during a loss of main feedwater. The operators' failure to perform the surveillance test as written constituted a violation of technical specification 6.8.

B. Licensee Identified Violations

A violation of very low safety significance which was identified by AmerGen was reviewed by the inspectors. Corrective actions taken or planned by AmerGen appear reasonable. This violation is listed in Section 4OA7 of this report.

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

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

R01 Adverse Weather Protection

a. Inspection Scope

The inspectors evaluated AmerGen's preparations for high winds by walking down TMI emergency procedure 1202-33, "Tornado/High Winds." The emergency procedure provided compensatory measures to be taken by site personnel in the event of a tornado or high wind storm. The inspectors verified that adequate instructions existed in the procedure and that all risk significant plant areas that could be potentially affected by high winds were considered.

b. Findings

No findings of significance were identified.

R04 Equipment Alignment

a. Inspection Scope

The inspectors conducted a partial system walkdown during planned maintenance on the 'B' high pressure injection (HPI)/makeup pump. The HPI/makeup system was selected because it performs a maintenance rule risk significant function. The inspectors performed the HPI/makeup system walkdown after the 'B' pump was removed from service. The inspectors verified the system alignment was in accordance with operating procedure 1104-2, "Makeup and Purification System," and verified operating parameters were consistent with the plant operating condition. The HPI/makeup system was also partially walked down following the maintenance activities to verify a proper return to service.

b. Findings

No findings of significance were identified.

R05 Fire Protection

a. Inspection Scope

The inspectors conducted fire protection inspections for the following plant fire zones:

- control building 306 foot elevation general areas
- control building 322 foot elevation remote shutdown control cabinet area
- auxiliary building 281 foot elevation general areas
- auxiliary building 305 foot elevation demineralizers and motor control center 'A' area

The rooms and areas were selected based on enclosing or proximity to risk significant equipment. The inspectors conducted plant walkdowns and verified the areas were as described in the fire hazard analysis report. The plant walkdowns included observations of combustible material control, fire detection and suppression equipment operability, and compensatory measures established for degraded fire protection equipment.

b. Findings

No findings of significance were identified.

R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed a simulator requalification training session on July 25, 2001, for an operating crew consisting of licensed reactor and senior reactor operators. The inspectors reviewed the lesson plans, assessed operator performance during the training sessions, and observed the evaluators' simulator critique.

b. Findings

No findings of significance were identified.

R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors verified AmerGen's implementation of the maintenance rule for three distinct heat sink protection system (HSPS) selector switch problems. The selector switch problems occurred on December 24, 2000, June 11, 2001, and June 13, 2001. The HSPS performs several maintenance rule risk significant functions.

The aspects of maintenance rule implementation inspected included safety significance classification, a (2) performance criteria, and maintenance preventable functional failure determinations. The inspectors referenced TMI administrative procedure 1082, "NRC Maintenance Rule," and NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Plants."

b. Findings

No findings of significance were identified.

R13 Maintenance Risk Assessment and Emergent Work Control

a. Inspection Scope

The inspectors reviewed AmerGen's planning and risk assessments for the following risk significant maintenance activities:

- river water intake structure annual desilting
- 'B' HPI/makeup pump planned outage
- integrated control system module emergent replacement affecting turbine bypass valve control

The inspectors reviewed the risk assessment of these maintenance activities with respect to 10 CFR 50.65(a)(4). The inspector reviewed the online station risk evaluation to assure that concurrent work would not negatively impact the overall safety of the facility. The inspectors referenced TMI administrative procedure 1082.1, "TMI Risk Management Program," and NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Plants."

b. Findings

No findings of significance were identified.

R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations for the following degraded equipment issues:

- steady low standpipe level alarm for the 'A' reactor coolant pump seal leakoff
- partial fouling of the river water intake structure
- 'B' HPI/makeup pump oil breather removal
- an integrated control system module failure affecting turbine bypass valve operation

The inspectors verified the degraded conditions were properly characterized, the operability of the affected systems was properly justified, and no unrecognized increase in plant risk resulted from the equipment issues.

b. Findings

No findings of significance were identified.

R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed identified operator work-arounds, the caution tag database, and walked down control room operating panels, local operating panels and equipment. The reviews were performed to determine the cumulative effect of equipment deficiencies on system performance, operator response, or increased likelihood for an initiating event.

b. Issues and Findings

No findings of significance were identified.

R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance tests performed by AmerGen in conjunction with a planned outage on the 'B' HPI/makeup pump and an integrated control system module emergent replacement affecting turbine bypass valve control. The inspectors verified that the post-maintenance test procedures and test activities were adequate to verify operability and functional capability prior to the affected systems being returned to service.

b. Findings

No findings of significance were identified.

R22 Surveillance Testing

.1 Emergency Feedwater Automatic Start System Surveillance Testing Error

a. Inspection Scope

On July 17, 2001, the inspectors observed surveillance testing of the emergency feedwater automatic start system conducted in accordance with AmerGen surveillance procedure 1303-11.39A, "HSPS (Heat Sink Protection System) - EFW (Emergency Feedwater) Auto Initiation." The inspectors observed portions of the test and compared the test results against the acceptance criteria established in the surveillance procedure. The inspectors reviewed the design basis documents for the system to determine if the acceptance criteria were appropriately established.

b. Findings

The inspectors identified an operator error and failure to perform the surveillance test as written. Specifically, the equipment operators did not verify that a turbine-driven emergency feedwater pump steam admission valve operated consistent with the test requirements. The safety significance of this finding is very low (Green) because AmerGen reperformed the missed portion of the surveillance and verified proper operation of the valve. The operators' failure to perform the surveillance procedure as written was a violation of technical specifications, which require written procedures be established and implemented for surveillance test activities.

TMI technical specifications require AmerGen to conduct quarterly surveillance testing of the HSPS EFW automatic start circuit. Surveillance procedure 1303-11.39A is the implementing procedure to conduct this required testing. To prevent an inadvertent start of the turbine-driven EFW pump, operators manually isolate two automatic steam admission valves. The steam admission valves automatically open from a HSPS signal. Operators are required to locally verify the automatic start signal at the valve actuator. To perform this step, operators must verify the solenoid valve controlling the automatic opening of the steam admission valve de-energizes and vents air off the valve actuator.

On July 17, 2001, the inspectors observed that operators did not verify the automatic operation of the 'A' steam admission valve as required by the surveillance procedure. The design of the system is that the 'A' steam admission valve receives a signal to automatically open first and then, after a time delay of about 53 seconds, the 'B' steam admission valve receives an automatic open signal. The operator designated to verify the local operation of the steam admission valves mistakenly understood his responsibility to only time the 'B' steam admission valve. An in-plant supervisor also incorrectly recorded that local operation of the 'A' steam admission valve was verified. The operators noticed their error after the NRC inspectors questioned the omitted verification.

This finding is more than minor because local verification of valve actuation is required to ensure that the automatic start circuit is fully functional. The operators' failure to verify local operation of the 'A' steam admission valve to the turbine-driven EFW pump could have masked a problem in the automatic start circuit. The safety significance of the failure to perform the surveillance test as written was very low (Green), because AmerGen reperformed the missed portion of the test and the valve was verified to be operating properly. The equipment operators' failure to perform the surveillance test as written was a violation of technical specification 6.8, "Procedures and Programs," which requires, among other requirements, that written procedures be established and implemented for surveillance activities of equipment that affect nuclear safety. The EFW system is important to safety because it provides a method of decay heat removal during a loss of main feedwater. This technical specification violation is being treated as a non-cited violation because of the very low safety significance and because AmerGen has entered this procedure problem into its corrective action process (T2001-0704) (**NCV 50-289/01-05-01**).

.2 Additional Surveillance Testing

a. Inspection Scope

The inspectors reviewed two additional surveillance testing activities: turbine-driven EFW inservice testing and annual river water intake structure silt level measurements. The surveillance activities were selected based on contribution to plant risk. The inspectors observed portions of the selected surveillance tests and verified, based on the test results, that the systems met technical specification and procedural requirements. The inspectors sampled AmerGen's corrective action process for problems identified during previous performances of the tests to determine if problems involving surveillance testing were being identified and resolved at an appropriate threshold.

b. Findings

No findings of significance were identified.

Emergency Preparedness [EP]

EP6 Drill Evaluation

a. Inspection Scope

On August 8, 2001, the inspectors observed a simulator scenario that AmerGen credited towards the Drill/Exercise Performance performance indicator. The inspectors evaluated the opportunities for classification and notification of the emergency action levels presented in the simulator scenario. The inspectors verified that AmerGen correctly evaluated the simulator participants' classifications and notifications.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors verified data submitted by AmerGen for the Residual Heat Removal System Unavailability performance indicator. The inspectors reviewed operating logs, maintenance rule records, and the corrective action process database to verify the accuracy and completeness of the reported unavailability data. Records were reviewed for reported performance indicator data covering the last two quarters of 2000 and the first two quarters of 2001.

b. Findings

No findings of significance were identified.

OA6 Management Meetings

Exit Meeting Summary

On August 17, 2001, the resident inspectors presented the inspection results to members of AmerGen management led by Mr. Mark Warner. AmerGen acknowledged the findings presented. AmerGen did not indicate that any of the information presented at the exit meeting was proprietary.

OA7 Licensee Identified Violations

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

- **NCV 50-289/01-05-02.** 10 CFR 50, Appendix B, Criterion III, "Design Control," requires in part that measures be established to assure applicable design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to this requirement, operators removed the intermediate building ventilation system from service for planned maintenance without assessing the impact of the loss of ventilation on building temperatures. The issue was more than minor because equipment important to safety was affected by elevated temperatures above design basis considerations. AmerGen engineers performed an analysis to determine the impact on the environmental qualification of critical components. AmerGen entered this problem in the corrective action process (T2001-0465).

ATTACHMENT 1
SUPPLEMENTAL INFORMATION

a. Key Points of Contact

D. Atherholt, Shift Operations Superintendent
G. Gellrich, Plant Manager
O. Limpias, Director - Site Engineering
D. McDermott, Director, Maintenance
J. McElwain, Manager, Regulatory Assurance
S. Queen, Senior Manager, Plant Engineering
J. Robertson, Plant Operations Director
M. Warner, Vice President, TMI Unit I

b. Items Opened, Closed, and Discussed

OPENED AND CLOSED

50-289/01-05-001	NCV	Operator Error During Emergency Feedwater Automatic Start Circuit Surveillance Testing
50-289/01-05-02	NCV	Intermediate Building Operation Above Design Basis Temperature

c. List of Acronyms

ADAMS	Agencywide Documents and Management System
AmerGen	AmerGen Energy Company, LLC
CFR	Code of Federal Regulations
EFW	Emergency Feedwater
HPI	High Pressure Injection
HSPS	Heat Sink Protection System
IR	Inspection Report
NCV	Non-cited Violation
NRC	Nuclear Regulatory Commission
SDP	Significance Determination Process
TMI	Three Mile Island, Unit 1